



# CITY OF MILWAUKIE

## AGENDA

July 27, 2021

### PLANNING COMMISSION

milwaukieoregon.gov

**Zoom Video Meeting:** due to the governor's "Stay Home, Stay Healthy" order, the Planning Commission will hold this meeting through Zoom video. The public is invited to watch the meeting online through the City of Milwaukie YouTube page ([https://www.youtube.com/channel/UCRFbfqe3OnDWLQKSB\\_m9cAw](https://www.youtube.com/channel/UCRFbfqe3OnDWLQKSB_m9cAw)) or on Comcast Channel 30 within city limits.

If you wish to provide comments, the city encourages written comments via email at [planning@milwaukieoregon.gov](mailto:planning@milwaukieoregon.gov). Written comments should be submitted before the Planning Commission meeting begins to ensure that they can be provided to the Planning Commissioners ahead of time. To speak during the meeting, visit the meeting webpage (<https://www.milwaukieoregon.gov/bc-pc/planning-commission-77>) and follow the Zoom webinar login instructions.

**1.0 Call to Order – Procedural Matters — 6:30 PM**

**2.0 Planning Commission Minutes – Motion Needed**

**2.1** May 11, 2021

**2.2** May 25, 2021

**3.0 Information Items**

**4.0 Audience Participation** — This is an opportunity for the public to comment on any item not on the agenda

**5.0 Hearing Items:**

**5.1** Summary: Sign Code Zoning Text Amendment

File: ZA-2021-003

Staff: Assistant Planner Mary Heberling

**5.2** Summary: Kellogg Bowl Redevelopment

Applicant: Pahlisch Commercial, Inc

Address: 10306 SE Main St

File: DR-2021-003

Staff: Associate Planner Brett Kelter

**6.0 Planning Department Other Business/Updates**

**7.0 Planning Commission Committee Updates and Discussion Items** — This is an opportunity for comment or discussion for items not on the agenda.

**8.0 Forecast for Future Meetings**

August 10, 2021 Work Session Item: Comprehensive Plan Implementation – Draft Code/Map Amendments

August 24, 2021 Work Session Item: Comprehensive Plan Implementation – Tree Code  
Work Session Item: Comprehensive Plan Implementation – Draft Code/Map Amendments – Batch #2

September 14, 2021 Hearing Item: VR-2021-013, Bonaventure Senior Living Walkways (tentative)

## Milwaukie Planning Commission Statement

The Planning Commission serves as an advisory body to, and a resource for, the City Council in land use matters. In this capacity, the mission of the Planning Commission is to articulate the Community's values and commitment to socially and environmentally responsible uses of its resources as reflected in the Comprehensive Plan

1. **PROCEDURAL MATTERS.** If you wish to register to provide spoken comment at this meeting or for background information on agenda items please send an email to [planning@milwaukieoregon.gov](mailto:planning@milwaukieoregon.gov).
2. **PLANNING COMMISSION and CITY COUNCIL MINUTES.** City Council and Planning Commission minutes can be found on the City website at [www.milwaukieoregon.gov/meetings](http://www.milwaukieoregon.gov/meetings).
3. **FORECAST FOR FUTURE MEETINGS.** These items are tentatively scheduled but may be rescheduled prior to the meeting date. Please contact staff with any questions you may have.
4. **TIME LIMIT POLICY.** The Commission intends to end each meeting by 10:00pm. The Planning Commission will pause discussion of agenda items at 9:45pm to discuss whether to continue the agenda item to a future date or finish the agenda item.

### Public Hearing Procedure

Those who wish to testify should attend the Zoom meeting posted on the city website, state their name and city of residence for the record, and remain available until the Chairperson has asked if there are any questions from the Commissioners. Speakers are asked to submit their contact information to staff via email so they may establish standing.

1. **STAFF REPORT.** Each hearing starts with a brief review of the staff report by staff. The report lists the criteria for the land use action being considered, as well as a recommended decision with reasons for that recommendation.
2. **CORRESPONDENCE.** Staff will report any verbal or written correspondence that has been received since the Commission was presented with its meeting packet.
3. **APPLICANT'S PRESENTATION.**
4. **PUBLIC TESTIMONY IN SUPPORT.** Testimony from those in favor of the application.
5. **NEUTRAL PUBLIC TESTIMONY.** Comments or questions from interested persons who are neither in favor of nor opposed to the application.
6. **PUBLIC TESTIMONY IN OPPOSITION.** Testimony from those in opposition to the application.
7. **QUESTIONS FROM COMMISSIONERS.** The commission will have the opportunity to ask for clarification from staff, the applicant, or those who have already testified.
8. **REBUTTAL TESTIMONY FROM APPLICANT.** After all public testimony, the commission will take rebuttal testimony from the applicant.
9. **CLOSING OF PUBLIC HEARING.** The Chairperson will close the public portion of the hearing. The Commission will then enter into deliberation. From this point in the hearing the Commission will not receive any additional testimony from the audience but may ask questions of anyone who has testified.
10. **COMMISSION DISCUSSION AND ACTION.** It is the Commission's intention to make a decision this evening on each issue on the agenda. Planning Commission decisions may be appealed to the City Council. If you wish to appeal a decision, please contact the Planning Department for information on the procedures and fees involved.
11. **MEETING CONTINUANCE.** Prior to the close of the first public hearing, any person may request an opportunity to present additional information at another time. If there is such a request, the Planning Commission will either continue the public hearing to a date certain or leave the record open for at least seven days for additional written evidence, argument, or testimony. The Planning Commission may ask the applicant to consider granting an extension of the 120-day time period for making a decision if a delay in making a decision could impact the ability of the City to take final action on the application, including resolution of all local appeals.

### **Meeting Accessibility Services and Americans with Disabilities Act (ADA) Notice**

The city is committed to providing equal access to public meetings. To request listening and mobility assistance services contact the Office of the City Recorder at least 48 hours before the meeting by email at [ocr@milwaukieoregon.gov](mailto:ocr@milwaukieoregon.gov) or phone at 503-786-7502. To request Spanish language translation services email [espanol@milwaukieoregon.gov](mailto:espanol@milwaukieoregon.gov) at least 48 hours before the meeting. Staff will do their best to respond in a timely manner and to accommodate requests. Most Council meetings are broadcast live on the city's YouTube channel and Comcast Channel 30 in city limits.

### **Servicios de Accesibilidad para Reuniones y Aviso de la Ley de Estadounidenses con Discapacidades (ADA)**

La ciudad se compromete a proporcionar igualdad de acceso para reuniones públicas. Para solicitar servicios de asistencia auditiva y de movilidad, favor de comunicarse a la Oficina del Registro de la Ciudad con un mínimo de 48 horas antes de la reunión por correo electrónico a [ocr@milwaukieoregon.gov](mailto:ocr@milwaukieoregon.gov) o llame al 503-786-7502. Para solicitar servicios de traducción al español, envíe un correo electrónico a [espanol@milwaukieoregon.gov](mailto:espanol@milwaukieoregon.gov) al menos 48 horas antes de la reunión. El personal hará todo lo posible para responder de manera oportuna y atender las solicitudes. La mayoría de las reuniones del Consejo de la Ciudad se transmiten en vivo en el canal de YouTube de la ciudad y el Canal 30 de Comcast dentro de los límites de la ciudad.

#### **Milwaukie Planning Commission:**

Lauren Loosveldt, Chair  
Joseph Edge, Vice Chair  
Greg Hemer  
Robert Massey  
Amy Erdt  
Adam Khosroabadi  
Jacob Sherman

#### **Planning Department Staff:**

Laura Weigel, Planning Manager  
Vera Koliass, Senior Planner  
Brett Kolver, Associate Planner  
Mary Heberling, Assistant Planner  
Janine Gates, Assistant Planner



# CITY OF MILWAUKIE

## PLANNING COMMISSION MINUTES

City Hall Council Chambers  
10722 SE Main Street  
[www.milwaukieoregon.gov](http://www.milwaukieoregon.gov)

May 11, 2021

**Present:** Lauren Loosveldt, Chair  
Joseph Edge, Vice Chair  
Amy Erdt  
Greg Hemer  
Adam Khosroabadi  
Robert Massey  
Jacob Sherman

**Staff:** Laura Weigel, Planning Manger  
Mary Heberling, Assistant Planner  
Justin Gericke, City Attorney

(00:16:44)

### 1.0 Call to Order – Procedural Matters\*

**Chair Loosveldt** called the meeting to order at 6:30 pm and read the conduct of meeting format into the record.

**Note:** The information presented constitutes summarized minutes only. The meeting video is available by clicking the Video link at <http://www.milwaukieoregon.gov/meetings>.

(00:18:02)

### 2.0 Informational Items

No information was presented for this portion of the meeting.

(00:18:12)

### 3.0 Audience Participation

No information was presented for this portion of the meeting.

(00:19:00)

### 4.0 Public Hearing Items

(00: 22:24)

#### 4.1 VR-2021-002 Milwaukie High School Sign Variance Continued Hearing

This was a continued hearing from April 13, 2021. **Mary Heberling, Assistant Planner** shared the staff report for V-2021-002 for Milwaukie High School. The applicant proposed an electronic reader board to share messages with the Milwaukie High School community and neighbors. The size of the electronic reader sign would be 18.56

square feet (sf) and the display size would be 16.93 sf. The applicant would like to locate the electronic reader sign at the main parking lot entrance, which would be the northeast corner of Willard St and 23rd Ave. At the last hearing, the Planning Commission requested additional information from the applicant. The Planning Commission wanted to know how a Category 4 designation created a unique situation and circumstance to grant a sign adjustment and how a Category 4 designation satisfied the findings required for an approval of an adjustment under MMC 14.032.030? The applicant shared that being a Category 4 building was a unique situation because the electronic reader sign would be able to meet the needs of the school's community and the wider community during a catastrophic event. The proposed electronic reader board would be connected to the high school's generator and would be operational in the event of a power outage.

The Planning Commission asked the applicant additional questions. **Commissioner Sherman** asked about the applicant's connection to the Clackamas County's joint information system and if there was a Memorandum of Understanding with the County? **The applicant** shared, they haven't reached out to the County and would do so after receiving approval for their electronic reader board. **Commissioner Massey** asked, if Category 4 buildings were designated by a governmental agency? **The applicant** responded, they believed there were national rules to follow for establishing a seismic building. For the school, their structural engineer designed and designated the building as so. **Chair Loosveldt** added, it was common for a structural engineer to design and designate a building as seismic.

The Planning Commission discussed the necessary code for evaluation. **Commissioner Edge** asked, if the applicant needed to meet all subsections of Milwaukie Municipal Code (MMC) 14.32.030 Circumstances for Granting Adjustment. **Heberling** confirmed that the applicant needed to consider and make findings to each subsection of MMC 14.32.030.

The Planning Commission discussed the approval criteria of the application. **Vice Chair Edge** asked, since the electronic reader sign was created to provide information during a catastrophic event, was it possible to have a conditional of approval that the electronic reader board must connect to the generator? **Justin Gericke, City Attorney**, reminded the Planning Commission that the applicant shared that the electronic reader sign would be connected to the generator. Gericke suggested there was a possibility that in a catastrophic event the electronic reader sign could be the first thing to lose power if too many things were connected to the generator and wasn't sure if we should add that as a condition of approval. **Commissioner Hemer** shared, there could be a concern about the illumination and its effects on neighbors. He wanted to condition the electronic reader sign to display two colors and no animation. **Vice Chair Edge** shared, he did not support the application as is because the applicant did not satisfy MMC 14.32.030.C, which stated "that strict or literal interpretation and enforcement of the specified regulation would deprive the applicant of privileges enjoyed by the owners of other properties classified in the same zoning district." An electronic reader sign was not allowed in the residential zone. Denying the application would not deprive the applicant a privilege that someone in the Residential R-2 (R-2) zone would get. **Commissioner Khosroabadi** asked, since the high school is part of the

community and is a conditional use in the R-2 zone, did C really apply to the school given their special situation? **Gericke** responded, C applied to the school. The subsections of MMC 14.32.030 were written to apply to all zones and there were not any exceptions because of the school use in the R-2 zone. **Commissioner Hemer** wanted to understand how to approve the proposal due to their unique offer to the city as a Category 4 building and emergency shelter. **Vice Chair Edge** responded, as the code was written, the applicant did not meet the requirements of C. **Commissioner Massey** agreed with Commissioner Hemer. They believed any building in the R-2 that was a Category 4 and seismic building would be eligible for an electronic reader sign. **Vice Chair Edge** responded, the Planning Commission needed to base their decision on the code as it was written and not a code that might be implemented in the future. **Chair Loosveldt** shared, it would be best to send this to City Council because they had an ability to create a policy that was favorable for this and future applicants that would like to serve the public as a Category 4 building. **Commissioner Hemer** responded, a City Council hearing would not solve the problem at hand. He suggested that C applied if Council agreed with "therefore the strict or literal interpretation of the sign ordinance would deprive the applicant the privileges as a critical essential building that were not applicable to the other uses in the R-2 zone." If Council believed this was a false statement, he would like to hear that. If it was not a false statement, the applicant met the standard for C. **Gerick** responded, the statement did not align with C. **Commissioner Sherman** responded, the code did not tell the Planning Commission that each subsection needed to be met. **Gerick** responded, the code said, "the review authority shall consider and make findings with respect to each of the following," which listed criteria for A through E.

**Commissioner Hemer** introduced a motion approve the application with a condition of approval to limit the number of colors for the electronic reader sign to two and no animation. There was a 3 – 3 vote, as a result, the motion and application was denied. **Commissioner Sherman** suggested the Planning Commission write a letter explaining how to improve the sign code for unique buildings. **Commissioner Hemer** agreed and would like the Planning Commission to send a letter to City Council whether the applicants appealed their decision or not. **Commissioner Edge** shared, if the Planning Commission sent a letter the Chair or Vice Chair should present the letter to City Council. The Planning Commission agreed.

(01:20:14)

#### **4.2 VR-2021-006 Providence Supportive Housing Height Variance**

The purpose of the hearing was to request a variance on a vacant lot located on the northwest corner of Llewellyn St and 34<sup>th</sup> Ave. The applicant was attempting to seek approval for their height variance for the 4<sup>th</sup> and 5<sup>th</sup> stories and reduced step and setbacks prior to seeking federal funding.

**Heberling** shared the staff report. On April 13, 2021, the Planning Commission discussed land use file CU-2021-001, which was related to today's hearing. On April 13<sup>th</sup>, the applicant was interested in developing a vacant lot with a 17-space parking lot, outdoor space to serve the mixed-use building, and multi-family/commercial related

uses. The goal of the hearing on April 13<sup>th</sup> was to ensure the applicant met the criteria for a conditional use for the parking lot. The parking lot would be in the R-3 zone and be used by residents only. Additional parking for the clinic/office and employees would be on a different parcel in the GMU zone and would meet all of MMC standards.. Today's hearing was to discuss the applicant's request for a 5-story mixed use building which would include 72 affordable units for seniors with zero to 30% of the median family income (MFI) and Elder Place PACE Center, which is a medical clinic for the residents. The proposal had three variances, which included reduced front and rear transition measures setbacks, reduction in building setback requirements for the street-facing stories above 5 ft, and a GMU building height bonus for the 4<sup>th</sup> and 5<sup>th</sup> stories. By code, the GMU offered the applicant an opportunity to seek two bonus stories. The code allowed one bonus if the development was at least 25% housing and the second bonus was if a building received a green building certification. The applicant was seeking the two bonuses. More than 25% of the building would be housing and the applicant was currently seeking a green building certification. The code required the applicant to meet the setback standards of the lower density zone because the property abutted and/or was across the right-of-way of a lower density zone. The NE and S property lines were abutting the R-3 zone and had 15 ft setbacks for the front and rear yards. The applicant was seeking a variance to the setbacks. Any street-facing façade over 45 ft needed a setback of 15 ft. The applicant proposed a 2 ft setback from the front of the western side of the building because the office and clinic would be located on the first floor and this would reduce the distance patients had to walk to access the clinic. The minimum setback for the GMU zone is 0 ft, if there were no transition measures the proposed building could be built on the property lines. The eastern portion of the building would have a 20 ft setback to allow a transition from commercial to residential. The further east the building would go, the more residential it would become, which would align with the surrounding properties. The rear setback would be 11 ft only for the first floor and floors 2 – 5 would meet the 15 ft setback. Some benefits of the proposal were the development would have some mature vegetation that separates the site from the northern neighbors and there would be over 50 ft from this development to the northern neighbors. Another potential impact mentioned was shadowing issues on the southern properties, which was why the building would have a 50 ft setback to mitigate that issue. The development would provide quite a few public benefits. The reduced setbacks, step backs, and height would allow the applicant to provide 18 more affordable units for senior. The building would be designed to meet Earth Advantage Gold certification, and provide an electric vehicle charging station. The applicant would work to meet the Central Milwaukie Bikeway plans if approved for Llewellyn St.

**Heberling** also discussed the height variance impacts and mitigations. 44 ft of the 142 ft of the front façade would be within 2 ft of Llewellyn St. Some concerns could be the lack of privacy from a taller building. The applicant shared, the topography slopes up higher than the development site both to the east and north. The first few residential buildings east of 34<sup>th</sup> Ave and on either side of SE King Ave will be on level with the 4<sup>th</sup> of 5<sup>th</sup> story of this development if not higher due to the raised topography. The neighborly concerns around the lack of privacy from a taller building as such is mitigated. On the East and West sides of the building, there would be articulation to mitigate possible vision impacts. An important benefit of the proposal was there would be 72 deeply affordable housing for seniors within the 5 story building. Lastly, Heberling shared, the proposal received 5 comments from neighbors who were opposed to the development. Based on the approval criteria, the Planning Staff recommended approval of the proposal.

**The applicant** testified, they would preserve the trees on the property to ensure they do not interfere with the Northern properties' privacy. In the most impacted areas on Llewelyn St, the development would meet the setback. The proposed development was different than other senior housing because this development would allow residents to age in place. As residents age and may need additional resources they would not be required to move or relocate to another unit because the units were designed to create a permanent residence for the seniors. Residents would be 62 years old and older. The building would foster an environment for mobility access for all residents. The units and hallways are bigger to accommodate wheelchairs and other mobility equipment. The applicant would use material that matches the homes of the neighborhood. They would introduce more green space, trees, and vegetation to the site. The majority of the vegetation/open space would exist east of the proposed building. ElderPlace would occupy part of the first floor. The clinic would offer free health care to people who are Medicaid and Medicare eligible.

The group discussed the site's vegetation. **Commissioner Khosroabadi** asked how many trees would be removed, replanted, and if the vegetation would be a net positive. **The applicant** responded, there would be a net positive of vegetation, including planting a lot of different species in the green space.

The group discussed the changes in the applicant's proposal. **Commissioner Hemer** shared, the applicant went before the Ardenwald-Johnson Creek Neighbor District Association (NDA) and proposed a 4-story building. During the hearing, the applicant presented a 5-story building. Commissioner Hemer asked about the changes and why they were proposing an additional floor. **The Applicant** responded, that was correct. They added an additional floor to house more seniors and ensure they were a competitive applicant for federal funding.

The public shared testimony of support. **Arnold Rhodacker** said, they supported the project and the services that would be offered to seniors. They were concerned that the hospital did not have more support for the neighborhood. They wanted to see an urgent care clinic in the neighborhood. The nearest urgent care clinic was about two hours away and one needed to catch three buses to the clinic.

The public shared testimony of opposition. **Caroline Krause** lived on the corner of 34<sup>th</sup> and Llewellyn ST. They had three concerns, which were scale, parking, and safety. There were not any buildings similar in size and this development would be a misfit. They believed 17 parking spaces were not enough and the site would need more parking. There would be a massive influx of people and there were not sidewalks to accommodate the current or future residents. This was not the appropriate location for the proposed project. **Alle Bernards** lived on 34<sup>th</sup> Ave. They agreed with Krause's statements. The setbacks not being met was alarming as it does not offer a transition to the residential properties. **Mark Gossage** owned an adjacent property to the north of the site. They shared, the scale of this size building did not protect the current residents and was concerned about the removal of trees. **Ronelle Coburn** was a resident of the Ardenwald – Johnson Creek NDA. They were concerned regarding design issues and asked why the south side of the building did not have a 15 ft setback. Lastly, they agreed the proposed building was too high. She asked if there was a time limit for the residents occupying the space? **Lisa Gunion-Rinker** was the Land Use Chair of the Ardenwald -Johnson Creek NDA. They were concerned that the hospital would not

have enough parking and about the building height. They agreed with Ronelle Coburn regarding the set and step backs. Overall, the residents were concerned about the traffic influx, building height, and questioned receiving notifications about the project. **Commissioner Sherman** asked, if the neighbors received any public notices about the proposal and **Heberling** responded that properties within 300 ft received a notice on March 23<sup>rd</sup>.

The applicant responded to the testimonies. **The applicant** stated, the property must remain as affordable senior housing for a minimum of 50 years. When the applicant submits their final application, they would complete a traffic impact study to the City of Milwaukie. They shared that the building height bonus maximum was 69 ft and they were seeking 62 ft.

The Planning Commission decided to continue the hearing and keep the record open for seven days for new written testimony from the public and additional seven day for the applicant and community members to respond to any new written testimony that was received. No testimony will be taken at the next continued hearing.

(03:09:36)

#### **5.0 Planning Department Other Business/Updates**

**Laura Weigel, Planning Manager** shared they met with the Chair and Vice Chair to prepare for the joint Neighborhood Associate District meeting. They were tentatively scheduling the meeting for July 22, 2021 although the summer was proving to be a difficult time to schedule the meeting.

(03:09:36)

#### **6.0 Planning Commission Committee Updates and Discussion Items**

No information was presented for this portion of the meeting.

(03:15:09)

#### **7.0 Forecast for Future Meetings**

May 25, 2021: Comprehensive Plan Update and amendments.

June 9, 2021: Two accessory structure variances.

**Meeting adjourned at approximately 8:30 PM.**

Respectfully submitted,

N. Janine Gates  
Assistant Planner





# CITY OF MILWAUKIE

## PLANNING COMMISSION MINUTES

City Hall Council Chambers  
10722 SE Main Street  
[www.milwaukieoregon.gov](http://www.milwaukieoregon.gov)

May 25, 2021

**Present:** Lauren Loosveldt, Chair  
Joseph Edge, Vice Chair  
Amy Erdt  
Greg Hemer  
Adam Khosroabadi  
Robert Massey  
Jacob Sherman

**Staff:** Laura Weigel, Planning Manger  
Vera Koliass, Senior Planner  
Mary Heberling, Assistant Planner  
Justin Gericke, City Attorney

(00:07:17)

### 1.0 Call to Order – Procedural Matters\*

**Chair Loosveldt** called the meeting to order at 6:30 pm and read the conduct of meeting format into the record.

**Note:** The information presented constitutes summarized minutes only. The meeting video is available by clicking the Video link at <http://www.milwaukieoregon.gov/meetings>.

(00:08:28)

### 2.0 Minutes

The Planning Commission reviewed the March 23, 2021 minutes. Commissioner Massey's titled needed to be changed from Chair to Commissioner. The Planning Commissioner approved the amended minutes.

(00:10:34)

### 3.0 Informational Items

**Laura Weigel, Planning Manager** informed the Planning Commission that Waverly Woods was now referred to as Birnam Oaks. The developer submitted their final plat and were working on their tree protection activities. Also, the Monroe Apartments project was not going to continue and there was a developer who may take over the project.

(00:11:31)

### 4.0 Audience Participation

No information was presented for this portion of the meeting.

(00:12:12)

## 5.0 Public Hearing Items

(00:12:27)

### 5.1 VR-2021-006 Providence Supportive Housing Height Variance Continued

This was a continued hearing from May 11, 2021. The applicant was requesting a variance on a vacant lot located on the northwest corner of Llewellyn St and 34<sup>th</sup> Ave. The applicant applied for three variances, which included reduced front and rear transition measures setback, reduced building setback requirements for the street-facing stories above 45 ft, and general mixed use (GMU) building height variance for the 4<sup>th</sup> and 5<sup>th</sup> stories. They were seeking approval for the three variances prior to applying for federal funding. As proposed, the development will be a 5-story mixed use building with 72 affordable units for seniors with zero to 30% of the median family income (MFI). Elder Place PACE Center, which is a medical clinic for the residents will be onsite. During the hearing on May 11, the Planning Commission decided to continue the hearing and kept the record open until May 18<sup>th</sup> for new written testimony from the public and applicant. From May 18<sup>th</sup> until the 25<sup>th</sup>, the applicant and public had an opportunity to respond to any new information that was presented the week prior.

**Mary Heberling, Assistant Planner** shared the staff report. The first week the City of Milwaukie received four new public comments and additional testimony from the applicant. The second week the City of Milwaukie received comments from two community members and rebuttal testimony from the applicant. The Planning Department recommended approval of the variances and findings.

The Planning Commission discussed the state laws for land use review timelines of the project. **Heberling** shared, the state recently changed the law that affordable housing developments needed to receive a decision within 100 days after the application was deemed complete. Appeals needed to be completed within this timeframe as well. All other land use applications must have a decision within 120 days after the application is deemed complete.

The Planning Commission discussed the proposed building height. **Chair Loosveldt** asked about the proposed building height and why the applicant was seeking a building height of 62ft. **Heberling** responded, the GMU zone allowed height bonuses beyond the maximum height. To receive a bonus 25% of the building needed to be residential and the applicant met that, which meant they could apply for an additional story. Another incentive for a height bonus was to develop a certified green building. With the bonus height criteria, the applicant had a chance to apply for a bonus height of 69 ft and decided to propose 62 ft as the building height.

The Planning Commission discussed the setback variances. **Chair Loosveldt** asked the Planning Department to explain why they supported the variances. **Heberling** responded, the site was surrounded by the Residential R – 3 (R-3) zone to the north, south, and east. The GMU zone stated that if a development was next to a lower

density zone, which the R-3 was, the proposed development must meet the setbacks of the lower density zone. In this case, the applicant must meet the setback requirements for the R-3 zone. The eastside of the building, which was closer to 34<sup>th</sup> Ave, had a 15 ft setback, which was consistent with the R-3 zone. To the north, which was the back of the property, the applicant was asking for a 11 ft setback for the first floor only. The Planning Department supported that variance because the applicant addressed possible impacts and mitigation activities. Currently, on the site there were trees between the site and properties on the northside. The applicant would like to keep the trees there to serve as a buffer between the properties. The applicant applied for a variance for the front (south side) of the building as well. As proposed, 40 ft of the building on the western half, which would be closer to 32<sup>nd</sup> Ave, would be setback 2 ft versus the 15 ft setback requirement of the R-3 zone. On the eastern half and remaining 90 ft of the building, the setback would be 20 ft versus the 15 ft. A 20 ft setback was also the maximum setback for the GMU zone. The GMU zone was intended for buildings to be closer to the street. The Planning Department was comfortable approving this application because the setbacks the applicant was seeking setback variances for were portions of the building that would be closer to Providence Hospital and their parking lot. The applicant wanted the building to be closer to the street to better serve the residents and seniors who would visit the clinic. **Vice Chair Edge** asked, if the front setbacks and transition requirements were based on the zone designation or the uses of the buildings. **Heberling** responded, it was technically the zone designation. However, in the R-3 zone a variety of uses were allowed. An applicant had the ability to apply for a conditional use for a commercial use in the R-3 zone. **Commissioner Sherman** asked, if the zone across the street was GMU, many of the issues being discussed would not be a concern, correct? **Heberling** responded, yes, especially for the transition measure setbacks. The applicant could have submitted a proposal for a zero setback.

The Planning Commission asked the applicant final questions about their proposal. **Commissioner Erdt** asked if the unoccupied clinic was available to non-Providence medical providers? **The applicant** responded, the clinic could be used by medical professionals outside of Providence. **Commissioner Khosroabadi** shared that there were concerns about the trees on the property. However, the arborist report stated the impact to trees would be low. They wanted the applicant to further explain the impact to the trees based on their proposed development. **The applicant** responded, the arborist shared with them that there would not be any impacts to the trees. Development may be close to the drip line and revisions to the structure of the building was possible to avoid impacts to the trees on the site. **Commission Hemer** asked, why the applicant was not constructing their building completely within the R-3 zone. **The applicant** responded, based on environmental impacts the parking lot was not ideal for residential which determined how they proceeded with developing their project.

The Planning Commission discussed the set and step backs of the proposal. **Commissioner Edge** shared, the applicant did not submit a proposal that aligned with the R-3 setbacks and transition requirements. However, after rereading the applicant's and Planning Department's reports and understanding the surrounding properties this was an approvable proposal. **Commissioner Hemer** shared, many years ago, there were conversations about set and step backs and ensuring 5-story building were not dominating the neighborhood. If the building was in the middle of a GMU and not as

close to the R-3 zone, they would support the proposal and variances. **Commissioner Sherman** shared, the design of the proposal, proposed open spaces, and other activities would provide some of those transition measures.

The Planning Commission discussed the building height. **Commissioner Hemer** said, the applicant 100% qualified for the building height variance. The applicant met the criteria for a variance.

The proposal was approved with a 6-1 vote.

(01:02:52)

## 6.0 Work Session

(01:02:52)

## 6.1 Comprehensive Plan Implementation - Draft Code / Map Amendments

**Vera Koliás, Senior Planner** shared an update about the Comprehensive Plan Implementation Project. The project schedule had changed slightly. Originally the goal was to adopt the code in June, but that had been pushed to fall or winter of 2021. Staff was required to submit a draft code to DLCD in June to comply with a DLCD grant. The goal for the code updates were to increase the supply of middle housing, increase the tree canopy and preserve existing trees, and manage parking to enable middle housing. There was a virtual open house that ended in April. Respondents were asked about parking options. Most of the respondents supported allowing a combination of on and off-street parking to meet the parking requirements. Respondents were asked if they supported allowing less than one parking space per dwelling unit. 53% of the respondents said no, 35% of the respondents said yes, and 13% of the respondents were unsure. Respondents were asked about building form and trees. 55% of the survey respondents preferred buildings to be stacked and 70% of the respondents preferred multiple buildings on a lot. 58% of the respondents supported allowing a three story building to preserve a mature tree. **Commissioner Massey** asked, how and who would determine the maturity of a tree? **Koliás** responded, the purpose of this question was to understand how the public felt about residential building heights. If this became a policy, standards would be created.

**Koliás** said, there were options for how the City proceeded with adopting HB 2001 and whether the City used the model code. The model code was prepared by the Department of Land Conservation & Development (DLCD) for communities to implement house bill, outlined in Division 46. The model code was intended to provide guidance in implementing HB 2001. If the City does not adopt a code that is compliant with HB 2001 by June 2022 they must adopt the model code. Again, the City had options. It could adopt the model code as is, adopt portions of the model code, or adopt a completely new code that still met Division 46. The City of Milwaukie will not adopt the model code but will use it as a guide to develop its own code unique to Milwaukie that complies with HB 2001.

The parking recommendations were amending Table 19.605.1 to reduce parking minimums for newly defined middle housing types to one space per dwelling unit and amending 19.607 to allow parking within the front and street side yard setbacks. The parking space will be allowed within the front yard. **Commissioner Hemer** asked if the committee thought about electric vehicle charging stations. **Kolias** responded, the garage could be used for an electronic vehicle charging station. The goal was not intended to discourage garages. **Chair Loosveldt** shared, charging stations were evolving and plugs may not be necessary in the future.

The Planning Commissioner discussed parking alternatives related to the new code. **Commissioner Sherman** would like to know if the community would support houses without driveways or garages if that meant the houses cost less. The City had the ability to reduce parking on private property and allowing residents to park on the street. With this option, there would be ample parking available. There were several initiatives within the City's programs and policies to reduce parking and parking requirements. For the minimum parking requirements, it should be zero parking required. **Kolias** responded, the community supported a combination of on and off-street parking options. There were certain streets that had difficulties providing on-street parking which needed to be taken into consideration. **Commissioner Sherman** shared, if the City realized there was not enough on-street parking in the future, they could require permits and implement other tools to manage on-street parking. **Chair Loosveldt** shared, if the City allowed on-street parking it should also ensure the infrastructure followed, which included adequate sidewalks, curbs, and proper drainage. **Commissioner Erdt** shared, less parking will be needed due to fewer people owning cars and utilizing Uber, Lyft, and autonomous vehicles. **Chair Loosveldt** shared, if we allowed zero cars to be parked it would allow the market to drive whether a driveway or garage would be built, which could make building a house more affordable and cost effective. There must be a balance between on-street parking and necessary infrastructure. **Vice Chair Edge** shared, that the younger generations were owning fewer cars than baby boomers. With that being said, we cannot apply outdated information when it was no longer true or effective. There were new preferences and those needed to go into effect. The city was overbuilt with parking and they liked that residents were allowed to convert their garages into housing. The policy needed to be housing for people and not housing for cars. There was a process currently for developers to apply for a parking reduction through a Type II land use review process. This was an opportunity to create an amendment or process that was more accessible to seek parking reductions or modifications. **Commissioner Khosroabadi** agreed with Chair Loosveldt and Vice Chair Edge that parking reduction should be part of the code and the infrastructure needed to be in place to allow on-street parking. **Commissioner Hemer** asked, what was an on-street parking credit? **Kolias** responded, it basically meant that the applicant received credit for the parking requirement that was located on-street. **Commissioner Hemer** shared, off-street parking was still needed and was not as expensive as long as the applicant was not building a garage. They wanted the City to require one off-street parking space per unit. **Commissioner Massey** shared, the pandemic has caused individuals to purchase cars and fewer people were using public transit. They were unsure if it was a great idea to reduce the minimum off-street parking requirement to zero. This was something the group needed to think about further and prior to changing the requirement. They also shared, ride share was the way of the future. **Commissioner**

**Edge** asked Kolas if they would discuss cluster parking and chicane design. **Kolas** responded, as the City and community discussed on-street parking it was important that they considered street design and the various ways parking should be allowed. There were conversations about angled and parallel parking, alternative street cross sections, and other activities that would allow flexible and accessible parking options. The Planning Department had meetings with the Engineering and Public Works departments to understand what options were available and feasible. **Commissioner Sherman** shared, the Transportation System Plan was a great resource to assist with next steps and best parking activities for the future. **Kolas** agreed.

**Kolas** shared the recommendations for consolidated zones. There was a plan to have two residential zones instead of eight. The two zones were R1 (high density zones) and R2 (R-5, R-7, and R-10). Some key ideas were that 1,500 sq ft lots would be allowed for townhouses and cottage clusters and 3,000 ft lots would be allowed for single unit homes and duplexes. The goal was to allow smaller lots to be buildable and provide opportunities for homeownership. Zoning standards would be based on the lot size and if there was a smaller lot abutting a bigger lot both lots must comply with the setback standards of the bigger lot. **Commissioner Erdt** shared, there was a need for smaller lot sizes and suggested changing the front yard setback to 10 ft to give homeowners an opportunity to have a bigger backyard. **Commissioner Khosroabadi** shared, a smaller lot size and smaller houses would make ownership more attainable for individuals who could not afford to participate in the bidding war. They would like to see less setbacks for smaller lots to allow more living space or bigger backyards. **Commissioner Hemer** shared, setbacks were inconsistent in their neighborhood and should change to 0 ft or 5 ft from the property lines. The City should not regulate the type of housing on any lot. There should be one set of rules for all of the residential zones. **Vice Chair Edge** agreed with Commissioner Hemer and shared, the City should eliminate the setback requirements. **Commissioner Sherman** encouraged the Planning Department to consider every parcel and street when determining the new zones. Commissioners Hemer and Sherman wanted to mitigate any confusions regarding the new zoning and setback requirements.

**Kolas** shared the recommendations for housing types. The Comprehensive Plan Implementation Committee (CPIC) had discussed how the Planning Department should evaluate duplexes, triplexes, and quadplexes and whether they should be attached or detached. **Commissioner Sherman** shared his concerns for detached triplexes. Based on the example Kolas shared, they were concerned about vegetation and the lack of opportunity to grow anything. They also shared concerns about fire, safety, and access between the units. **Commissioner Hemer** shared, the importance of defining the various types of housing. Also, detached structures should have their own lot. The CPIC agreed that both attached and detached options should be allowed. Kolas asked the Planning Commission if ADU's should be allowed with middle housing. If so, what limits needed to be in place? **Commissioner Erdt** shared, they supported ADUs being allowed with middle housing. **Commissioner Massey** supported the idea as well. They were not concerned about housing types and constraints were not needed. **Commissioner Edge** shared, the Planning Commission should not be concerned about attached or detached units. They believed it was important to clearly explain the relationship between an accessory dwelling unit (ADU) and the primary structure. This was

important because the City could not require a parking space an ADU. **Commissioner Sherman** shared, they were reminded of the flag lot discussion and believed ADUs should have a similar privacy code. **Commissioner Khosroabadi** encouraged the Planning Department to be mindful of their tree canopy goals and ensuring ADUs aligned with the goals.

This concluded Koliass's presentation. They will return to the Planning Commission on June 8<sup>th</sup> to discuss the code adoption process.

**Chair Loosveldt** asked Koliass about the project process and a letter the Planning Commission and Department received from a community member. The community member wrote, the process was rushed and wanted to see more public engagement. **Koliass** responded, the next phase, which was the code adoption process, would respond to the community member's concerns. Koliass wanted to know if the community member thought June was the final step in the code process and that was not the case. There were still six months or more of work to do, including review opportunities for the public. **Chair Loosveldt** shared, the community member said, the process was built on an idea of equity and inclusion and participation of communities of color. The person wanted to know how communities of color would be included moving forward. **Koliass** responded, the Planning Department was working with the City's Equity Manager and would continue to do so to ensure there was participation from diverse community members. All information had been available in Spanish, there were separate meetings with a BIPOC group, and one that was run exclusively in Spanish. Moving forward the Planning Department will have in person opportunities to interact with the public.

(02:50:04)

#### **7.0 Planning Department Other Business/Updates**

(02:50:04)

#### **8.0 Planning Commission Committee Updates and Discussion Items**

No information was presented for this portion of the meeting.

(02:53:06)

#### **9.0 Forecast for Future Meetings**

TBD: Staff is still determining the best date for a joint meeting with the Planning Commission and the Neighborhood District Associations.

June 8, 2021: Two accessory structure variances.

July 13: Comprehensive Plan Implementation Update

**Meeting adjourned at approximately 8:30 PM.**

Respectfully submitted,

N. Janine Gates  
Assistant Planner





# CITY OF MILWAUKIE

**To:** Planning Commission

**Through:** Laura Weigel, Planning Manager

**From:** Mary Heberling, Assistant Planner

**Date:** July 20, 2021, for July 27, 2021 Public Hearing

**Subject:** Electronic Display Signs – Conditional and Community Service Use Signs Code Amendments

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## **ACTION REQUESTED**

Open the public hearing for application ZA-2021-003. Discuss the proposed amendments, take public testimony, provide feedback, and recommend City Council approval of application ZA-2021-003 and adoption of the recommended Findings of Approval found in Attachment 1a.

## **BACKGROUND**

North Clackamas School District (NCSD) applied for an electronic display sign at Milwaukie High School (MHS) through the MMC 14.32 Sign Adjustment process in February 2021. The underlying zone for MHS (R-2) does not allow electronic display signs and Conditional and Community Service Uses (CSU) adhere to the sign code standards for their underlying zones. Therefore, NCSD's only option in the Title 14 Sign Code was to apply for a sign adjustment to allow for an electronic display sign at MHS.

At the [April 13 Planning Commission Hearing](#) and [May 11 Planning Commission Hearing](#), NCSD proposed that a sign adjustment be granted for an electronic display sign at MHS.

At the April 13 Planning Commission hearing, city planning staff recommended denial of the sign adjustment proposal based on it not meeting the Circumstances for Granting Adjustment listed in MMC 14.32.030. At the May 11 Planning Commission Hearing, the sign adjustment proposal was denied based on lack of majority.

On June 7, 2021, NCSD submitted an appeal of the Planning Commission denial to City Council with a 90-day extension to the 120-day review period clock to give city planning staff time to propose revisions to the Title 14 Sign Code.

## **ANALYSIS**

The proposed code amendments provide a process for a public high school existing as an approved CSU to apply for an electronic display sign. The process would require an applicant to go through a Type III land use review with a decision made by the Planning Commission. Specific standards for electronic display signs must be met because most CSUs are located in residentially zoned areas. These standards include, but are not limited to, only one electronic display sign is allowed per CSU and size limitations for the electronic display of the sign.

Staff proposes these amendments to create a process for a public high school existing as an approved CSU to apply for an electronic display, and to evaluate the proposal through a Type III process where public notice and a public hearing will be required.

## ATTACHMENTS

Attachments are provided as indicated by the checked boxes. All material is available for viewing upon request.

	PC Packet	Public Copies	EPacket
1. Ordinance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
a. Recommended Findings in Support of Approval	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
b. Draft code amendment language (underline/strikeout)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c. Draft code amendment language (clean)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Key:

PC Packet = paper materials provided to Planning Commission 7 days prior to the meeting.

Public Copies = paper copies of the packet available for review at City facilities and at the Planning Commission meeting.

E-Packet = packet materials available online at <https://www.milwaukieoregon.gov/bc-pc/planning-commission-77>.



**COUNCIL ORDINANCE No.**

**AN ORDINANCE OF THE CITY OF MILWAUKIE, OREGON, AMENDING MUNICIPAL CODE (MMC) CHAPTER 14.08.090 CONDITIONAL AND COMMUNITY SERVICE USE SIGNS FOR THE PURPOSE OF CLARIFICATION OF, AND ALLOWING ELECTRONIC DISPLAY SIGNS FOR COMMUNITY SERVICE USES THAT ARE CONSIDERED PUBLIC HIGH SCHOOLS (FILE #ZA-2021-003).**

WHEREAS, the proposed amendments to MMC Title 14.08.090 creates a section that allows for review of electronic display signs for Community Service Uses considered public high schools with specific requirements; and

WHEREAS, legal and public notices have been provided as required by law; and

WHEREAS, on July 27, the Milwaukie Planning Commission conducted a public hearing as required by MMC 19.1008.5 and adopted a motion in support of the amendments; and

WHEREAS, the Milwaukie City Council finds that the proposed amendments are in the public interest of the City of Milwaukie.

**Now, Therefore, the City of Milwaukie does ordain as follows:**

Section 1. Findings. Findings of face in support of the amendments are adopted by the City Council and are attached as Exhibit A.

Section 2. Amendments. The Milwaukie Municipal Code (MMC) is amended as described in Exhibit B (Title 14 underline/strikeout version), and Exhibit C (Title 14 clean version).

Section 3. Effective Date. The amendments shall become effective immediately.

Read the first time on \_\_\_\_\_, and moved to second reading by \_\_\_\_\_ vote of the City Council.

Read the second time and adopted by the City Council on \_\_\_\_\_.

Signed by the Mayor on \_\_\_\_\_.

\_\_\_\_\_  
Mark F. Gamba, Mayor

ATTEST:

APPROVED AS TO FORM:

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Scott S. Stauffer, City Recorder

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Justin D. Gericke, City Attorney

**Recommended Findings in Support of Approval  
File #ZA-2021-003, Title 14 Sign Code Amendments**

Sections of the Milwaukie Municipal Code not addressed in these findings are found to be inapplicable to the decision on this application.

1. The applicant, the City of Milwaukie, proposes to amend regulations that are contained in Title 14 of the Milwaukie Municipal Code (MMC). The land use application file number is ZA-2021-003.
2. The purpose of the proposed code amendments is to amend code language related to electronic display signs to allow review of electronic display signs for Community Service Uses considered public high schools with specific requirements. The amendments affect the following title of the municipal code:  
  
Milwaukie Municipal Code
  - MMC 14.08.090 – Conditional and Community Service Use Signs
3. The proposal is subject to the criteria and procedures outlined in the following sections of the Milwaukie Municipal Code (MMC):
  - MMC Section 19.902 Amendments to Maps and Ordinances
  - MMC Chapter 19.1000 Review Procedures
4. Sections of the MMC or Milwaukie Comprehensive Plan (MCP) not addressed in these findings are found to be not applicable to the decision on this land use application.
5. The application has been processed and public notice provided in accordance with MMC Section 19.1008 Type V Review. A public hearing was held on July 27, 2021 and September 7, 2021 as required by law.
6. MMC Chapter 19.1000 establishes the initiation and review requirements for land use applications. The City Council finds that these requirements have been met as follows.
  - a. MMC Subsection 19.1001.6 requires that Type V applications be initiated by the Milwaukie City Council, Planning Commission, Planning Manager or any individual.  
*The amendments were initiated by the Planning Manager on June 19, 2021.*
  - b. MMC Section 19.1008 establishes requirements for Type V review. The procedures for Type V Review have been met as follows:
    - (1) Subsection 19.1008.3.A.1 requires opportunity for public comment.  
*Opportunity for public comment and review has been provided. The draft amendments have been posted on the City's web site since June 28, 2021. On June 28, 2021 staff e-mailed NDA leaders and North Clackamas School District (NCSD) with information about the Planning Commission hearing and a link to the draft proposed amendments.*

- (2) Subsection 19.1008.3.A.2 requires notice of public hearing on a Type V Review to be posted on the City website and at City facilities that are open to the public at least 30 days prior to the hearing.

*A notice of the Planning Commission's July 27, 2021, hearing was posted as required on June 28, 2021. A notice of the City Council's September 7, 2021 hearing was posted as required on August 9, 2021.*

- (3) Subsection 19.1008.3.A.3 requires notice be sent to individual property owners if the proposal affects a discrete geographic area or specific properties in the City.

*The Planning Manager has determined that the proposal affects a large geographic area.*

- (4) Subsection 19.1008.3.B requires notice of a Type V application be sent to the Department of Land Conservation and Development (DLCD) 35 days prior to the first evidentiary hearing.

*Notice of the proposed amendments was sent to DLCD on June 23, 2021.*

- (5) Subsection 19.1008.3.C requires notice of a Type V application be sent to Metro 35 days prior to the first evidentiary hearing.

*Notice of the proposed amendments was sent to Metro on June 22, 2021.*

- (6) Subsection 19.1008.3.D requires notice to property owners if, in the Planning Director's opinion, the proposed amendments would affect the permissible uses of land for those property owners.

*The proposed amendments do not further restrict the use of property. In general, the proposed amendments add flexibility.*

- (7) Subsection 19.1008.4 and 5 establish the review authority and process for review of a Type V application.

*The Planning Commission held a duly advertised public hearing on July 27, 2021 and passed a motion recommending that the City Council approve the proposed amendments. The City Council held a duly advertised public hearing on September 7, 2021 and approved the amendments.*

7. MMC 19.902 Amendments to Maps and Ordinances

- a. MMC 19.902.5 establishes requirements for amendments to the text of the zoning ordinance. The City Council finds that these requirements have been met as follows.

- (1) MMC Subsection 19.902.5.A requires that changes to the text of the land use regulations of the Milwaukie Municipal Code shall be evaluated through a Type V review per Section 19.1008.

*The Planning Commission held a duly advertised public hearing on July 27, 2021. A public hearing before City Council is tentatively scheduled for September 7, 2021. Public notice was provided in accordance with MMC Subsection 19.1008.3.*

- (2) MMC Subsection 19.902.5.B establishes the approval criteria for changes to land use regulations of the Milwaukie Municipal Code.
- (a) MMC Subsection 19.905.B.1 requires that the proposed amendment be consistent with other provisions of the Milwaukie Municipal Code.
- The proposed amendments have been coordinated with and are consistent with other provisions of the Milwaukie Municipal Code.*
- (b) MMC Subsection 19.902.5.B.2 requires that the proposed amendment be consistent with the goals and policies of the Comprehensive Plan.
- Only the goals, objectives, and policies of Comprehensive Plan that are listed below are found to be relevant to the proposed text amendment.*

Overarching Goal for Section 10: Public Facilities and Services states:  
Plan, develop and maintain an orderly and efficient system of public facilities and services to serve urban development.

Goal 10.7 – Local Partners states:  
Coordinate with local partners in planning for schools, medical facilities, and other institutional uses.

Policy 10.7.1 states: Coordinate community development activities and public services with the school district.

*The proposed amendments provide a permit process to allow an electronic display sign for Community Service Uses considered public high schools.*

- (c) MMC Subsection 19.902.5.B.3 requires that the proposed amendment be consistent with the Metro Urban Growth Management Functional Plan and relevant regional policies.
- The proposed amendments were sent to Metro for comment. Metro did not identify any inconsistencies with the Metro Urban Growth Management Functional Plan or relevant regional policies.*
- (d) MMC Subsection 19.902.5.B.4 requires that the proposed amendment be consistent with relevant State statutes and administrative rules, including the Statewide Planning Goals and Transportation Planning Rule.
- The proposed amendments were sent to the Department of Land Conservation and Development (DLCD) for comment. DLCD did not identify any inconsistencies with relevant State statutes or administrative rules.*

*Oregon Statewide Planning Goal 2: Land Use Planning*

*Goal 2 requires each local government in Oregon to have and follow a comprehensive land use plan and implement regulations.*

*The proposed amendments follow the goals and policies found in the City of Milwaukie's Comprehensive Plan.*

- (e) MMC Subsection 19.902.5.B.5 requires that the proposed amendment be consistent with relevant federal regulations.

*There are no relevant federal regulations for the proposed amendment.*



## Underline/Strikeout Amendments

### Title 14 Signs

#### 14.08.090 Conditional and Community Service Use Signs

##### 14.080.090 CONDITIONAL AND COMMUNITY SERVICE USE SIGNS

- A. Signs for conditional and community service uses shall be limited to those allowed in the underlying zone, except as allowed by Subsections 14.08.090.B and C.
- B. The standards of the underlying zone may be increased to the standards in Table 14.08.090.B, pursuant to a Type I review.

Table 14.08.090.B				
Standards for Conditional and Community Service Use Signs with Type I Review				
Sign Type	Size	Number	Height	Location
Monument or freestanding sign	Max. 16 SF per display surface	1	Max 6 ft. above ground	Not in the public right-of-way
Wall sign	Max. 16 SF	1 per building face		
Daily Display	Max. 12 SF per display surface	1 per frontage		Not in the public right-of-way except as allowed in MMC Section 14.20.040.

- C. The standards of the underlying zone may be increased to the standards in Table 14.08.090.C per Section 19.1006 Type III Review.

In reviewing an application for a sign to meet the standards of Table 14.08.090.C, the Planning Commission will consider the proximity of the sign to residences, the functional classification of adjacent streets, and the scale of surrounding development.

<b>Table 14.08.090.C</b>					
<b>Standards for Conditional and Community Service Use Signs</b>					
<b>with Minor Quasi-Judicial Review</b>					
<b>Sign Type</b>	<b>Size</b>	<b>Number</b>	<b>Height</b>	<b>Location</b>	<b>Illumination<sup>1</sup></b>
Monument or freestanding sign	Max. 16 SF per display surface	1	Max 6 ft. above ground	Not in the public right-of-way	<u>Follow the base sign district standards<sup>2</sup></u>
Wall sign	Max. 16 SF	1 per building face			<u>Follow the base sign district standards</u>
Daily Display	Max. 12 SF per display surface	1 per frontage		Not in the public right-of-way except as allowed in MMC Section 14.20.040.	<u>Follow the base sign district standards</u>

<sup>1</sup>Follow the illumination standards in the Community Service Use’s base sign district unless the Community Service Use is a public high school.

<sup>2</sup>A public high school can apply to have one electronic display monument or freestanding sign that meets the Community Service Use Illumination standards of 14.080.090.E.

- D. In addition to the sign size limitations of this chapter, if an original art mural permitted under Title 20 occupies a wall where a wall sign has been proposed, the size of the wall sign shall be limited such that the total area of the original art mural plus the area of the wall sign does not exceed the maximum allowed. (Ord. 2078 § 2 (Exh. B), 2014; Ord. 2025 § 3, 2011; Ord. 2001 § 2, 2009; Ord. 1965 §§ 2, 3, 2006; Ord. 1733 § 1(1) (Exh. A), 1993)
- E. Electronic display signs are permitted for Community Service Uses that are public high schools, subject to the following standards:
  1. An electronic display sign may be included only as part of a larger sign. The electronic display portion of the sign cannot be larger than 20 sq ft.
  2. Illumination for an electronic display sign is subject to the standards of Subsection 14.24.020.G.1.
  3. The manner of display on electronic display signs shall comply with the standards of Subsection 14.24.020.G.3.

## Clean Amendments

### Title 14 Signs

#### 14.08.090 Conditional and Community Service Use Signs

##### 14.080.090 CONDITIONAL AND COMMUNITY SERVICE USE SIGNS

- A. Signs for conditional and community service uses shall be limited to those allowed in the underlying zone, except as allowed by Subsections 14.08.090.B and C.
- B. The standards of the underlying zone may be increased to the standards in Table 14.08.090.B, pursuant to a Type I review.

<b>Table 14.08.090.B</b>				
<b>Standards for Conditional and Community Service Use Signs with Type I Review</b>				
<b>Sign Type</b>	<b>Size</b>	<b>Number</b>	<b>Height</b>	<b>Location</b>
Monument or freestanding sign	Max. 16 SF per display surface	1	Max 6 ft. above ground	Not in the public right-of-way
Wall sign	Max. 16 SF	1 per building face		
Daily Display	Max. 12 SF per display surface	1 per frontage		Not in the public right-of-way except as allowed in MMC Section 14.20.040.

- C. The standards of the underlying zone may be increased to the standards in Table 14.08.090.C per Section 19.1006 Type III Review.

In reviewing an application for a sign to meet the standards of Table 14.08.090.C, the Planning Commission will consider the proximity of the sign to residences, the functional classification of adjacent streets, and the scale of surrounding development.

<b>Table 14.08.090.C</b>					
<b>Standards for Conditional and Community Service Use Signs</b>					
<b>with Minor Quasi-Judicial Review</b>					
<b>Sign Type</b>	<b>Size</b>	<b>Number</b>	<b>Height</b>	<b>Location</b>	<b>Illumination<sup>1</sup></b>
Monument or freestanding sign	Max. 16 SF per display surface	1	Max 6 ft. above ground	Not in the public right-of-way	Follow the base sign district standards <sup>2</sup>
Wall sign	Max. 16 SF	1 per building face			Follow the base sign district standards
Daily Display	Max. 12 SF per display surface	1 per frontage		Not in the public right-of-way except as allowed in MMC Section 14.20.040.	Follow the base sign district standards

<sup>1</sup>Follow the illumination standards in the Community Service Use’s base sign district unless the Community Service Use is a public high school.

<sup>2</sup>A public high school can apply to have one electronic display monument or freestanding sign that meets the Community Service Use Illumination standards of 14.080.090.E.

- D. In addition to the sign size limitations of this chapter, if an original art mural permitted under Title 20 occupies a wall where a wall sign has been proposed, the size of the wall sign shall be limited such that the total area of the original art mural plus the area of the wall sign does not exceed the maximum allowed. (Ord. 2078 § 2 (Exh. B), 2014; Ord. 2025 § 3, 2011; Ord. 2001 § 2, 2009; Ord. 1965 §§ 2, 3, 2006; Ord. 1733 § 1(1) (Exh. A), 1993)
- E. Electronic display signs are permitted for Community Service Uses that are public high schools, subject to the following standards:
  - 1. An electronic display sign may be included only as part of a larger sign. The electronic display portion of the sign cannot be larger than 20 sq ft.
  - 2. Illumination for an electronic display sign is subject to the standards of Subsection 14.24.020.G.1.
  - 3. The manner of display on electronic display signs shall comply with the standards of Subsection 14.24.020.G.3.



# CITY OF MILWAUKIE

**To:** Planning Commission

**Through:** Laura Weigel, Planning Manager

**From:** Brett Kelter, Associate Planner

**Date:** July 20, 2021, for July 27, 2021, Public Hearing

**Subject:** **Master File:** DR-2021-003  
**Applicant/Owner:** Pahlisch Commercial, Inc.  
**Applicant's Representative:** AKS Engineering & Forestry  
**Address:** 10306 SE Main St  
**Legal Description (Map & Tax Lot):** 1S1E25CC, lots 401 & 402  
**NDA(s):** Historic Milwaukie

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## ACTION REQUESTED

Approve the land use applications associated with master file #DR-2021-003 and adopt the Recommended Findings and Conditions of Approval found in Attachments 1 and 2. This action would allow for the development of a six-story multifamily residential building on the site of the former Kellogg Bowl bowling alley (10306 SE Main St).

## BACKGROUND INFORMATION

The proposal is to construct a six-story residential building providing 178 multifamily units, including a two-unit live/work component on the ground floor (see Figure 1). Structured parking will be provided on the ground floor, with additional exterior off-street parking in front

**Figure 1.** Rendering of proposed building (west and south elevations)



of and behind the building. The project involves disturbance to a designated natural resource area on the site where an existing paved parking area is adjacent to an off-site pond. The subject property's flag-lot shape necessitates variances to several development standards (frontage occupancy, maximum building setback, provision of open space in the setback area, and off-street parking between the street and the building). An amendment to the zoning map is required to change the small R-5-zoned portion of the property (an existing off-street parking area in the northeast corner) to Downtown Mixed Use (DMU), to be consistent with the rest of the property's DMU zone designation.

### A. Site and Vicinity

The site is located at 10306 SE Main St and is currently developed with the Kellogg Bowl bowling alley and a large associated off-street parking area (see Figure 2). The subject property is approximately 1.94 acres (approximately 84,475 sq ft) and is comprised of two tax lots: a 55-ft-wide "flag-pole" access lot (approx. 13,900 sq ft) extending just over 250 ft east from Main Street to a larger lot (approx. 70,575 sq ft) where the new building will be located. The larger lot is rectilinear but irregularly shaped and has public street frontage where 23<sup>rd</sup> Avenue dead-ends at the property's northeast corner.

The adjacent area to the east is zoned residential (R-5) and is developed with single-family houses. To the southeast, the area is zoned R-1-B and is developed with a combination of multifamily apartments and single-family-houses, some of which are used as offices. The area immediately to the south, west, and north is zoned DMU and is developed with a variety of commercial uses, including Pietro's Pizza, the Oddfellows Hall, an athletic club, and a veterinary clinic. Farther to the north is Highway 224 and the North Milwaukie industrial area. To the northeast, a City-owned property is contiguous to the Hwy 224 right-of-way and is zoned Open Space (OS).

Figure 2. Site and vicinity



Scott Park (OS zone) is not adjacent to the site but is just south of the subject property, although the pond formed by Spring Creek extends onto the adjacent lot to the south and constitutes a protected water feature whose associated vegetated corridor extends onto the subject property. A small intermittent stream running through the City-owned OS property and the Hwy 224 right-of-way constitutes another protected water feature, but the associated vegetated corridor extends only minimally onto the subject property into one of the existing off-street parking areas.

**B. Zoning Designation**

Downtown Mixed Use (DMU) and Residential R-5

**C. Comprehensive Plan Designation**

Town Center (TC)

**D. Land Use History**

City records indicate no previous land use actions for this site.

**E. Proposal**

The applicant is seeking land use approval for the development of a six-story multifamily residential building with 178 units, including two live/work units (see Figure 3). The proposal includes the following:

1. Demolition of the existing Kellogg Bowl building (bowling alley).
2. Construction of a new six-story building with 178 multifamily units, including two live/work units on the ground floor.
3. 173 off-street parking spaces—142 spaces within the building structure (ground floor, including some with a mechanized stacker) and 31 exterior spaces behind the building and in the accessway connecting to Main Street.
4. Private and common open spaces in the form of rooftop terraces, indoor club rooms, a fitness room, lobby, private balconies, and outdoor plaza areas (approximately 17,700 sq ft in total).

Figure 3. Proposed site layout



5. Rezoning the small R-5 portion of the site in the northeast corner to match the majority of the site's DMU zoning designation.
6. Encroachment of the new building into the designated vegetated corridor associated with the pond on an adjacent property to the south. (The on-site vegetated corridor is currently developed as part of the site's larger existing parking lot.)
7. Variance requests to several development standards, necessitated by the unique configuration of the site (functionally a flag lot)— frontage occupancy, maximum building setback, provision of open space in the setback area, and off-street parking between the street and the building.

See Attachments 3 and 4 for the applicant's submittal materials.

The project requires approval of the following applications:

1. Downtown Design Review (land use master file #DR-2021-003)
2. Zoning Map Amendment (ZA-2021-001)
3. Variance Requests (VR-2021-004 and VR-2021-010)
4. Natural Resource Review (NR-2021-003)
5. Transportation Facilities Review (TFR-2021-002)

## KEY ISSUES

### Summary

Staff has identified the following key issue(s) for the Planning Commission's deliberation. Aspects of the proposal not listed below are addressed in the Findings (see Attachment 1) and generally require less analysis and discretion by the Commission.

- A. Why are so many variances required for the proposed development?
- B. Why is the application subject to natural resource review when the site is already developed? Are there really any new impacts to natural resources?
- C. Does the proposed building sufficiently meet the standards and guidelines for downtown design?

### Analysis

#### A. Why are so many variances required for the proposed development?

The project requires four variances to the downtown development standards established in MMC Subsection 19.304.5—maximum building setback, frontage occupancy, location of off-street parking, and percentage of the front setback area used for open space. The need for all four variances is driven by the particular configuration of the subject property. It is a flag-lot shape, with a narrow accessway connecting the larger developable area with the street



where the site takes access. With the “pole” portion of the lot only approximately 55 ft wide and the larger “flag” portion over 260 ft from the front lot line, it is reasonable to expect that the new building would be set far back from the street and that it would not occupy any of the limited frontage. It is also reasonable to expect a significant portion of the accessway to be utilized for off-street parking and/or open space.

The applicant has not proposed anything radical as a development footprint and is not taking liberties that are at odds with the intent of the downtown development standards—they are simply working with the shape of the lot as it is. The development standards are intended for more conventional downtown lots, ones with more ample frontage, where there are legitimate opportunities to pull buildings closer to the street and create a more engaging pedestrian environment. Surface parking should not be the gateway between the street and the average downtown building; and when a portion of a building is set back from the street, an interactive open space should be a significant part of the setback.

In this case, the applicant has treated the building as if it were fronting on Main Street, with façade details and treatments that acknowledge how visible it will be from the street. The site layout works within the constraints of a flag lot, providing a building that takes advantage of the pole to provide parking and maintain access to adjacent properties to the north and south. The design includes parallel parking in the pole and provides a small pedestrian plaza on Main Street.

It is likely that none of the four variances would be required if the subject property were not configured the way it is.

**B. Why is the application subject to natural resource review when the site is already developed? Are there really any new impacts to natural resources?**

The existing Kellogg Bowl site is developed with the bowling alley building and a large area of off-street parking, including spaces that abut the very edge of the off-site pond to the south. As proposed, the new building would encroach into a portion of the 50-ft vegetated corridor that constitutes the Water Quality Resource (WQR) area on the southern portion of the site. Even though there is no existing vegetation within the WQR on the site, there is a three-dimensional aspect to the importance of maintaining a vegetated corridor, and there are some impacts that result from the encroachment of new building mass.

As reflected in the peer-reviewed memo provided by ESA (see Attachment 5), the City’s on-call natural resources consultant, vegetated corridors provide an important space for birds, insects, and other small animals to find food sources and move between the protected water feature and other nearby habitat areas. The more a building encroaches into the vegetated corridor, the less space there is for those functions, so it is worthwhile to review the proposed development to assess its impacts and determine an appropriate level of mitigation.

In a situation like this, where the protected water feature is not on the subject property, it is true that the applicant’s ability to positively impact the WQR is more limited. And it could be argued that the addition of any vegetation near the pond’s edge would be an

improvement over the heat-island desert of asphalt parking. Staff agrees that some encroachment of the building into the WQR is warranted and maintains the project's feasibility. Staff also notes that the applicant could have proposed to encroach even further into the WQR and closer to the edge of the pond. That said, it is also reasonable to take the opportunity to more meaningfully improve the vegetated corridor by requiring a slightly wider planting area, one that is more proportionate to the area that will be impacted by the new building. A healthier vegetated corridor is one that will benefit not only the pond itself and the wildlife it attracts but also the residents and visitors to the new building as an enhanced amenity.

**C. Does the proposed building sufficiently meet the standards and guidelines for downtown design?**

The City's Design and Landmarks Committee (DLC) held a public design review meeting to consider and discuss the proposed design. The group concurred with staff's initial conclusion that the building met most of the applicable design standards in MMC Subsection 19.508.4 and was consistent with the purpose statements of the relevant design elements when specific standards were not met. The DLC voted unanimously to approve the downtown design review portion of the proposed development and provided some suggestions and recommendations for the applicant team to consider (see Attachment 6).

Although the building is significantly set back from Main Street (as discussed above for Key Issue A), it will still be highly visible from the street—and the design has been developed with that awareness in mind. The building provides the base, middle, and top articulation that the design standards call for. It uses high quality materials that evoke a sense of permanence. There are ample windows and doors on all façades, step backs to reduce the sense of imposing mass on adjacent properties, and several rooftop terraces that create interest and provide usable open space for residents. For most of the design standards the building does not meet, it misses by only a small percentage. The proposed design is one that will fit well into the evolving downtown landscape.

**CONCLUSIONS**

**A. Staff recommendation to the Planning Commission is as follows:**

1. Approve the application for downtown design review (file #DR-2021-003) to allow the proposed six-story multifamily residential building.
2. Approve the application for zoning map amendment (ZA-2021-001) to rezone the small R-5 area in the northeast corner of the site to DMU.
3. Approve the four requests for variances from several of the DMU development standards—frontage occupancy, maximum building setback, provision of open space in the setback area, and off-street parking between the street and the building (VR-2021-004 and VR-2021-010).

4. Approve the application for natural resource review (NR-2021-003) to allow the new building to encroach into the vegetated corridor associated with the adjacent pond to the south.
5. Approve the application for transportation facilities review (TFR-2021-002) to confirm that
6. Adopt the attached Findings and Conditions of Approval.

**B. Staff recommends the following key condition(s) of approval (see Attachment 2 for the full list of Recommended Conditions of Approval):**

- Expand the mitigation planting area adjacent to the off-site pond to be closer in size to the WQR area impacted by the new building (approximately 3,250 sq ft). Increase the number of trees and shrubs and provide at least one additional species of native tree.

**CODE AUTHORITY AND DECISION-MAKING PROCESS**

The proposal is subject to the following provisions of the Milwaukie Municipal Code (MMC).

- MMC Chapter 12.16 Access Management
- MMC Section 19.301 Low Density Residential Zones (including R-5)
- MMC Section 19.304 Downtown Zones (including Downtown Mixed Use DMU)
- MMC Section 19.402 Natural Resources
- MMC Subsection 19.505.3.D.6 Building Façade Design (multifamily buildings downtown)
- MMC Section 19.508 Downtown Site and Building Design Standards
- MMC Chapter 19.600 Off-Street Parking and Loading
- MMC Chapter 19.700 Public Facility Improvements
- MMC Section 19.902 Amendments to Maps and Ordinances
- MMC Section 19.907 Downtown Design Review
- MMC Section 19.911 Variances
- MMC Section 19.1006 Type III Review
- MMC Section 19.1011 Design Review Meetings

This application is subject to Type III review, which requires the Planning Commission to consider whether the applicant has demonstrated compliance with the code sections shown above. In Type III reviews, the Commission assesses the application against review criteria and development standards and evaluates testimony and evidence received at the public hearing.

The Commission has four decision-making options as follows:

- A. Approve the application subject to the recommended Findings and Conditions of Approval.

- B. Approve the application with modified Findings and Conditions of Approval. Such modifications need to be read into the record.
- C. Deny the application upon finding that it does not meet approval criteria.
- D. Continue the hearing. This option may require that the applicant provide a waiver to the 120-day clock. If the applicant is not willing to provide a waiver to the 120-day clock, the Planning Commission may need to deny the application.

The final decision on these applications, which includes any appeals to the City Council, must be made by September 25, 2021, in accordance with the Oregon Revised Statutes and the Milwaukie Zoning Ordinance. The applicant can waive the time period in which the application must be decided.

## COMMENTS

Notice of the proposed development was given to the following agencies and persons: City of Milwaukie Community Development, Engineering, Building, and Police Departments, City Attorney, Historic Milwaukie Neighborhood District Association (NDA), Clackamas Fire District #1 (CFD#1), ESA (City's on-call natural resources consultant), Clackamas County Department of Transportation & Development, Metro, ODOT, TriMet, North Clackamas School District, and NW Natural.

The following is a summary of the comments received by the City. See Attachment 7 for further details.

- **Alex McGladrey, Lieutenant - Deputy Fire Marshal, CFD #1:** The subject property is in an area with public water supply. Fire apparatus access roads cannot route continuously around the exterior walls of the building due to site constraints. CFD #1 accepted the application for alternative or modification of the 2019 Oregon Fire Code (pending Milwaukie Building Department approval) where the applicant proposed the following:
  - The building will be equipped with an approved NFPA 13 automatic sprinkler system throughout.
  - There are no combustibles concealed in attic spaces.
  - All stairway enclosures have a fire-resistance rating of not less than 2-hour.
  - The roof slope is essentially flat with a slope of 3/8 inch per foot (less than 33% slope).
  - Approved access is provided to the roof from all the stairways. The north and south stairways extend to the roof within a 2-hour enclosure and a compliant roof hatch.
  - Each stairwell is equipped with a standpipe; both standpipes terminate at the roof.
- **Jeremy Lorence, East Metro Engineer, NW Natural:** No comments.
- **Cindy Detchon, Assistant Superintendent of Operations, North Clackamas School District:** No comments.

- **John Wooldridge and Kim Freeman, co-owners of Veterinary Cancer & Surgery Specialists, LLC (10400 SE Main St):** Concerns about parking restrictions and potential overflow parking onto their site from tenants and visitors of the proposed development. The project appears to require significant changes to the existing shared access easement [with the Kellogg Bowl and Pietro’s Pizza sites] and the elimination of existing parking spaces in the accessway. Concern that existing electrical infrastructure is not sufficient to support the proposed development.

*Staff Response: As proposed, the development exceeds the minimum parking requirements (considering the reductions allowed for the DMU zone). The existing shared access/parking agreement is not a City issue but rather one to be worked out among the affected parties. Staff is not presently aware of the terms of the existing agreement and notes that it is the applicant’s responsibility to ensure that the agreement is sufficient to allow the development being proposed. Likewise, issues of sufficient electrical infrastructure are the applicant’s responsibility.*

- **Jennifer Backhaus, Engineering Technician III, City of Milwaukie Engineering Department:** The Engineering Department coordinated with Planning staff to craft the findings for MMC Chapter 12.16 and MMC Chapter 19.700.
- **John Vlastelicia, Senior Environmental Scientist, ESA (City’s on-call natural resources consultant):** Peer review of the applicant’s Water Quality Resource Site Assessment was provided in a memo dated July 16, 2021, and was incorporated into the findings for MMC Section 19.402.
- **Kate Hawkins, Associate Transportation Planner, ODOT:** Confirmation of the assessment provided by the applicant’s Traffic Impact Study. No other comments.
- **Richard Recker, Chair, Historic Milwaukie NDA:** No specific comments on the proposed development; general suggestion to revisit the overall process of community engagement in development review.

## ATTACHMENTS

Attachments are provided as indicated by the checked boxes. All material is available for viewing upon request.

	Early PC Mailing	PC Packet	Public Copies	Packet
1. Recommended Findings in Support of Approval	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Recommended Conditions of Approval	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Applicant’s Submittal Materials (received May 28, 2021).				
a. Narrative	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Application Forms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c. Plans and Drawings	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Preliminary Stormwater Report	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e. Traffic Impact Study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
f. Tax Map and Deeds	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

	Early PC Mailing	PC Packet	Public Copies	Packet
g. Natural Resource Report	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
h. Mechanical Parking System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Applicant's additional/revised info (received June 28, 2021).				
a. Response to Completeness Letter of June 15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
b. Revised narrative	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c. Revised plans (site plans)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
d. Revised drawings (building elevations & renderings)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5. Memo from ESA (City's on-call natural resources consultant) (dated July 16, 2021)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Summary of Recommendation by Design and Landmarks Committee (from design review meeting held July 8, 2021)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Comments Received	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Key:

Early PC Mailing = electronic materials provided to Planning Commission at the time of public notice (20 days prior to the hearing).

PC Packet = electronic materials provided to Planning Commission 7 days prior to the hearing.

Public Copies = materials posted online to the website for this application (<https://www.milwaukieoregon.gov/planning/dr-2021-003>).

Packet = packet materials available online at <https://www.milwaukieoregon.gov/bc-pc/planning-commission-77>.

**Recommended Findings in Support of Approval Master  
File #DR-2021-003, Kellogg Bowl Redevelopment**

Sections of the Milwaukie Municipal Code not addressed in these findings are found to be inapplicable to the decision on this application.

1. The applicant, Pahlisch Commercial HT Properties, Inc., has applied for approval to construct a six-story multifamily residential building on the two lots that comprise the Kellogg Bowl site at 10306 SE Main St. The site is in the Downtown Mixed Use (DMU) zone. The land use application master file number is DR-2021-003, with accompanying applications for a zoning map amendment, natural resource review, transportation facilities review, and variances to development standards.
2. The subject property is 1.94 acres in area and is comprised of two tax lots: a 55-ft-wide “flag-pole” access lot (approximately 13,900 sq ft) that extends just over 250 ft east from Main Street to a larger lot (approx. 70,575 sq ft) where the new building will be located. The larger lot is rectilinear but irregularly shaped and has public street frontage where 23<sup>rd</sup> Avenue dead-ends along the subject property’s northeast corner. Protected water features to the north and south of the larger lot generate vegetated corridor areas that extend onto small portions of the site.

The proposed development involves demolishing the existing bowling alley on the site and replacing it with a six-story, 178-unit multifamily building, including two live/work units on the ground floor. A total of 173 off-street parking spaces are proposed, with 142 structured spaces on the ground floor of the building and 31 exterior spaces in the accessway and behind the building. Almost 18,000 sq ft of private and common open spaces in the form of rooftop terraces, indoor club rooms, a fitness room, lobby, private balconies, and outdoor plaza areas will be provided. The new building will encroach into a portion of the vegetated corridor associated with the off-site pond adjacent to the south of the site, in what is currently developed as an off-street parking lot serving the pre-existing bowling alley. The Residential R-5 zone designation of the northeast corner of the site will be rezoned to match the DMU designation of the rest of the subject property.

3. The proposal is subject to the following provisions of the Milwaukie Municipal Code (MMC):
  - MMC Chapter 12.16 Access Management
  - MMC Section 19.301 Low Density Residential Zones (including R-5)
  - MMC Section 19.304 Downtown Zones (including Downtown Mixed Use DMU)
  - MMC Section 19.402 Natural Resources
  - MMC Subsection 19.505.3 Building Design Standards for Multifamily Housing
  - MMC Section 19.508 Downtown Site and Building Design Standards
  - MMC Section 19.510 Green Building Standards
  - MMC Chapter 19.600 Off-Street Parking and Loading

- MMC Chapter 19.700 Public Facility Improvements
- MMC Section 19.902 Amendments to Maps and Ordinances
- MMC Section 19.907 Downtown Design Review
- MMC Section 19.911 Variances
- MMC Section 19.1006 Type III Review
- MMC Section 19.1011 Design Review Meetings

The application has been processed and public notice provided in accordance with MMC Section 19.1006 Type III Review. A public hearing was held by the Planning Commission on July 27, 2021, as required by law.

#### 4. MMC Chapter 12.16 Access Management

MMC Section 12.16.040 establishes standards for access (driveway) requirements, including access spacing, number and location of accessways, and limitations for access onto collector and arterial streets. New driveways accessing collector streets must be spaced at least 300 ft from the nearest intersection and at least 10 ft from the side property line. New multifamily driveways onto local streets must be at least 100 ft from the nearest intersection. For multifamily residential uses with more than eight units, the driveway apron must have a minimum width of 24 ft and maximum width of 30 ft.

*The subject property has frontage on Main Street, a collector street, and 23<sup>rd</sup> Avenue, a local street. Both streets are currently under the jurisdiction of the City. The site is accessed by the primary existing accessway connecting the larger lot to Main Street, as well as through two existing driveways serving the adjacent Pietro's Pizza site to the north of the accessway (and west of the larger lot). Currently, access to the site from 23<sup>rd</sup> Avenue is restricted by an undeveloped strip of the right-of-way (ROW) at the easternmost edge of the subject property.*

*As proposed, the existing driveway approach at Main Street, which is approximately 53 ft wide, will be reduced in width to approximately 26 ft. No new driveways are proposed on Main Street. The ROW on 23<sup>rd</sup> Avenue will be improved to provide emergency access to the new building, with a new driveway accessing the small off-street parking lot and providing a turnaround for emergency vehicles. The new driveway approach is approximately 48 ft wide at the widest point of the throat, which the City Engineer has determined is allowable and sufficient for the intended turnaround function. The new driveway will be gated and accessible for emergency use only.*

*As proposed, the Planning Commission finds that the proposed development is consistent with the applicable standards of MMC 12.16.*

#### 5. MMC Section 19.301 Low Density Residential Zones (including R-5)

MMC 19.301 establishes standards for Low Density Residential zones, including the R-5 zone. MMC Subsection 19.301.2 establishes the uses allowed in the R-5 zone, including single-family detached dwellings, duplexes, accessory dwelling units (ADUs), and residential homes as outright permitted uses.

*Multifamily dwellings such as the one proposed with this application are not an allowed use in the R-5 zone. However, the portion of the site that is zoned R-5 is currently developed with a parking*



*lot (park of the pre-existing Kellogg Bowl bowling alley use) and will be redeveloped as parking for the new multifamily residential building, so there is no proposed change in the existing nonconforming use. As discussed in Finding 13, the applicant has proposed to rezone the R-5 portion of the site to DMU to be consistent with the majority zoning for the subject property. With the approval of the proposed zoning map amendment, questions related to the R-5 zone become moot.*

*As proposed, and with approval of the zoning map amendment discussed in Finding 13, the Planning Commission finds that the proposed development does not result in any change of use of the R-5 portion of the site and that the approved zone change makes MMC 19.301 inapplicable to the proposed development.*

6. MMC Section 19.304 Downtown Zones (including Downtown Mixed Use DMU)

MMC 19.304 establishes standards for the downtown zones, including the Downtown Mixed Use (DMU) zone.

a. MMC Subsection 19.304.2 Uses

MMC 19.304.2 establishes the uses allowed in the DMU zone, including multifamily residential dwellings.

*The proposed development is a multifamily residential building with 178 dwelling units.*

*This standard is met.*

b. MMC Subsection 19.304.3 Use Limitations, Restrictions, and Provisions

MMC Subsection 19.304.3.A.1 establishes limitations for residential uses in downtown Milwaukie. Along Main Street south of Scott Street, residential dwellings are not permitted on the ground floor; north of Scott Street, residential dwellings and/or lobbies for upper-floor units are permitted anywhere on the ground floor along Main Street. Live/work units and rowhouses are not permitted on Main Street.

*The proposed development is a multifamily residential building with 178 units, including two ground-floor dwelling units and two ground-floor live/work units. The subject property is north of Scott Street, and although it has a Main Street address, the proposed building is not adjacent to Main Street. Therefore, the limitations established in MMC 19.304.3.A.1 are not applicable to the proposed development.*

*This standard is not applicable.*

c. MMC Subsections 19.304.4 and 19.304.5 Development Standards and Detailed Development Standards

MMC Table 19.304.4 lists the general categories of development standards for the DMU zone and MMC 19.304.5 provides additional detail for each category.

(1) MMC Subsection 19.304.5.A Floor Area Ratios

The Floor Area Ratio (FAR) is a tool for regulating the intensity of development. The minimum FAR established in MMC Table 19.304.4.B.1 apply only to

nonresidential development. For stand-alone residential buildings, density is controlled by the minimum density requirements discussed in Finding 6-c-10.

*The proposed development is a stand-alone residential building.*

*This standard is not applicable.*

(2) MMC Subsection 19.304.5.B Building Height

Base maximum building heights are specified in MMC Figure 19.304-4, with height bonuses available for buildings that meet the standards of MMC Subsection 19.304.5.B.3. In the northernmost part of downtown, the base maximum building height is four stories or 55 ft. One additional story (or 12 ft of additional building height) is allowed for new buildings that devote at least one story or 25% of the gross floor area to a residential or lodging use. An additional story is allowed for new buildings that receive approvals and certification as identified in MMC Section 19.510. Additional building height beyond these bonuses requires a Type III variance per MMC Subsection 19.911.6.

*The proposed building is six stories and approximately 72 ft in height. As a residential building, it is allowed one additional story above the four-story base standard. The applicant has also indicated that the building will qualify for an Earth Advantage certification, which is listed in MMC Section 19.510 as an approved green building program (see Finding 10.) With these allowed height bonuses, the building is approvable up to a height of six stories or 79 ft.*

*This standard is met.*

(3) MMC Subsection 19.304.5.C Flexible Ground-Floor Space

For new buildings fronting Main Street, the ground-floor height must be at least 14 ft, as measured from the finished floor to the bottom of the structure above (as in a multistory building). The interior floor area adjacent to Main Street must be at least 20 ft deep, as measured from the inside building wall or windows facing Main Street. Stand-alone residential buildings on Main Street as specified in MMC Figure 19.304-2 are exempt from the flexible ground-floor space requirements.

*The proposed building is a stand-alone residential building located along the portion of Main Street which is shown on MMC Figure 19.304-2 to be exempt from the flexible ground-floor space requirements. Furthermore, due to the configuration of the subject property, the proposed building does not front on or directly abut Main Street.*

*This standard is not applicable.*

(4) MMC Subsection 19.304.5.D Street Setbacks/Build-To Lines

Required build-to lines are used in combination with the frontage occupancy requirements of MMC Subsection 19.304.5. to ensure that the ground floors of

buildings engage the street. No minimum street setbacks are required. MMC Figure 19.304-5 identifies block faces where zero setbacks are required (first-floor build-to lines), where 75% of the first floor must be built with a zero setback and the remaining 25% may be set back from the front lot line a maximum of 20 ft. The front setback must provide usable open space that meets the requirements of MMC Subsection 19.304.5.H. For other block faces, there is no build-to line requirement and the maximum setback is 10 ft. The front setback must provide usable open space. The portions of the building used to meet the build-to line requirement must have a depth of at least 20 ft.

*The subject property is not identified on MMC Figure 19.304-5 as having the 75% zero setback requirement, so it is subject only to the maximum setback of 10 ft. Due to the configuration of the subject property, with the 55-ft-wide accessway leading to the primary buildable area of the site, the proposed building is set back over 250 ft from the site's frontage on Main Street. The applicant has requested a variance from the street setback standard, which is discussed and approved in Finding 15.*

*As approved by the variance discussed in Finding 15, this standard is met.*

(5) MMC Subsection 19.304.5.E Frontage Occupancy

To ensure that buildings are used to create a “street wall” that contributes to a walkable and pedestrian-friendly environment, minimum frontage occupancy requirements are established for block faces identified on MMC Figure 19.304-6 and are used in combination with the required build-to line of MMC Subsection 19.304.3.D. MMC Figure 19.304-6 identifies block faces where either 90%, 75%, or 50% of the site's street frontage must be occupied by a building or buildings. If the site has frontage on more than one street, the frontage occupancy requirement must be met on one street only.

*MMC Figure 19.304-6 indicates that the subject property is subject to the 50% frontage occupancy standard. Due to the configuration of the subject property, the proposed building is set back over 250 ft from the site's frontage on Main Street. The applicant has requested a variance from the frontage occupancy standard, which is discussed and approved in Finding 15.*

*As approved by the variance discussed in Finding 15, this standard is met.*

(6) MMC Subsection 19.304.5.F Primary Entrances

All new buildings must have at least one primary entrance facing an abutting street or connected to the public sidewalk with a pedestrian walkway.

*The proposed main entrance to the proposed building is oriented toward Main Street and connected to the Main Street sidewalk by a pedestrian walkway.*

*This standard is met.*

(7) MMC Subsection 19.304.5.G Off-Street Parking

Off-street parking for residential uses is required at the ratios established in MMC Table 19.605.1, and all other applicable standards of MMC Chapter 19.600 apply. Off-street surface parking lots (including curb cuts) must not be located within 50 ft of the Main Street ROW. Off-street parking must not be located between a building and the street-facing lot line.

*The proposed building will establish 178 multifamily residential units. The off-street parking requirements of MMC 19.600 are addressed in Finding 11. Off-street surface parking is proposed where the site is adjacent to 23<sup>rd</sup> Avenue (though accessed only through the building via Main Street) and within the accessway connecting the site to Main Street. A total of 14 parking spaces are proposed within the accessway, with the first space set back 50 ft from the Main Street ROW. Due to the configuration of the subject property and the proposed building setback, this front parking area is between the building and the front lot line. The applicant has requested a variance from this off-street parking standard, which is discussed and approved in Finding 15.*

*As discussed in this finding and in Finding 11 for off-street parking, and as approved by the variance discussed in Finding 15, this standard is met.*

(8) MMC Subsection 19.304.5.H Open Space

When a building is set back from the sidewalk, at least 50% of the setback area must provide usable open space, such as a public plaza or pedestrian amenities, that is abutted on at least two sides by retail shops, restaurants, offices, services, or residences with windows and entrances fronting on the space. Usable open space must be accessible at grade adjacent to the sidewalk and may be hardscaped or landscaped, including plazas, courtyards, gardens, terraces, outdoor seating, and small parks.

*As discussed above in these findings, the proposed building is set back over 250 ft from the site's frontage on Main Street, separated from the street by an accessway and off-street parking. The proposed site development includes a pedestrian plaza of approximately 950 sq ft located at the accessway entrance, between the Main Street ROW and the first off-street parking space. A majority of the approximately 14,000-sq-ft setback area is occupied by the accessway (for vehicles and pedestrians) and off-street parking spaces, so the plaza represents only approximately 7% of the overall setback area. Due to its location far from any other buildings, the plaza is not abutted on two sides by any of the uses noted in the standard above, though it is accessible at grade by an adjacent pedestrian walkway and will incorporate a combination of landscape, hardscape, and street furnishings. The applicant has requested a variance from the unmet aspects of this open space standard, which is discussed and approved in Finding 15.*

*As discussed in this finding and as approved by the variance discussed in Finding 15, this standard is met.*

(9) MMC Subsection 19.304.5.I Transition Measures

For properties north of Harrison Street and located within 50 ft of a lower-density residential zone (R-10, R-7, or R-5), transition area measures apply. Within 50 ft of the property line abutting lower-density residential zones, buildings must provide a step back of at least 6 ft for any portion of the building above 35 ft and the height bonuses established in MMC Subsection 19.304.5.B.3 cannot be applied.

*The subject property is north of Harrison Street and is adjacent to residential properties zoned R-5 along its eastern boundary. A small portion of the northeast corner of the site is zoned R-5 but, as discussed in Finding 13, a zone change to DMU has been requested and approved. Where the proposed building is within 50 ft of the eastern property line, the building steps back 7 ft above the first floor (19 ft, including rooftop terrace at second-floor level) and then steps back at least 25 ft more above the fourth floor. No height bonuses are requested within 50 ft of the eastern property line adjacent to the R-5 zone.*

*This standard is met.*

(10) MMC Subsection 19.304.5.J Residential Density

The minimum density for stand-alone multifamily dwellings in the DMU zone is 30 units per acre. There are no minimum density requirements when residential units are developed as part of a mixed-use building. Maximum density is controlled by height limits.

*The subject property is approximately 1.94 acres and so has a minimum density of 58 units. The proposed development will provide 178 units and meets the applicable height standards for the DMU zone, as discussed above.*

*This standard is met.*

*The proposed development meets the applicable development standards, including the detailed development standards, of MMC 19.304.4 and 19.304.5.*

d. MMC Subsection 19.304.6 Public Area Requirements

The Public Area Requirements (PAR) implement the Downtown and Riverfront Land Use Framework Plan and are intended to ensure a safe, comfortable, contiguous pedestrian-oriented environment as revitalization occurs in downtown. The PAR are defined as improvements within the public ROW and include such features as sidewalks, bicycle lanes, on-street parking, curb extensions, lighting, street furniture, and landscaping. The PAR is implemented through MMC Chapter 19.700 and the Public Works Standards.

*As discussed in Finding 12-f, the required street improvements are minimal and are consistent with the applicable standards of MMC 19.700 and the Public Works Standards.*

*This standard is met.*

e. MMC Subsection 19.304.7 Additional Standards

Depending upon the type of use and development proposed, the standards for general site design (MMC Section 19.504), for general building design (MMC Section 19.505), and/or downtown site and building design (MMC Section 19.508) may apply.

*One set of standards from MMC Subsection 19.505.3 and the design standards of MMC 19.508 are applicable to the proposed development. As discussed in Findings 8 and 9 and elsewhere in these findings, the applicable standards of MMC 19.505.3 and 19.508 are met or are addressed with the necessary variances or conditions of approval as needed.*

*As proposed, and as discussed and approved elsewhere in these findings, the Planning Commission finds that the applicable standards of the DMU zone are met.*

7. MMC Section 19.402 Natural Resources

MMC 19.402 establishes regulations for designated natural resource areas. The standards and requirements of MMC 19.402 are an acknowledgment that many of the riparian, wildlife, and wetland resources in the community have been adversely impacted by development over time. The regulations are intended to minimize additional negative impacts and to restore and improve natural resources where possible.

a. MMC Subsection 19.402.3 Applicability

MMC 19.402.3 establishes applicability of the Natural Resource (NR) regulations, including all properties containing Water Quality Resources (WQRs) and Habitat Conservation Areas (HCAs) as shown on the City's Natural Resource (NR) Administrative Map.

*There are no protected water features on the subject property, but two water features on adjacent properties to the northeast and south include vegetated corridors that establish WQR overlays on the subject property. To the northeast, an intermittent stream flows across the highway ROW that includes Highway 224. The vegetated corridor generated by this water feature extends onto a City-owned open space strip between the highway and the subject property, across a portion of the 23<sup>rd</sup> Avenue ROW, and very minimally onto the northeastern-most portion of the subject property. To the south, Spring Creek forms a surface pond that abuts the southern property line of the larger lot that constitutes the subject property. The vegetated corridor associated with the pond extends approximately 50 ft onto the subject property.*

*The proposed development will impact both of the designated WQR areas on the subject property, so the Planning Commission finds that the provisions of MMC 19.402 are applicable to the project.*

b. MMC Subsection 19.402.4 Exempt Activities

MMC Subsection 19.402.A establishes a list of activities that are exempt from NR review. This includes routine repair and maintenance, alteration, and/or total replacement of existing parking improvements (including asphalt overlays) as long as there is no new disturbance of the WQR or HCA, no increase in impervious area, no

reduction in landscaped areas or tree cover, and no other change that could result in increased direct stormwater discharges to the WQR (MMC Subsection 19.402.4.A.10).

*In both cases, the WQR areas on the subject property are already developed with off-street parking facilities. At the northeast corner, the replacement of the existing parking area with a renovated parking area qualifies as an exempt activity for purposes of NR review, as per MMC Subsection 19.402.4.A.10. However, the proposal to construct a new building that encroaches into a portion of the WQR near the off-site pond does not constitute a simple replacement of existing improvements—it presents a new form of encroachment into the vegetated corridor area adjacent to the pond. Even though the WQR that will be disturbed is already developed, the proposed activity includes the permanent disturbance of approximately 9,200 sq ft of the WQR (vegetated corridor) is not exempt from NR review.*

*The Planning Commission finds that the proposed development is not exempt from NR review and the applicable standards of MMC 19.402.*

c. MMC Subsection 19.402.8 Activities Requiring Type III Review

MMC 19.402.8 establishes that certain activities within a designated WQR and/or HCA are subject to Type III review in accordance with MMC 19.1006. As per MMC 19.402.8.A.1, this includes activities allowed in the base zone that are not otherwise exempt or permitted as a Type I or II activity.

*MMC Subsections 19.402.6 and 19.402.7 establish activities that require Type I or Type II NR review, respectively. The scale of disturbance proposed within the identified WQR area on the subject property (approximately 9,200 sq ft) far exceeds the levels of WQR disturbance allowed by Type I and II review.*

*The Planning Commission finds that the proposed development is subject to Type III review and the discretionary process established in MMC 19.402.12.*

d. MMC Subsection 19.402.9 Construction Management Plans

MMC 19.402.9 establishes standards for construction management plans, which are required for projects that disturb more than 150 sq ft of designated natural resource area. Construction management plans must provide information related to site access, staging of materials and equipment, and measures for tree protection and erosion control.

*The applicant's submittal materials include a construction management plan with grading and erosion control information, including the information required by MMC 19.402.9.*

*The Planning Commission finds that the submitted construction management plan provides sufficient information for natural resource protection. This standard is met.*

e. MMC Subsection 19.402.11 Development Standards

MMC 19.402.11 establishes development standards for projects that impact a designated natural resource, including requirements to protect natural resource areas during development. MMC Subsection 19.402.11.B establishes general standards for

required mitigation (e.g., plant species, size, spacing, and diversity). For example, mitigation plantings must be native plants and must be a minimum size at time of planting (1/2-in caliper at six feet above grade for most trees, one gallon and 12-in height for shrubs). Trees must be spaced at eight to 12 ft on center, shrubs between four and five ft on center or clustered in single-species groups of no more than four plants. Shrubs must be of at least two different species; if 10 or more trees are planted, then no more than 50% of the trees can be of the same genus. A minimum of 80% of the trees and shrubs planted must remain alive on the second anniversary of the planting date.

MMC Subsection 19.402.11.C establishes mitigation requirements for disturbance within WQRs. The requirements vary depending on the existing condition of the WQR, according to the categories established in MMC Table 19.402.11.C. For Class A "Good" WQR conditions, the table requires that the applicant submit a plan for mitigating water quality impacts related to the development; for Class B "Marginal" and Class C "Poor" WQR conditions, the table requires restoration and mitigation with native species using a City-approved plan.

*As proposed, the development will permanently impact the entire WQR area on the southern portion of the subject property near the off-site pond, approximately 9,200 sq ft. Based on existing conditions, the portion of the southern WQR is categorized as Class C ("Poor"). For Poor WQR areas, the code requires restoration and mitigation with native species using a City-approved plan. The applicant has proposed to plant an area of approximately 1,800 sq ft in a strip along the pond edge with native trees and shrubs.*

*As proposed, the mitigation plantings consist of 10 cascara trees (*Rhamnus purshiana*) and approximately 90 native shrubs, a combination of red flowering currant (*Ribes sanguineum*) and dull Oregon grape (*Mahonia nervosa*). As proposed, the trees do not meet the spacing or species-diversity standards, so a condition has been established to require the necessary revisions to the planting plan. The proposed shrub plantings meet the minimum required standards for species and spacing.*

*As conditioned, the Planning Commission finds that the applicable development standards of MMC 19.402.11 are met.*

f. MMC Subsection 19.402.12 General Discretionary Review

MMC 19.402.12 establishes the discretionary review process for activities that substantially disturb designated natural resource areas.

(1) MMC Subsection 19.402.12.A Impact Evaluation and Analysis

MMC 19.402.12.A requires an impact evaluation and alternatives analysis in order to determine compliance with the approval criteria for discretionary review and to evaluate alternatives to the proposed development. A technical report prepared by a qualified natural resource professional is required and should include the following components:

- Identification of ecological functions



- Inventory of vegetation
- Assessment of water quality impacts
- Alternatives analysis
- Demonstration that no practicable alternative method or design exists that would have a lesser impact on the resource and that impacts are mitigated to the extent practicable
- Mitigation plan

*The applicant's submittal materials include a natural resource management plan (technical report) prepared by Stacey Reed, a certified Professional Wetland Scientist with AKS Engineering and Forestry, LLC. The technical report includes a presentation of existing conditions, assessment of the extent and condition of the on-site vegetated corridor, assessment of ecological functions and water quality impacts, alternatives analysis, and mitigation plan. As submitted, the report is consistent with the required components listed above.*

*The report narrative discusses three alternatives to the proposed development configuration: (1) reducing the size of the proposed new building and associated outdoor amenities to avoid disturbance of the WQR; (2) expanding the building footprint to the southern property line, increasing the number of units but also increasing the encroachment into the WQR; and (3) reducing the new building footprint to avoid WQR encroachment but maintaining the existing surface parking lot within the WQR. The report concludes that Alternative 2 would have an even greater impact on the WQR and that Alternatives 1 and 3 would reduce the number of dwelling units and amenities so significantly as to make the project unviable. The report presents the proposed development scenario as the most practicable alternative that results in the least impact to the natural resources on the site.*

*ESA, the City's consultant for on-call natural resource services, evaluated the applicant's technical report and provided a memo with its peer review. ESA's memo confirmed that the observed site conditions were generally consistent with what was noted in the applicant's narrative and the technical report. ESA agreed with the report's determination of the relevant WQR boundaries and the classification of the on-site WQR condition as "Poor." The ESA memo noted that the technical report did not quantify the impact to the WQR in terms of square footage of the area to be converted from parking lot to building and did not specifically address each of the seven riparian functions and values listed in MMC Subsection 19.402.1.C.2 as contributing to water quality and fish and wildlife habitat.*

*ESA noted that the report's analysis of alternatives would benefit by more clearly defining the purpose and need of the project (as a basis for evaluating alternatives) and presenting a basis for economic viability in the context of being a key constraint to reducing encroachment into the WQR. The ESA memo also concluded that the impacts of the various alternatives were described at a high level and could benefit from additional detail.*

*With respect to proposed mitigation for impacts to the WQR, ESA notes that the technical report states that the project will not have any adverse impacts on the WQR and so does not require compensatory mitigation. However, ESA notes that the location of the existing Kellogg Bowl building (between 145 ft and 175 ft from the edge of the off-site pond) provides open space and room for birds and small wildlife to move between the pond and nearby trees and vegetated areas. The proposed new six-story building would be within 17 ft and 40 ft of the pond, significantly reducing the physical space currently available for birds and small mammals and other wildlife to move within the WQR on the site north of the pond.*

*The technical report refers to the proposed landscaping and includes a section on mitigation, though it does not present the proposed plantings as mitigation for impacts. As noted in the ESA memo, however, the proposed development will in fact impact the WQR. Because the technical report does not quantify the area of WQR that is being disturbed by the encroachment of the new building, ESA notes that it is difficult to determine how sufficiently the proposed landscape plan meets the requirement of MMC Subsection 19.402.11.C to mitigate disturbed areas. The ESA memo suggests that one way to quantify new WQR disturbance would be to calculate the square footage of new building encroachment into the vegetated corridor, and that one logical approach to mitigating would be to plant an area equal to that encroachment with native plants.*

*Regarding the proposed landscaping plan, the ESA memo indicates that the proposed planting location, along the southern property line adjacent to the off-site pond, as well as the proposed species, are appropriate. However, ESA notes that the proposed tree spacing does not meet the minimum requirements of eight to 12 ft on center nor the requirement to provide more than one species of tree when 10 or more trees are planted.*

*The ESA memo concludes that the proposed landscaping plan will improve some of the ecological functions and values that will be impacted by the encroachment of the new building into the vegetated corridor that constitutes the WQR on site. The location and nature of the off-site pond (which is approximately five ft below the grade of the subject property and separated by a concrete retaining wall) make it difficult for the proposed landscaping to moderate streamflow or to improve water storage, bank stabilization, or large woody recruitment and retention. But the replacement of existing asphalt with native plantings along the northern perimeter of the pond will serve to better separate the protected water feature from development; will improve microclimate and shade functions as well as water filtration, infiltration, and natural purification; and will provide a source of organic material within the WQR, including food sources and structure for birds, insects, and small mammals.*

*The Planning Commission acknowledges the points raised by ESA and finds that the applicant's materials provide a sufficient amount of information for evaluating alternatives and reviewing the proposed activity against the approval criteria of Subsection 12-B. This standard is met.*

(2) MMC Subsection 19.402.12.B Approval Criteria

MMC 19.402.12.B provides the approval criteria for discretionary review as follows:

- Avoid - The proposed activity avoids the intrusion of development into the WQR and/or HCA to the extent practicable, and has less detrimental impact to the natural resource areas than other practicable alternatives.

*The technical report provided by the applicant acknowledges that there are alternatives that involve less encroachment or no encroachment into the WQR but explains that those alternatives would result in fewer housing units and accompanying amenities and would therefore not be economically viable. Given that the existing WQR is already developed as an asphalt parking lot, the proposal to construct a new building that encroaches into a portion of the WQR and to remove a strip of existing asphalt and provide a vegetated buffer of native plants in its place will have far less negative impact than leaving the existing parking lot in place and avoiding natural resource review altogether.*

- Minimize - If the applicant demonstrates that there is no practicable alternative to avoid disturbance of the natural resource, then the proposed activity shall minimize detrimental impacts to the extent practicable.

*Reducing the building footprint would significantly reduce the number of dwelling units provided, and eliminating the proposed plaza area adjacent to the pond would remove an important open space component of the proposed development. These changes (particularly the loss of units) could make the project infeasible.*

*The applicant could have proposed to construct an even larger building that encroached all the way to the southern property, where it would have been directly adjacent to the off-site pond. That would have completely filled the three-dimensional vegetated corridor, leaving no space for wildlife to move from the pond to the subject property and beyond. The proposed development represents a minimally impactful building that remains financially viable.*

- Mitigate - If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the natural resource, then the proposed activity shall mitigate for adverse impacts to the resource area. The applicant shall present a mitigation plan that demonstrates compensation for detrimental impacts to ecological functions, with mitigation occurring on the site of the disturbance to the extent practicable, utilization of native plants, and a maintenance plan to ensure the success of plantings.

*As discussed above, ESA's review of the applicant's technical report noted that the report did not quantify the WQR disturbance or assert that the proposed plantings were adequate mitigation. (The technical report in fact asserted that the proposed development presented no new impact to the WQR since it has already been*

*developed as a parking lot.) The total area of WQR on the subject property near the pond is approximately 9,200 sq ft; the portion of the proposed building that encroaches into the WQR is approximately 3,250 sq ft; the area of proposed landscaping along the edge of the off-site pond is approximately 1,970 sq ft.*

*ESA has suggested that a 1:1 ratio of disturbance area to mitigation planting area is a logical approach to adequately mitigate for the disturbance. As proposed, a 10-ft strip along the approximately 197-ft length of the southern property boundary adjacent to the off-site pond would be landscaped. If the width of the landscaped strip was expanded to 16.5 ft, the planting area would be roughly equivalent to the area of new WQR disturbance by the proposed building. The number of trees and shrubs would need to be increased to meet the required spacing standards, and at least one additional species of native tree would need to be provided so that no more than 50% of the trees are of the same genus. A condition has been established to require these adjustments to make the required mitigation commensurate with the proposed new disturbance of the WQR.*

*As conditioned, the Planning Commission finds that the proposed development meets the approval criteria for discretionary review as established in MMC 19.402.12.B.*

*The Planning Commission finds that, as conditioned, the proposed development meets the applicable discretionary review standards of MMC 19.402.12.*

g. MMC Subsection 19.402.15 Boundary Verification and Map Administration

MMC 19.402.15 establishes standards for verifying the boundaries of WQRs and HCAs and for administering the City's NR Administrative Map.

The locations of WQRs are determined based on the provisions of MMC Table 19.402.15. For streams, the WQR includes the feature itself and a vegetated corridor that extends 50 ft from the ordinary high-water mark or two-year recurrence interval flood elevation. Where the slope exceeds 25% for less than 150 ft, the vegetated corridor is measured with a 50-ft width from the break in the 25% slope. For wetlands, a wetland delineation report prepared by a professional wetland specialist and approved by the Department of State Lands (DSL) is required.

For HCAs, the City's NR Map is assumed to be accurate with respect to location unless challenged by the applicant, using the procedures outlined in either MMC Subsection 19.402.15.A.1 or MMC Subsection 19.402.15.A.2.b.

*The applicant's technical report and other submittal materials document the existence and location of two off-site protected water features: an intermittent stream to the northeast of the subject property and a pond formed by Spring Creek to the south. The City's NR Administrative Map clearly shows the location of the pond but appears to be less accurate with respect to the location of the intermittent stream. The existing conditions map included in the applicant's submittal materials includes topographic information and shows the surveyed location of the ordinary high-water mark associated with the stream. This information can be used to improve the accuracy of the City's NR Administrative Map.*

*The Planning Commission finds that the City’s NR Administrative Map should be adjusted to reflect the detailed information provided by the applicant with respect to the location of the off-site intermittent stream to the northeast of the subject property.*

*The Planning Commission finds that, as conditioned, the proposed development meets the applicable standards of MMC 19.402.*

8. MMC Subsection 19.505.3 Building Design Standards for Multifamily Housing

MMC 19.505.3 establishes design standards and guidelines for multifamily residential buildings. In the DMU zone, stand-alone multifamily residential buildings have the option of addressing either the design standards or guidelines specifically for multifamily housing (as established in MMC Subsection 19.505.3.D) or addressing the design standards for downtown development in general (as established in MMC Subsection 19.508.4). As noted in Finding 9, in cases where a stand-alone multifamily residential building opts to address the downtown design standards of MMC 19.508.4, the only multifamily design standards from MMC 19.505.3.D that apply are those for building façade design (MMC Table 19.505.3.D.6).

*The proposed development, which is for a stand-alone multifamily residential building, has opted to address the downtown design standards of MMC 19.508.4. The applicable standards for building façade design (MMC Table 19.505.3.D.6) are addressed as part of the overall discussion of downtown design in Finding 9.*

*The Planning Commission finds that, as addressed in Finding 9, the applicable standards for multifamily design are met.*

9. MMC Section 19.508 Downtown Site and Building Design Standards

MMC 19.508 establishes design standards for downtown development, to encourage building design and construction with durable, high-quality materials. The design standards are applicable to all new development. MMC Subsection 19.508.4 establishes standards for seven different elements of design.

*The proposed development is for a new multifamily residential building. The findings for each of the applicable design elements are provided in Table 9, below.*

**Table 9**  
**Building Design Standards**

<b>A. BUILDING FAÇADE DETAILS</b> <b><u>Purpose:</u> To provide cohesive and visually interesting building façades in the downtown, particularly along the ground floor.</b>	
Standard	Findings
<p><b>To address this design element, stand-alone multifamily residential buildings are subject to the objective standards of MMC Subsection 19.505.3.D.6 (Building Façade Design).</b></p> <p><b>a. Street-facing building façades shall be divided into wall planes. The wall plane on the exterior of each dwelling unit shall be articulated by doing one or more of the following:</b></p> <ol style="list-style-type: none"> <li><b>1) Incorporating elements such as porches or decks into the wall plane.</b></li> <li><b>2) Recessing the building a minimum of 2 ft deep x 6 ft long.</b></li> <li><b>3) Extending an architectural bay at least 2 ft from the primary street-facing façade.</b></li> </ol> <p><b>b. Windows and the glass portion(s) of doors with glazing shall occupy a minimum of 25% of the total street-facing façade.</b></p>	<p>The proposed development is a residential-only building with 178 multifamily units, including two live/work units. The live/work units are considered primarily residential and do not make the development a mixed-use project.</p> <p>The street-facing façades (west and east elevations, facing Main Street and 23<sup>rd</sup> Avenue, respectively) have projecting balconies, a major recess in the center of the building (10 to 50 ft deep by 140 ft wide), and other minor recesses of around 2 ft.</p> <p>This standard is met.</p> <p>The west elevation (façade facing Main Street) is approximately 17,240 sq ft in area and presents approximately 6,230 sq ft of glazing (36%).</p> <p>The east elevation (façade facing 23<sup>rd</sup> Avenue) is also approximately 17,240 sq ft in area and presents approximately 4,540 sq ft of glazing (26%).</p> <p>This standard is met.</p>

**A. BUILDING FAÇADE DETAILS**

**Purpose: To provide cohesive and visually interesting building façades in the downtown, particularly along the ground floor.**

Standard	Findings
<p><b>c. Buildings shall have a distinct base and top. The base of the building (ground-floor level) shall be considered from grade to 12 ft above grade. The base shall be visually distinguished from the top of the building by any of the following physical transitions: a change in brick pattern, a change in surface or siding materials, a change in color, or a change in the size or orientation of window types.</b></p>	<p>The building presents a distinct base, middle, and top. The base is clad with brick (or fiber-cement panels where the parking garage extends on the east elevation), the middle section uses fiber-cement lap siding, and the top incorporates fiber-cement panels of a contrasting color with a cornice overhang. This standard is met.</p>
<p><b>d. To avoid long, monotonous, uninterrupted walls, buildings shall incorporate exterior wall off-sets, projections and/or recesses. At least 1 ft of horizontal variation shall be used at intervals of 40 ft or less along the building's primary façade on the ground-floor level.</b></p>	<p>The building includes a recessed courtyard area on level 2 that extends the offset up through level 6. Along the building's primary façade (west elevation, facing Main Street), the base provides numerous offsets of 1 ft or more every 40 lineal ft. This standard is met.</p>
<p><b>e. Blank, windowless walls in excess of 750 sq ft are prohibited when facing a public street, unless required by the Building Code. In instances where a blank wall exceeds 750 sq ft, it shall be articulated or intensive landscaping shall be provided.</b></p>	<p>Both of the building's street-facing elevations (west, facing Main Street; and east, facing 23<sup>rd</sup> Avenue) provide ample windows and openings into the parking garage area, avoiding the presentation of a blank façade. This standard is met.</p>
<p><b>f. Garage doors shall be painted to match the color or color palette used on the rest of the building.</b></p>	<p>As proposed, garage doors will be painted to match the color palette of the building exterior, likely a charcoal-grey accent color. A condition has been established to ensure that this standard is met at the time of development review. As conditioned, this standard is met.</p>

**B. CORNERS**

**Purpose:** To create a strong architectural statement at street corners and establish visual landmarks and enhance visual variety.

Standard	Findings
<p>Nonresidential or mixed-use buildings at the corner of two public streets—or at the corner of a street and a public area, park, or plaza—shall incorporate two of the following features (for the purposes of this standard an alley is not considered a public street):</p> <ol style="list-style-type: none"> <li>The primary entry to the building located within 5 ft of the corner.</li> <li>A prominent architectural element, such as increased building height or massing, a cupola, a turret, or a pitched roof at the corner of the building or within 20 ft of the corner of the building.</li> <li>The corner of the building cut at a 45° angle or a similar dimension “rounded” corner.</li> <li>A combination of special paving materials; street furnishings; and, where appropriate, plantings, in addition to the front door.</li> </ol>	<p>The proposed structure is a stand-alone residential building and not a nonresidential or mixed-use building.                      This standard is not applicable.</p>



**C. WEATHER PROTECTION**

**Purpose: Create an all-season pedestrian environment.**

Standard	Findings
<p>All buildings shall provide weather protection for pedestrians as follows:</p> <p>a. Minimum Weather Protection Coverage</p> <ol style="list-style-type: none"> <li>1) All ground-floor building entries shall be protected from the weather by canopies or recessed behind the front building facade at least 3 ft.</li> <li>2) Permanent awnings, canopies, recesses, or similar weather protection shall be provided along at least 50% of the ground-floor elevation(s) of a building where the building abuts a sidewalk, civic space, or pedestrian accessway.</li> <li>3) Weather protection used to meet the above standard shall extend at least 4 ft, and no more than 6 ft, over the pedestrian area, and a maximum of 4 ft into the public right-of-way. Balconies meeting these dimensional requirements can be counted toward this requirement.</li> <li>4) In addition, the above standards do not apply where a building has a ground-floor dwelling, as in a mixed-use development or live-work building, and the dwelling entrance has a covered entrance.</li> </ol>	<p>The building design provides canopies over the various public entries on the ground floor. Doors accessing service areas for infrastructure (fire, water, or electrical rooms) or emergency egress are not considered building entries, such as along the north elevation of the building. All proposed canopies extend 6 ft from the building over adjacent pedestrian areas and are not adjacent to any public right-of-way.</p> <p>There are two live/work units along the west elevation and two regular dwelling units at the southeast corner. As proposed, the live/work entries have canopy coverage (77 ft); one of the two regular dwelling units has 14 ft of canopy on the south elevation, but no coverage is shown for the other unit.</p> <p>The various public entries are clustered at the southwest corner of the building, where there are entrances to the lobby, lounge, and fitness room. Measuring from the lobby entrance near the vehicle garage door on the west elevation around to the eastern edge of the fitness room, there is approximately 180 ft of building frontage and 72 ft of canopy (40%).</p> <p><u>Address of purpose statement and applicable guidelines:</u> As proposed, the southwest corner of the building does not provide the minimum required percentage of weather protection (50%), and one of the two ground-floor regular dwelling units does not have a covered entry. However, the design does provide a significant percentage of coverage (40%) where needed above the primary entries. The adjacent plaza on the south side of the building is intended to be an uncovered and open-air area with a landscaped fringe as a buffer from the nearby pond. The site layout encourages residents and visitors to move away from the building (and thus away from any canopies) as they utilize the open space of the plaza. The fact that the entire plaza is not covered does not mean that it cannot serve as an all-season environment.</p>

**C. WEATHER PROTECTION**

**Purpose: Create an all-season pedestrian environment.**

Standard	Findings
<p><b>b. Weather Protection Design</b>                      Weather protection shall comply with applicable building codes and shall be designed to be visually compatible with the architecture of a building. Where applicable, weather protection shall be designed to accommodate pedestrian signage (e.g., blade signs) while maintaining required vertical clearance.</p>	<p>The Milwaukie Character guideline for Integrating the Environment encourages buildings to capitalize on environmental assets, providing graceful transitions to natural and constructed elements that engage water edges. The proposed canopies provide some protection from the elements without establishing such a large covered area that residents and visitors are discouraged from leaving the building edge to engage with the plaza and the landscaped fringe near the water. The Pedestrian Emphasis guidelines for Protecting the Pedestrian from the Elements, Providing Places for Stopping and Viewing, and for Creating Successful Outdoor Spaces all support the idea of balancing protection from the elements with creating an inviting plaza area that draws people away from the building (and the associated canopies).</p> <p>As discussed in Finding 7 for Natural Resource review (MMC Section 19.402), the building proposes to encroach into part of the space where a vegetated corridor is identified, so there is a push to limit the structural footprint and building mass along the south side of the site. The extension of additional canopy coverage into the vegetated corridor is not necessary to make the plaza an engaging space, and limiting coverage to the proposed 40% instead of going all the way to the 50% standard preserves some of the desired open space without removing all weather protection for pedestrians.</p> <p>As noted above, the applicable standards are met; where specific standards are not met, the proposed design is consistent with the purpose of this design element and any applicable design guidelines.</p>
<p><b>b. Weather Protection Design</b>                      Weather protection shall comply with applicable building codes and shall be designed to be visually compatible with the architecture of a building. Where applicable, weather protection shall be designed to accommodate pedestrian signage (e.g., blade signs) while maintaining required vertical clearance.</p>	<p>The proposed canopies are flat, rigid structures that would extend perpendicular from the building façade at a height of approximately 12 ft. As proposed, the canopies are visually compatible with the building architecture. No signage is proposed at this time, but the 12-ft canopy height allows sufficient clearance for any future proposed signage.</p> <p>This standard is met.</p>

## D. EXTERIOR BUILDING MATERIALS

**Purpose:** To encourage the construction of attractive buildings with materials that evoke a sense of permanence and are compatible with downtown Milwaukee and the surrounding built and natural environment.

Standard	Findings
<p>The following standards are applicable to the street-facing façades of all new buildings. For the purposes of this standard, street-facing façades are those abutting streets, courtyards, and/or public squares in all of the downtown. Table 19.508.4.D specifies the primary, secondary, and prohibited material types referenced in this standard.</p> <ul style="list-style-type: none"> <li>a. Buildings shall utilize primary materials for at least 65% of each applicable building façade.</li> <li>b. Secondary materials are permitted on no greater than 35% of each applicable building façade.</li> <li>c. Accent materials are permitted on no greater than 10% of each applicable building façade as trims or accents (e.g. flashing, projecting features, ornamentation, etc.).</li> <li>d. Buildings shall not use prohibited materials on any exterior wall, whether or not it is a street-facing façade.</li> </ul>	<p>The west and east elevations are street-facing façades. As proposed, neither façade meets the materials standard. Both façades are approximately 55% primary materials (brick and glass), 45% secondary materials (fiber cement siding), and 4.5% accent materials. No prohibited materials are proposed.</p> <p><u>Address of purpose statement and applicable guidelines:</u> The design is intended to evoke a sense of permanence with the use of brick to establish the base and highlight building entrances and durable fiber-cement throughout the middle (lap siding) and top (panels). The window trim is substantial and, together with the overhanging cornice, lends an air of solidity to the design. The tripartite nature of the building (base, middle, top) and the vertical proportion of the windows are compatible with other newer downtown buildings such as North Main Village and the Axletree apartments.</p> <p>This is all compatible with the Architecture design guideline pertaining to Wall Materials, which also emphasizes the use of materials that create a sense of permanence. The proposed color palette is subdued in color, with boldly articulated window trim. Cladding materials (brick, fiber-cement) are varied yet compatible. Belt courses occur at level 2 above the building base and again at the level 6 floor line to define the top floor. Overall, the design provides a sense of substance and mass, without the appearance of veneer.</p> <p>As proposed, the design is consistent with the purpose of this design element and any applicable design guidelines.</p>

**E. WINDOWS AND DOORS**

**Purpose:** To enhance street safety and provide a comfortable pedestrian environment by adding interest to exterior facades, allowing for day lighting of interior space, and creating a visual connection between interior and exterior spaces.

Standard	Findings
<p><b>Main Street</b>            For block faces along Main Street, 50% of the ground-floor street wall area must consist of openings; i.e., windows or glazed doors. The ground-floor street wall area is defined as the area up to the finished ceiling height of the space fronting the street or 15 ft above finished grade, whichever is less.</p>	<p>The west elevation faces Main Street, with a ground-floor street wall area of approximately 3,240 sq ft. The design provides approximately 1,810 sq ft of windows, glazed doors, and/or other openings such as the main garage door, for a total percentage of nearly 56%.            This standard is met.</p>
<p><b>Other Streets</b>            For all other block faces, the exterior wall(s) of the building facing the street/sidewalk must meet the following standards:            a. 40% of the ground-floor street wall area must consist of openings; i.e., windows or glazed doors.            b. Along McLaughlin Blvd the required coverage is 30%.</p>	<p>The east elevation faces 23<sup>rd</sup> Avenue, also with a ground-floor street wall area of approximately 3,240 sq ft. The design provides approximately 1,690 sq ft of windows, glazed doors, and/or other openings such as the large open-metal grille “windows” into the parking garage, for a total percentage of nearly 52%.            This standard is met.</p>

**E. WINDOWS AND DOORS**

**Purpose:** To enhance street safety and provide a comfortable pedestrian environment by adding interest to exterior façades, allowing for day lighting of interior space, and creating a visual connection between interior and exterior spaces.

Standard	Findings
<p><b>Upper Level</b></p> <p>Along all block faces, the following standards are applicable on the upper-level building façades facing a street or public space.</p> <ol style="list-style-type: none"> <li>Upper building stories shall provide a minimum of 30% glazing. For the purposes of this standard, minimum glazing includes windows and any glazed portions of doors.</li> <li>The required upper-floor window/door percentage does not apply to floors where sloped roofs and dormer windows are used.</li> <li>A minimum of 60% of all upper-floor windows shall be vertically oriented. This vertical orientation applies to grouped window arrays as opposed to individual windows.</li> </ol>	<p>The upper level wall areas of both of the street-facing façades (west and east elevations) are approximately 14,000 sq ft. The west elevation (facing Main Street) provides a total of just over 4,700 sq ft of glazing (nearly 34%); the east elevation (facing 23<sup>rd</sup> Avenue) provides just over 4,380 sq ft of glazing (31%).</p> <p>On the west elevation, less than 60% of the upper-floor windows are vertically oriented. <u>Address of purpose statement and applicable guidelines:</u> Many of the windows that do not technically count as being vertically oriented (i.e., where the vertical dimension is greater than the horizontal dimension) are almost square in shape and are fairly large relative to the ceiling height of each upper story. As a result, the windows provide significant daylighting of the interior spaces. The mullions on many of the windows also emphasize their vertical dimension and add sufficient interest to the façade. There are no design guidelines that relate directly to residential windows.</p> <p>On the east elevation, all of the upper-floor windows are vertically oriented. As noted above, the applicable standards are met; where a specific standard is not met, the proposed design is consistent with the purpose of this design element and any applicable design guidelines.</p>

## E. WINDOWS AND DOORS

**Purpose:** To enhance street safety and provide a comfortable pedestrian environment by adding interest to exterior façades, allowing for day lighting of interior space, and creating a visual connection between interior and exterior spaces.

Standard	Findings
<p><b>General Standards</b></p> <ul style="list-style-type: none"> <li>a. Windows shall be designed to provide shadowing. This can be accomplished by recessing windows 4 in into the façade and/or incorporating trim of a contrasting material or color.</li> <li>b. All buildings with nonresidential ground-floor windows must have a visible transmittance (VT) of 0.6 or higher.</li> <li>c. Doors and/or primary entrances must be located on the street-facing block faces and must be unlocked when the business located on the premises is open. Doors/entrances to second-floor residential units may be locked.</li> <li>d. The bottom edge of windows along pedestrian ways shall be constructed no more than 30 in above the abutting walkway surface.</li> <li>e. Ground-floor windows for nonresidential buildings shall allow views into storefronts, working areas, or lobbies. No more than 50% of the window area may be covered by interior furnishings including, but not limited to, curtains, shades, signs, or shelves.</li> <li>f. Signs are limited to a maximum coverage of 20% of the required window area.</li> </ul>	<p>As proposed, all windows have contrasting trim.</p> <p>Although the proposed development is a stand-alone residential building, there are some ground-floor windows into nonresidential spaces (e.g., lobby, lounge, fitness room). As proposed, those windows have a VT of 0.6 or higher. A condition has been established to require that VT documentation be provided at the development review stage of the project to confirm that this standard is met.</p> <p>The street-facing façades include primary entrances. Since no stand-alone commercial uses are proposed, the requirement for unlocking doors during certain hours is not applicable.</p> <p>The bottom edge of windows along the pedestrian walkways in front of the west and south elevations are essentially at grade.</p> <p>The proposed development is a stand-alone residential building, so the requirements for maintaining views into storefronts are not applicable. Signage is not part of the proposed development and will be reviewed as necessary in the future.</p> <p>As conditioned, the applicable standards are met.</p>
<p><b>Prohibited Window Elements</b></p> <p>For all building windows facing streets, courtyards, and/or public squares in the downtown, the following window elements are prohibited:</p> <ul style="list-style-type: none"> <li>a. Reflective, tinted, or opaque glazing.</li> <li>b. Simulated divisions (internal or applied synthetic materials).</li> <li>c. Exposed, unpainted metal frame windows.</li> </ul>	<p>No prohibited window elements are proposed.</p> <p>This standard is met.</p>

**F. ROOFS AND ROOFTOP EQUIPMENT**  
**Purpose: To create a visually interesting condition at the top of the building that enhances the quality and character of the building.**

Standard	Findings
<p><b>Roof Forms</b></p> <p>a. The roof form of a building shall follow one (or a combination) of the following forms:</p> <ol style="list-style-type: none"> <li>1) Flat roof with parapet or cornice.</li> <li>2) Hip roof.</li> <li>3) Gabled roof.</li> <li>4) Dormers.</li> <li>5) Shed roof.</li> </ol> <p>b. All flat roofs, or those with a pitch of less than 4/12, shall be architecturally treated or articulated with a parapet wall that projects vertically above the roofline at least 12 in and/or a cornice that projects from the building face at least 6 in.</p> <p>c. All hip or gabled roofs exposed to view from adjacent public or private streets and properties shall have a minimum 4/12 pitch.</p> <p>d. Sloped roofs shall have eaves, exclusive of rain gutters, that project from the building wall at least 12 in.</p>	<p>The proposed roof is flat with an overhanging cornice.                      This standard is met.</p> <p>The proposed flat roof includes a 12-in projecting cornice that overhangs the roof edges by 3 ft.                      The applicable standard is met.</p>

## F. ROOFS AND ROOFTOP EQUIPMENT

**Purpose:** To create a visually interesting condition at the top of the building that enhances the quality and character of the building.

Standard	Findings
<p><b>Rooftop Equipment and Screening</b></p> <p>a. The following rooftop equipment does not require screening:</p> <ol style="list-style-type: none"> <li>1) Solar panels, wind generators, and green roof features.</li> <li>2) Equipment under 2 ft high, if set back a minimum of 5 ft from the outer edge of the roof.</li> </ol> <p>b. Elevator mechanical equipment may extend above the height limit a maximum of 16 ft, provided that the mechanical shaft is incorporated into the architecture of the building.</p> <p>c. Satellite dishes, communications equipment, and all other roof-mounted mechanical equipment shall be limited to 10 ft high, shall be set back a minimum of 10 ft from the roof edge, and shall be screened from public view and from views from adjacent buildings by one of the following methods:</p> <ol style="list-style-type: none"> <li>1) A screen around the equipment that is made of a primary exterior finish material used on other portions of the building, wood fencing, or masonry.</li> <li>2) Green roof features or regularly maintained dense evergreen foliage that forms an opaque barrier when planted.</li> </ol> <p>d. Required screening shall not be included in the building's maximum height calculation.</p>	<p>The proposed design includes an elevator overrun that is less than 16 ft in height. As proposed, all other rooftop equipment will be screened and set back from the roof edge as required. A condition has been established to ensure that this standard is met.</p> <p>As conditioned, the applicable standards are met.</p>
<p><b>Rooftop Structures</b></p> <p>Rooftop structures related to shared outdoor space—such as arbors, trellises, or porticos related to roof decks or gardens—shall not be included in the building's maximum height calculation, as long as they do not exceed 10 ft high.</p>	<p>No structures related to shared outdoor space are proposed on the roof. Rooftop terraces are proposed on level 5 of the six-story building. This standard is not applicable.</p>



**G. OPEN SPACE**

**Purpose: To assure adequate public and private open space in the downtown.**

Standard	Findings
<p><b>Mixed-Use and Residential Development</b></p> <p>The following standards apply to mixed-use buildings with more than 4 residential units and residential-only multifamily developments:</p> <p><b>a. Outdoor Space Required</b></p> <p>50 sq ft of private or common open space is required for each dwelling unit. The open space may be allocated exclusively for private or common use, or it may be a combination of the two uses.</p> <p><b>b. Common Open Space</b></p> <p>1) Common open space may be provided in the form of decks, shared patios, roof gardens, recreation rooms, lobbies, or other gathering spaces created strictly for the tenants and not associated with storage or circulation. Landscape buffer areas may not be used as common open space unless active and passive uses are integrated into the space and its use will not adversely affect abutting properties.</p> <p>2) With the exception of roof decks or gardens, outdoor common open space shall be abutted on at least two sides by residential units or by nonresidential uses with windows and entrances fronting on the space.</p>	<p>The proposed residential-only multifamily building provides 178 units, requiring a minimum total of 8,900 sq ft of private or common open space. The design provides a total of almost 13,000 sq ft of outdoor open space, including approximately 9,425 sq ft in private balconies and rooftop terraces; a nearly 2,600-sq-ft ground-level terrace outside the lounge and fitness room, and an approximately 950-sq-ft publicly accessible landscaped plaza at the accessway entrance from Main Street. This standard is met.</p> <p>Open space intended for common use by tenants includes a rooftop terrace on level 2 (approximately 3,440 sq ft, abutted on three sides by residential units), a lobby area (approximately 900 sq ft), lounge/club rooms on levels 1 and 2 (approximately 625 sq ft and 1,300 sq ft, respectively), and a 1,900-sq-ft fitness center on level 1. This standard is met.</p>

**G. OPEN SPACE**

**Purpose: To assure adequate public and private open space in the downtown.**

Standard	Findings
<p><b>c. Private Open Space</b></p> <ol style="list-style-type: none"> <li>1) Private open space may be provided in the form of a porch, deck, balcony, patio, terrace, or other private outdoor area.</li> <li>2) The private open space provided shall be contiguous with the unit.</li> <li>3) Balconies used for entrances or exits shall not be considered as private open space except where such exits or entrances are for the sole use of the unit.</li> <li>4) Balconies may project up to a maximum of 4 ft into the public right-of-way.</li> </ol> <p><b>d. Credit for Open Space</b></p> <p>An open space credit of 50% may be granted when a development is directly adjacent to, or across a public right-of-way from, an improved public park.</p>	<p>Private open spaces include rooftop terraces (approximately 4,540 sq ft) and unit balconies (approximately 1,440 sq ft in total). These private open spaces are contiguous with the relevant units.</p> <p>No balconies are used for common entrances or exits, and no balconies project into the public right-of-way.</p> <p>The applicable standards are met.</p> <p>The applicant has not requested any reduction in the requirement for open space, and there is no adjacent improved public park. Scott Park is nearby but is not directly adjacent to the subject property.</p> <p>This standard is not applicable.</p>

*As discussed in these findings, and as conditioned, the Planning Commission finds that the proposed design meets the applicable design standards of MMC 19.508.*

#### 10. MMC Section 19.510 Green Building Standards

Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life cycle. For the purposes of height bonuses, a green building is defined as a building that will achieve certification or similar approval documentation at any level of one of the following programs: Living Building Challenge, LEED, Earth Advantage, Passive House, Enterprise Green Communities, or Energy Trust of Oregon's New Buildings program (confirming participation in the Path to Net Zero program offering).

Height bonus eligibility will be verified at the time of building permit submittal and is contingent upon a green building certification submittal. Height bonus awards may be revoked, and/or other permits or approvals may be withheld, if the project fails to achieve the required energy reduction and/or certification.

*As discussed in Finding 6-c(2), the proposed development includes requests for height bonuses to add two stories of building height, one of which is based on the new building qualifying for an Earth Advantage certification. A condition has been established requiring confirmation of the necessary green building certification submittal and subsequent award at relevant parts of the development review process.*

*As conditioned, the Planning Commission finds that the applicable standards are met.*

#### 11. MMC Chapter 19.600 Off-Street Parking and Loading

MMC 19.600 regulates off-street parking and loading areas on private property outside the public right-of-way. The purpose of these requirements includes providing adequate space for off-street parking, minimizing parking impacts to adjacent properties, and minimizing environmental impacts of parking areas.

##### a. MMC Section 19.602 Applicability

MMC 19.602 establishes the applicability of the provisions of MMC 19.600, and MMC Subsection 19.602.3 establishes thresholds for full compliance with the standards of MMC 19.600. Development of a vacant site is required to provide off-street parking and loading areas that conform fully to the requirements of MMC 19.600.

*The proposed development includes construction of a new multifamily residential building with 178 units and associated off-street parking, which is required to conform fully to the requirements of MMC 19.600.*

*The Planning Commission finds that the provisions of MMC 19.600 are applicable to the proposed development.*

##### b. MMC Section 19.605 Vehicle Parking Quantity Requirements

MMC 19.605 establishes standards to ensure that development provides adequate vehicle parking (off-street) based on estimated parking demand.

(1) MMC Subsection 19.605.1 Minimum and Maximum Requirements

MMC Table 19.605.1 provides minimum and maximum quantity requirements for multifamily dwellings containing 3 or more dwelling units. For multifamily dwelling units located in the DMU zone, a minimum of one space per unit is required and a maximum of two spaces per unit is allowed.

*The proposed development would establish 178 multifamily dwelling units. A minimum of 178 off-street spaces are required; a maximum of 356 spaces are allowed. A total of 173 parking spaces are proposed; exemptions and by-right reductions to the quantity requirements are discussed below in Finding 11-b(2).*

(2) MMC Subsection 19.605.3 Exemptions and By-Right Reductions to Quantity Requirements

MMC 19.605.3 establishes certain exemptions and reductions to the quantity requirements of MMC 19.605.1, including a 25% reduction for locations in the DMU zone and a 10% reduction for the provision of covered and secure bicycle parking in addition to what is required by MMC Section 19.609 (at a ratio of one reduced vehicle parking space for each six additional bicycle parking spaces). Applicants are allowed to utilize multiple reductions, provided the total reduction allowed in the DMU zone is no more than 30%.

*The applicant has proposed only a small by-right reduction to parking quantity, providing a total of 173 spaces for 178 multifamily dwelling units. With the 25% reduction allowed for being in the DMU zone and reduction of two additional spaces for the 12 extra bicycle spaces, the proposed development could provide 131 spaces and meet the adjusted minimum requirement.*

*The Planning Commission finds that the proposed development meets the vehicle parking quantity requirements of MMC 19.605.*

c. MMC Section 19.606 Parking Area Design and Landscaping

MMC 19.606 establishes standards for parking area design and landscaping, to ensure that off-street parking areas are safe, environmentally sound, and aesthetically pleasing, and that they have efficient circulation.

(1) MMC Subsection 19.606.1 Parking Space and Aisle Dimension

MMC 19.606.1 establishes dimensional standards for required off-street parking spaces and drive aisles. For 90°-angle spaces, the minimum width is 9 ft and minimum depth is 18 ft, with a 9-ft minimum curb length and 22-ft drive aisles.

*The proposed development includes 31 surface parking spaces (14 in front of the new building and 17 at the rear) and 142 spaces within a parking structure on the ground floor of the building. As proposed, all of the surface parking spaces outside the building are 90°-angle stalls that measure 9 ft by 18 ft, with a minimum 22-ft-wide drive aisle. The structured parking spaces vary somewhat in dimension, with many measuring 8.5 ft wide and less than 18 ft deep. The 64 stalls within the parking stacker also deviate*

*somewhat from the minimum required dimensions, due to the nature and function of the stacker. As addressed in Finding 11-g(1), the applicant has requested and justified reduced dimensions.*

*As proposed, and as addressed in Finding 11-g(1), the applicable standards are met.*

(2) MMC Subsection 19.606.2 Landscaping

MMC 19.606.2 establishes standards for parking lot landscaping, including for perimeter and interior areas. The purpose of these landscaping standards is to provide buffering between parking areas and adjacent properties, break up large expanses of paved area, help delineate between parking spaces and drive aisles, and provide environmental benefits such as stormwater management, carbon dioxide absorption, and a reduction of the urban heat island effect.

In the DMU zone, perimeter buffer areas abutting a ROW must be at least four ft wide (measured from the inside of curbs); no buffer is required abutting another property. Within perimeter buffer areas, at least one tree must be planted every 30 lineal feet. All parking areas adjacent to a residential use must have a continuous visual screen in the abutting landscape perimeter area (opaque year-round from one ft to four ft above the ground).

At least 25 sq ft of interior landscaped area must be provided for each parking space, either a divider median between opposing rows of parking or a landscape island in the middle or at the end of a parking row. Interior landscaped areas must be a minimum of 6 ft wide (measured from the inside of curbs). For landscape islands, at least one tree must be planted per island; for divider medians, at least one tree must be planted every 40 lineal feet.

*The landscaping requirements apply to outdoor parking lots, and the proposed development includes one in front of and one behind the new building. In front of the building (to the west), 14 off-street spaces are proposed, with a 50-ft-wide buffer between the Main Street ROW and the nearest parking space; no perimeter buffer is required between the parking area and the adjacent Pietro's Pizza property to the north, though a 2-ft-wide planting strip is provided and will be planted with groundcover (the strip is too narrow for tree planting). The buffer from Main Street is designed as a public plaza and includes a 10-ft-wide planting area adjacent to the nearest parking space. A total of 350 sq ft of interior landscaping is required, and four landscaped islands totaling over 500 sq ft of area are proposed, with one tree planted in each.*

*Behind the building (to the east), 17 off-street spaces are proposed. Where adjacent to the 23<sup>rd</sup> Avenue ROW, an 8-ft-wide perimeter buffer is proposed, with trees spaced approximately 27 ft apart. Although no perimeter buffer is required where adjacent to residential properties, a landscaped strip is provided—at least 7 ft in width along the eastern perimeter of the parking lot and approximately 10 ft in width along the southern boundary. Trees are proposed approximately 30 ft apart on average and a vegetative screen of plantings is proposed along the perimeter. A total of 425 sq ft of interior*

*landscaping is required, and five landscaped islands totaling more than 650 sq ft are provided, with one tree planted in each.*

*The applicable standards are met.*

(3) MMC Subsection 19.606.3 Additional Design Standards

MMC 19.606.3 establishes various additional design standards for off-street parking areas. Paving and striping are required for all required maneuvering and standing areas. Parking bumpers or wheel stops are required to prevent vehicles from encroaching onto public rights-of-way, adjacent landscaped areas, or pedestrian walkways. Driveways and on-site circulation must be designed so that vehicles enter the ROW in a forward motion. Pedestrian access must be provided so that no off-street parking space is farther than 100 ft away from a building entrance or a walkway that is continuous, leads to a building entrance, and meets the design standards of MMC Subsection 19.504.9.E. Lighting must not cause a light trespass of more than 0.5 footcandles measured vertically at the boundaries of the site and must provide a minimum illumination of 0.5 footcandles for pedestrian walkways in off-street parking areas.

*As proposed, all surface parking areas (exterior and structured) will be paved and striped, with wheel stops to limit intrusion into landscaped areas; the spaces within the parking stacker have their own form of delineation. The overall site design and configuration of the accessway onto Main Street ensure that vehicles will enter the ROW in a forward motion. As designed, each of the 31 exterior spaces are within 100 ft of a pedestrian walkway or building entrance; all of the structured spaces are within the building itself. The requirements of MMC 19.504.9 do not apply to multifamily developments (e.g., the requirement for pervious walkways). The applicant's photometric plan shows that the pedestrian walkway serving the front parking area will be illuminated to at least the minimum standard of 0.5 footcandles. The photometric plan suggests that light trespass onto adjacent properties will be below the minimum standard of 0.5 footcandles, but it is not clear for all applicable perimeters of the site; a condition has been established to ensure that this standard is met.*

*As conditioned, the applicable standards are met.*

*As proposed and conditioned, the Planning Commission finds that the applicable design and landscaping standards of MMC 19.606 are met.*

d. MMC Section 19.608 Loading

MMC 19.608 establishes standards for off-street loading areas and empowers the Planning Manager to determine whether loading spaces are required. Off-street loading is not required in the DMU zone. Where loading spaces are required, spaces must be at least 35 ft long and 10 ft wide, with a height clearance of 13 ft, and located where not a hindrance to drive aisles or walkways.

*The subject property is zoned DMU, so no off-street loading is required. This standard is not applicable.*

e. MMC Section 19.609 Bicycle Parking

MMC 19.609 establishes standards for bicycle parking for new development of various uses, including multifamily housing. For multifamily development with 4 or more units, MMC Subsection 19.609.2 requires a minimum of 1 bicycle parking space per unit, with at least 50% of the spaces covered and/or enclosed (in lockers or a secure room). MMC Subsection 19.609.3.A provides that each bicycle parking space shall have minimum dimensions of 2 ft by 6 ft, with 5-ft-wide aisles for maneuvering. MMC Subsection 19.609.4 requires bike racks to be located within 50 ft of a main building entrance.

*For the proposed 178-unit multifamily residential development, a minimum of 178 bicycle parking spaces are required, at least 89 of which must be covered or enclosed. As proposed, 190 bicycle spaces will be provide—10 in a dedicated bike room on the ground floor, 10 outside the front entrance, 16 in a bike storage room on each of the five upper floors (total of 80 spaces), and 90 in individual units (in the form of a permanent wall-mounted rack).*

*The applicant's submittal materials include some detail about the proposed in-unit racks and shows the location of the exterior racks and of the storage rooms within the building. The group of racks outside the front of the building are within 50 ft of the garage entrance and lobby door, and the ground-floor bike storage room is accessible from the front of the building; the other bike spaces are all within the building itself. The submittal materials do not include sufficient detail to confirm that the dimensional requirements are met (including for the in-unit location of the 90 spaces in individual units), so a condition has been established to ensure that the applicable standards are met.*

*As proposed and conditioned, the Planning Commission finds that the applicable standards are met.*

f. MMC Section 19.610 Carpool and Vanpool Parking

MMC 19.610 establishes carpool parking standards for new industrial, institutional, and commercial development.

*The proposed development is for multifamily housing. This standard is not applicable.*

g. MMC Section 19.611 Parking Structures

MMC 19.611 establishes standards that regulate the design and location of structured parking, and to provide appropriate incentives for the provision of structured parking.

(1) MMC Subsection 19.611.2 Compliance with Other Sections of MMC Chapter 19.600

Structured parking is allowed to accommodate parking that is required for a specific use, or as a parking facility that is a use by itself. The space and drive aisle dimensions required in MMC 19.606.1 apply to structured parking unless the applicant requests that the dimensions be reduced and can demonstrate that the reduced dimensions can safely accommodate parking and maneuvering for

standard passenger vehicles. In addition to the standards in MMC Subsection 19.611.3, parking structures must comply with the development standards, design standards, and design guidelines for the base zone(s) in which the structure will be located.

*As proposed, the 141 off-street spaces provided within the ground-floor parking structure are intended to meet the minimum parking requirement for the new building. As noted in Finding 11-c-1, many of the structured parking stalls are only 8.5 ft wide, particularly where adjacent to concrete columns protruding between stalls. The dimensions of the parking-stacker stalls are generally smaller than the 9 ft by 18 ft requirement of MMC 19.606.1. The applicant has requested an allowance of reduced dimensions where necessary, noting that the City of Portland sets minimum stall dimensions at 8.5 ft by 16 ft. The applicant has also noted that reduced dimensions are appropriate for the parking stacker, as its particular function eliminates the need for doors to open on both sides of the stall. The parking stacker is designed to accommodate a range of vehicle sizes (small, medium, and large) and will adequately serve even most sport utility vehicles.*

*As addressed particularly in Findings 6 and 9, the parking structure, as part of the overall proposed building, has been reviewed for compliance with other applicable development standards, design standards, and design guidelines.*

*The Planning Commission finds that the proposal to reduce minimum required parking stall dimensions is allowable and that the parking structure is consistent with all applicable standards and guidelines as addressed elsewhere in these findings.*

(2) MMC Subsection 19.611.3 Standards and Design Criteria for Structured Parking

MMC 19.611.3 establishes standards and design criteria for structured parking, including a requirement that 75% of the length of any façade of a parking structure that faces a street must provide ground-floor windows or wall openings; blank walls are prohibited. The required yard setbacks between the property line and the structure must be landscaped per the requirements of MMC Subsection 19.606.2.D.3. The structure must provide safe pedestrian connections between the parking structure and the public sidewalk or principal building. The structure must provide adequate lighting to ensure motorist and pedestrian safety within the structured parking facility and connecting pedestrian ways to the principal building.

*The majority of the ground floor of the proposed building provides structured parking for the new multifamily units. On the west elevation (facing Main Street), approximately 94 ft of the overall façade length includes structured parking, with approximately 55 ft of doors and wall openings (59%). On the east elevation (facing 23<sup>rd</sup> Avenue), approximately 210 ft of the overall façade length includes structured parking, with approximately 120 ft of doors and wall openings (57%). Neither elevation meets the standard, so a variance is addressed (and approved) in Finding 15.*



*No building setbacks are required. Regardless, landscaped buffers are provided around all sides of the building where adjacent to the ground-floor parking structure. A five-ft-wide sidewalk extends from the parking structure entrance to Main Street and includes lighting. No lighting information was provided for the interior of the parking structure, so a condition has been established to ensure that there is adequate lighting for the structured spaces.*

*As conditioned, the Planning Commission finds that the applicable standards and criteria for parking structures are met.*

(3) MMC Subsection 19.611.4 Incentives for Provision of Structured Parking

MMC 19.611.4 establishes incentives for structured parking, including an allowance of an additional 0.5 sq ft of floor area above the maximum allowed FAR for every 1 sq ft of structured parking provided. All other requirements of the development standards for the base zone must be met.

*The applicant has not proposed any additional floor area above what is allowed by the limitations of building height—for residential-only buildings, FAR does not apply. This standard is not applicable.*

*As conditioned, the Planning Commission finds that the applicable standards for parking structures are met.*

*As proposed and conditioned, the Planning Commission finds that the proposed development meets all applicable standards MMC 19.600 for off-street parking.*

12. MMC Chapter 19.700 Public Facility Improvements

MMC 19.700 is intended to ensure that development, including redevelopment, provides public facilities that are safe, convenient, and adequate in rough proportion to their public facility impacts.

a. MMC Section 19.702 Applicability

MMC 19.702 establishes the applicability of the provisions of MMC 19.700, including new construction.

*The applicant proposes to develop a multifamily apartment building with a ground-floor live/work and structured parking. The proposed new construction triggers the requirements of MMC 19.700.*

b. MMC Section 19.703 Review Process

MMC 19.703 establishes the review process for development that is subject to MMC 19.700, including requiring a preapplication conference, establishing the type of application required, and providing approval criteria.

*The applicant had a preapplication conference with City staff on August 27, 2020, prior to application submittal. The proposed development triggers a Transportation Impact Study (as addressed in Finding 12-c). The proposal's compliance with MMC 19.700 has been evaluated through a concurrent Transportation Facilities Review application. Finding 12-f addresses the*

*proposal's compliance with the approval criteria established in MMC Subsection 19.703.3, particularly the required transportation facility improvements.*

c. MMC Section 19.704 Transportation Impact Evaluation

MMC 19.704 establishes the process and requirements for evaluating development impacts on the surrounding transportation system, including determining when a formal Transportation Impact Study (TIS) is necessary and what mitigation measures will be required.

*The proposed development will trigger a significant increase in trip generation above the existing bowling alley use on the site and therefore requires a TIS. City Engineering staff and the City's on-call traffic consultant (DKS) provided the applicant with a scope of work for the TIS. Kittleson & Associates, the applicant's traffic consultant, prepared the TIS that was included with the applicant's larger submittal for the proposed senior housing development.*

*The TIS identified clear vision concerns on Main Street, so curb extensions are required as proposed in the revised preliminary plans submitted on June 28, 2021. The TIS concluded that the proposed development does not trigger mitigation of impacts beyond the proposed frontage improvements. The TIS also concluded that the surrounding transportation system would continue to operate at the same level of service as before the proposed development.*

*The TIS recommended establishing a "trip cap" on the 0.2-acre portion of the site that is currently zoned R-5 but is being rezoned to Downtown Mixed Use (DMU) as part of the proposed development. The trip cap would be equivalent to 18 daily, one weekday AM peak hour, and two weekday PM peak hour trips and is needed to assure that any future development traffic on this site complies with Oregon's Transportation Planning Rule (TPR). The TIS recommended that the need for the trip cap should be re-evaluated relative to TPR requirements if this portion of the site should be redeveloped in the future. A condition has been established to ensure that the proposed trip cap remains linked to the subject property until it is re-evaluated and deemed to no longer be necessary.*

*As submitted and conditioned, the applicant's TIS, including required mitigation measures and a condition related to the proposed trip cap, is sufficient to meet the requirements of MMC 19.704.*

d. MMC Section 19.705 Rough Proportionality

MMC 19.705 requires that transportation impacts of the proposed development be mitigated in proportion to its potential impacts.

*The TIS concluded that no additional mitigation measures are required beyond the proposed frontage improvements on Main Street and 23<sup>rd</sup> Avenue.*

*As proposed, mitigation for the transportation impacts of the proposed development is consistent with MMC 19.705.*

e. MMC Section 19.707 Agency Notification and Coordinated Review

MMC 19.707 establishes provisions for coordinating land use application review with other agencies that may have some interest in a project that is in proximity to facilities they manage.

*The subject property fronts Main Street, which is classified as a collector street and is part of a transit route. The application was referred to the Oregon Department of Transportation (ODOT), Clackamas County Department of Transportation and Development (DTD), TriMet, and Metro for comment.*

*This standard is met.*

f. MMC Section 19.708 Transportation Facility Requirements

MMC 19.708 establishes the City's requirements and standards for improvements to public streets, including pedestrian, bicycle, and transit facilities.

(1) MMC Subsection 19.708.1 General Street Requirements and Standards

MMC 19.708.1 provides general standards for streets, including for access management, clear vision, street layout and connectivity, and intersection design and spacing.

*As proposed, the development is consistent with the applicable standards of MMC 19.708.1.*

(2) MMC Subsection 19.708.2 Street Design Standards

MMC 19.708.2 provides design standards for streets, including dimensional requirements for the various street elements (e.g., travel lanes, bike lanes, on-street parking, landscape strips, and sidewalks).

*No improvements to Main Street are proposed, only a reconstructed driveway access. The proposed cross section for 23<sup>rd</sup> Avenue is a 22-ft-wide local residential street. As proposed, the development will have gated emergency-only access to 23<sup>rd</sup> Avenue, and the street will be established as a turn-around route with new curb and no on-street parking. The proposed cross sections conform to applicable requirements and are consistent with MMC 19.708.2.*

*As proposed, this standard is met.*

(3) MMC Subsection 19.708.3 Sidewalk Requirements and Standards

MMC 19.708.3 provides standards for public sidewalks, including the requirement for compliance with applicable standards of the Americans with Disabilities Act (ADA).

*The proposed development includes two new ADA ramps with curb extensions on Main Street and an updated pedestrian crossing of the accessway connecting to the existing sidewalk. The future design for 23<sup>rd</sup> Avenue does not include pedestrian facilities and no pedestrian facilities are required. The proposed improvements include pedestrian access*

*to the site from 23<sup>rd</sup> Avenue and will otherwise match the existing frontage improvements on 23<sup>rd</sup> Avenue to the east, which includes curb on both sides of the street.*

*As proposed, the development is consistent with all applicable standards of MMC 19.708.3.*

(4) MMC Subsection 19.708.6 Transit Requirements and Standards

MMC 19.708.6 provides standards for transit facilities.

*The portion of Main Street fronting the proposed development is classified as a transit route in the Milwaukie Transportation System Plan (TSP). However, transit facilities are already in place. As a result, transit facility improvements are not required for the proposed development.*

*As proposed, the development is consistent with all applicable standards of MMC 19.708.6.*

*As proposed, the development will meet all applicable standards of MMC 19.708 and any other applicable City requirements.*

*The Planning Commission finds that the proposed development meets the applicable public facility improvement standards of MMC 19.700.*

13. MMC Section 19.902 Amendments to Maps and Ordinances

MMC 19.902 establishes the general process for amending the City's Comprehensive Plan and land use regulations within the Milwaukie Municipal Code. Specifically, MMC Subsection 19.902.6 establishes the process for amending the Zoning Map.

a. MMC Subsection 19.902.6.A Review Process

MMC 19.902.6.A establishes the review process for Zoning Map amendments. Generally, changes that involve fewer than five properties or that encompass less than two acres of land are quasi-judicial in nature and subject to Type III review.

*The proposed amendment, which would change the zoning of the northeastern portion of the site from Residential R-5 to Downtown Mixed Use (DMU), involves one property that encompass approximately 84,475 sq ft or 1.94 acres. The Planning Commission finds that the change is quasi-judicial in nature and therefore subject to Type III review.*

b. MMC Subsection 19.902.6.B Approval Criteria

MMC 19.902.6.B establishes the following approval criteria for changes to the Zoning Map.

(1) The proposed amendment is compatible with the surrounding area based on the following factors:

- (a) Site location and character of the area.
- (b) Predominant land use pattern and density of the area.
- (c) Expected changes in the development pattern for the area.

*The majority of the subject property is zoned DMU. It is located at the north end of downtown Milwaukie, adjacent to other DMU-zoned properties—the Pietro’s Pizza and Oddfellow’s sites to the north and a veterinary clinic to the south. Across Main Street to the west are other small commercial buildings. The northeast corner of the site is zoned residential R-5 and is adjacent to several other residential (R-5) properties to the east.*

*As established in MMC Subsection 19.304.1.A, the DMU zone allows for a wide range of uses—including retail, office, commercial, and residential—that will bring people to the downtown to live, work, shop, dine, and recreate. The City anticipates continued redevelopment of this part of the downtown area, with more of the existing single- or low-story commercial-type buildings being replaced over time with new buildings more suitable for more intensive mixed use.*

*The proposed map amendment would reconcile the nonconforming use of the R-5 portion of the site (off-street parking for the former bowling alley) with the zoning of the rest of the subject property (DMU). Interestingly, the land use designation of the whole subject property (including the portion currently zoned R-5) is Town Center (TC), so the proposed map amendment will also bring the zoning into alignment with the assigned land use designation.*

*The Planning Commission finds that the proposed amendment is compatible with the surrounding area. This standard is met.*

- (2) The need is demonstrated for uses allowed by the proposed amendment.

*The DMU zone allows a wide variety of uses, including multifamily residential housing like the proposed development. The City’s Housing Needs Analysis, prepared in 2016 and looking ahead through 2036, notes that multifamily housing of five units or more comprise approximately 30% of the needed stock for both ownership and rental housing. That is second only to single-family detached housing (46%) in terms of projected need. Although the map amendment is not critical for the proposed multifamily residential development because the area being rezoned is already used for off-street parking and would continue being used in that way, the change would remove the split-zone aspect of the site, resolve the existing nonconforming status of the parking use on the portion currently zoned R-5, and remove one more obstacle for the potential redevelopment of that portion of the site for a use allowed in the DMU zone.*

*The Planning Commission finds that the need is demonstrated for uses allowed by the proposed amendment. This standard is met.*

- (3) The availability is shown of suitable alternative areas with the same or similar zoning designation.

*The area adjacent to the eastern boundary of the subject property includes some properties zoned R-5 (moderate density) and others zoned R-1-B (residential-business office). The adjacent area is currently developed primarily with detached single-family houses, one multifamily building (14 units), and a couple of small offices. The adjacent R-5 area extends further east by two blocks, and there are several other large areas of R-5*

*zoning throughout the city (including in the Island Station, Lake Road, Ardenwald, Hector Campbell, and Lewelling neighborhoods).*

*The Planning Commission finds that there is sufficient availability of alternative areas with the R-5 zoning designation. This standard is met.*

- (4) The subject property and adjacent properties presently have adequate public transportation facilities, public utilities, and services to support the use(s) allowed by the proposed amendment, or such facilities, utilities, and services are proposed or required as a condition of approval for the proposed amendment.

*The City's Engineering Department has confirmed that the water and sewer services in the adjacent streets are adequate to serve any redevelopment needs for the subject property. The site's existing street frontages on Main Street and 23<sup>rd</sup> Avenue will be brought up to City standards by the proposed development. Any future redevelopment of the portion of the subject property being rezoned (adjacent to 23<sup>rd</sup> Avenue), beyond the proposed off-street parking use, will trigger the requirement to reevaluate the 23<sup>rd</sup> Avenue frontage and require any further improvements necessary to support a new use.*

*The Planning Commission finds that the subject property and adjacent properties presently have adequate public facilities, utilities, and services to support uses allowed by the proposed amendment. This standard is met.*

- (5) The proposed amendment is consistent with the functional classification, capacity, and level of service of the transportation system. A transportation impact study may be required subject to the provisions of Chapter 19.700.

*Main Street is classified as a collector street; 23<sup>rd</sup> Avenue is a local street. As discussed in Finding 12-c with respect to the proposed trip cap for future redevelopment, the proposed zone change from R-5 to DMU will not significantly increase the potential peak-hour trips for that portion of the site without requiring a new TIS and an assessment of whether additional transportation facility improvements are required. The proposed amendment is consistent with the functional classification, capacity, and level of service of the transportation system.*

*The Planning Commission finds that the proposed amendment is consistent with the functional classification, capacity, and level of service of the transportation system. This standard is met.*

- (6) The proposed amendment is consistent with the goals and policies of the Comprehensive Plan, including the Land Use Map.

*The Land Use Map within the City's Comprehensive Plan (Comp Plan) shows a Town Center designation for the subject property, including the portion that is currently zoned R-5. The proposed amendment will make the zoning of the overall site consistent with the property's designation on the Land Use Map.*

*The Comp Plan includes the following goals and policies that are applicable to the proposed development:*

## Section 8 Urban Design and Land Use

Goal 8.1 (Design)—Use a design framework that considers location and development typology to guide urban design standards and procedures that are customized by zoning district.

*Policy 8.1.1(a) is a policy for Downtown Milwaukie that calls for allowing a variety of dense urban uses in multi-story buildings that can accommodate a mix of commercial, retail, office, and higher density residential uses. The proposed map amendment will revise the current moderate density residential zone designation (R-5) of the northeastern portion of the site to be consistent with the majority zoning of the subject property (DMU). This change would reconcile the inconsistency of the current split zoning of the site with both the Town Center designation on the Land Use Map and the proposed multifamily residential development, which is allowed outright in the DMU zone but not even as a conditional use in the R-5 zone. The subject property is committed to the type of dense urban use allowed in the DMU zone and that should be reflected by applying the DMU zone across the entire site.*

*The Planning Commission finds that the proposed amendment is consistent with the applicable goals and policies of the Comprehensive Plan, including the Land Use Map. This standard is met.*

- (7) The proposed amendment is consistent with the Metro Urban Growth Management Functional Plan and relevant regional policies.

Within the Metro Urban Growth Management Functional Plan, Title 1 (Housing Capacity) and Title 6 (Centers, Corridors, Station Communities, and Main Streets) provide guidance related to the proposed amendment. Title 1 calls for a compact urban form to meet regional housing needs. Title 6 recognizes centers, corridors, station communities, and Main Streets as the principal centers of urban life in the region and calls for actions and investments by cities and counties to enhance this role.

*The proposed change of a small portion of the subject property from R-5 to DMU zoning will eliminate the existing and future nonconformity of the off-street parking use of the area being rezoned. By making the site's zoning uniformly DMU, the proposed amendment will facilitate any future efforts to further develop or redevelop the subject property for the uses allowed in the DMU without the need for variances.*

*The Planning Commission finds that the proposed amendment is consistent with the Metro Urban Growth Management Functional Plan and relevant regional policies. This standard is met.*

- (8) The proposed amendment is consistent with relevant State statutes and administrative rules, including the Statewide Planning Goals and Transportation Planning Rule.

Several of the Statewide Planning Goals are applicable to the proposed amendment. Goal 1 (Citizen Involvement) focuses on developing a citizen

involvement program that ensures the opportunity for all citizens to be involved in all phases of the planning process. Goal 2 (Land Use Planning) deals with establishing a land use planning process and policy framework as a basis for all decisions and actions related to use of land, assuring that all such decisions and actions have an adequate factual base. Goal 14 (Urbanization) is intended to ensure efficient use of land and provide for livable communities.

In addition, the Metro Housing Rule, as established in Oregon Administrative Rule (OAR) 660 Division 7, aims to ensure opportunity for the provision of adequate numbers of needed housing units and the efficient use of land within the metropolitan Portland urban growth boundary, to provide greater certainty in the development process and so to reduce housing costs.

*The proposed zone change has been processed with Type III (quasi-judicial) review. Notice of the public hearing was provided to property owners and current residents of properties within 300 ft of the subject properties. The Planning Commission held a public hearing on July 27, 2021, with an opportunity for testimony and comment by anyone with interest in or concern about the proposed amendment. These findings demonstrate that the proposed amendment complies with the applicable criteria for approval established in the City's municipal code.*

*The proposed amendment will resolve the current inconsistency between the subject property's Town Center land use designation in the Comp Plan and the moderate density residential zoning (R-5) of a small portion of the site. This will eliminate the existing nonconforming situation, as the area being rezoned was mostly recently used for off-street parking for a longstanding commercial recreation use (bowling alley) and will continue to be used for off-street parking for a new multifamily residential building. Any future redevelopment of the subject property will be able to be conducted without the current split-zoning designations on the site (DMU and R-5). The proposed amendment also will ensure that the subject property can be used in its entirety for the efficient and intensely urban purposes for which the majority of its area is already zoned (DMU).*

*In OAR 660-007-0035, the Metro Housing Rule sets a base minimum density of eight units per acre for new residential construction in Milwaukie. The existing R-5 zone has a minimum density of 7.0 units per acre; the proposed DMU zone has a minimum density of 30 units per acre for stand-alone multifamily dwellings. The proposed amendment exceeds the minimum density required by Metro.*

*The Planning Commission finds that the proposed amendment is consistent with relevant State statutes and administrative rules, including the Statewide Planning Goals and Transportation Planning Rule. This standard is met.*

*The Planning Commission finds that the proposed amendment meets all applicable approval criteria for zoning map changes as established in MMC 19.902.6.B. This standard is met.*



c. MMC Subsection 19.902.6.C Conditions of Approval

As per MMC 19.902.6.C, conditions of approval may be applied to Zoning Map amendments for purposes of fulfilling identified need for public facilities and/or meeting applicable regional, State, or federal regulations.

*As discussed in Finding 12-c, a condition has been established to require the documentation of a trip cap on the portion of the subject property being rezoned from R-5 to DMU. The Planning Commission finds that no conditions of approval are necessary for fulfilling identified public facility needs and/or meeting applicable regional, State, or federal regulations.*

d. MMC Subsection 19.902.6.D Modification of Official Zoning Map

For Zoning Map amendments not involving conditions of approval, the Zoning Map will be modified when the adopting ordinance goes into effect. For zoning map amendments involving conditions of approval, the Zoning Map will not be modified until all conditions of approval have been met.

*As noted above in Finding 13-c, the proposed amendment includes one condition of approval related to the proposed trip cap. Once the condition has been met, an adopting ordinance will be brought before the City Council as required by MMC Subsection 19.1006.5.D, and the Zoning Map will be modified accordingly when the ordinance goes into effect.*

*As conditioned, the Planning Commission finds that the applicable requirements for an amendment to the City's Zoning Map are met.*

14. MMC Section 19.907 Downtown Design Review

MMC 19.907 establishes the applicability, procedure, and approval criteria for design review of development downtown.

a. MMC Subsection 19.907.2 Applicability

For stand-alone multifamily residential buildings, there are a number of options for review. For stand-alone multifamily buildings that meet the objective design standards in MMC Table 19.505.3.D, Type I review is required. Type II review is required if the building satisfies the multifamily design guidelines in MMC Table 19.505.3.D, or if an applicant prefers to meet the downtown design standards of MMC Section 19.508. Type III review is required for projects that do not fit the applicability of Type I or II review, that are unable to meet one or more of the downtown design standards of MMC 19.508, or where the applicant elects to forgo Type I or II review because additional design flexibility is desired.

*As addressed in Findings 8 and 9, the applicant has elected not to address the multifamily design standards or guidelines, and the design does not meet all of the downtown design standards of MMC 19.508. The proposed development is subject to Type III review.*

b. MMC Subsection 19.907.5 Approval Criteria

MMC 19.907.5 establishes the approval criteria for Type I, II, and III downtown design review. For Type III review, projects must meet the following criteria:

- (1) Compliance with MMC Title 19.
- (2) Compliance with applicable design standards in MMC 19.508.
- (3) Substantial consistency with the purpose statement of the applicable design standard and the applicable Downtown Design Guideline(s) being utilized in place of the applicable design standard(s).

*For the proposed development, compliance with the applicable standards of MMC Title 19 is discussed throughout these findings. Finding 9 discusses the project's compliance with the applicable design standards of MMC 19.508, as well as consistency with the purpose statement of any design standards that are not met and any applicable downtown design guidelines.*

*As discussed throughout these findings, and particularly in Finding 9, and as conditioned where necessary, the proposed development satisfies the approval criteria for downtown design review.*

c. MMC Subsection 19.907.6 Report and Recommendation by Design and Landmarks Committee

For Type III downtown design review applications, the City's Design and Landmarks Committee (DLC) will hold a public meeting and prepare a report in accordance with the provisions of MMC Section 19.1011. The Planning Commission will consider the findings and recommendations contained in the downtown design review report during a public hearing on the proposal.

*The DLC held a public design review meeting on July 8, 2021, and voted unanimously to recommend approval of the proposed development. The DLC provided several recommendations for the Planning Commission's consideration; these recommendations are addressed in Finding 16.*

*As addressed throughout these findings (particularly in Findings 9 and 16), and as conditioned where necessary, the Planning Commission finds that the proposed development meets the approval criteria for Type III downtown design review.*

15. MMC Section 19.911 Variances

a. MMC Subsection 19.911.2 Applicability

MMC 19.911.2 establishes applicability standards for variance requests.

Variances may be requested to any standard of MMC Title 19, provided the request is not specifically listed as ineligible in MMC Subsection 19.911.2.B. Ineligible variances include requests that result in any of the following: change of a review type, change or omission of a procedural step, change to a definition, increase in density, allowance of a building code violation, allowance of a use that is not allowed in the

base zone, or the elimination of restrictions on uses or development that contain the word “prohibited.”

*The applicant has requested the following four variances to the downtown development standards, and staff has noted the need for a fifth variance to a requirement for parking structures: (1) to exceed the maximum allowed building setback, (2) to provide less than the minimum frontage occupancy, (3) to allow off-street parking between the building and the street-facing lot line, (4) to provide less than the required open space in the front setback, and (5) to provide less than the minimum percentage of ground-floor windows or wall openings required for parking structures.*

*The requested variances meet the eligibility requirements.*

b. MMC Subsection 19.911.3 Review Process

MMC 19.911.3 establishes review processes for different types of variances. MMC Subsection 19.911.3.B establishes the Type II review process for limited variations to certain numerical standards. MMC Subsection 19.911.3.C establishes the Type III review process for larger or more complex variations to standards that require additional discretion and warrant a public hearing.

*None of the requested variances are eligible for Type II review; all are subject to the Type III review process.*

c. MMC Subsection 19.911.4 Approval Criteria

MMC 19.911.4 establishes approval criteria for variance requests. For Type III variances, MMC Subsection 19.911.4.B.1 provides approval criteria related to discretionary relief and MMC Subsection 19.911.4.B.2 provides approval criteria related to economic hardship.

*The applicant has elected to address the economic hardship criteria for the four variances related to downtown development standards; staff has determined that it is most appropriate to address the discretionary relief criteria for the variance related to the parking structure standard.*

(1) MMC Subsection 19.911.4.B.1 Discretionary Relief Criteria

- (a) The applicant’s alternatives analysis provides, at a minimum, an analysis of the impacts and benefits of the variance proposal as compared to the baseline code requirements.

*Parking Structures (Ground-floor Windows and Wall Openings): As noted in Finding 11-g-2, neither of the street-facing façades (west and east elevations) meet the minimum standard of providing ground-floor windows or wall openings for at least 75% of the length of any street-facing façade. The west elevation (facing Main Street) has approximately 59% wall openings for the length of the façade; the east elevation has approximately 57% wall openings for the length of the façade.*

*Although short of the 75% standard, both elevations provide significant percentages of wall opening and do not present blank walls. Since the structured parking is only one part of the overall building, is only on the ground floor, and is not directly adjacent to each façade from within the building (e.g., the live/work units are part of the façade but have structured parking behind them within the building), it is relevant to note that the parking portion of the façade needs to complement and be consistent with the overall design of the building. As proposed, the percentages of façade on both elevations are consistent with and proportional to the percentages of windows and wall openings on other portions of each façade. For the west elevation, the proposed configuration and design of windows and wall openings makes it difficult to tell that there is structured parking within the building. For the east elevation, which is technically street-facing but only onto what is intended to serve as emergency access from 23<sup>rd</sup> Avenue, there is little impact to not providing additional wall openings.*

*The Planning Commission finds that the analysis of the impacts and benefits of the requested variance compared to the baseline requirements is adequate. This criterion is met.*

- (b) The proposed variance is determined to be both reasonable and appropriate, and it meets one or more of the following criteria:
- The proposed variance avoids or minimizes impacts to surrounding properties.
  - The proposed variance has desirable public benefits.
  - The proposed variance responds to the existing built or natural environment in a creative and sensitive manner.

*Parking Structures (Ground-Floor Windows and Wall Openings): As proposed, the west and east elevations of the building provide significant percentages of windows and wall openings on the ground floor. Reconfiguring those façades by inserting more openings would require the relocation of some of the interior support columns and represents a substantial change in the engineering of the structure itself. The requested deviation from the 75% standard is reasonable and appropriate and does not result in any impacts to surrounding properties. As proposed, the west and east elevations present ground floors with articulation and variety while remaining a complementary part of each overall façade. Neither elevation presents a blank wall at the ground-floor level.*

*The Planning Commission finds that the requested variance is reasonable and appropriate and that it meets one or more of the criteria provided in MMC Subsection 19.911.B.1.b.*

- (c) Impacts from the proposed variance will be mitigated to the extent practicable.

*Parking Structures (Ground-Floor Windows and Wall Openings): As noted above in Finding 15-c(1-b), there are no negative impacts from the proposed variance to this particular standard for parking structures. The west and east elevations of the building provide significant percentages of windows and wall openings on the ground floor. As proposed, the ground floor of each elevation complements the upper stories and is part of a coherent façade.*

*The Planning Commission finds that the requested variance will not result in any impacts that require mitigation. This criterion is met.*

*As proposed, the Planning Commission finds that the requested variance meets the approval criteria established in MMC 19.911.4.B.1 for Type III variances seeking discretionary relief.*

- (2) MMC Subsection 19.911.4.B.2 Economic Hardship Criteria

- (a) Due to unusual site characteristics and/or other physical conditions on or near the site, the variance is necessary to allow reasonable economic use of the property comparable with other properties in the same area and zoning district.

*The need for all four of the variances requested to development standards of the DMU zone is a result of the configuration of the subject property (i.e., its flag-lot shape) and its limited frontage on Main Street. The developable part of the property (where the new building will be located) is connected to Main Street by an accessway lot that is approximately 55 ft wide and approximately 260 ft long. The accessway portion of the site provides shared access to the Pietro's Pizza site adjacent to the north and the veterinary clinic property to the south, so there are considerable limits on how much and what kind of development can happen within the accessway. Unlike most other properties along Main Street, the subject property does not have the same physical opportunity for development that meets the standards for which variances have been requested.*

*Maximum Building Setback: As identified on MMC Figure 19.304-5, the subject property is subject to a maximum setback of 10 ft from Main Street. In addition to the constraints provided by the shared access agreement with adjacent properties, the fact that the accessway is only 55 ft along its Main Street frontage and does not expand until approximately 260 ft from the front property line, a new building essentially must be set back over 260 ft.*

*Frontage Occupancy: Aside from the constraints provided by the shared access agreement with adjacent properties, in order to meet the 50% frontage occupancy standard for the 55-ft-wide frontage, a new building would have to be at least 27.5 ft wide but would also have to consider preserving some frontage width for access. With the bulk of the developable portion of the site approximately 260 ft away from*

*the Main Street frontage, such a building would be long and narrow and thus significantly constrained in terms of what uses it could accommodate practically. Or the building could extend across most or all of the frontage and incorporate access into its design by allowing vehicles and pedestrians to pass through it to reach the rest of the site. Either way, the frontage occupancy standard presents a challenge for the subject property given its shape.*

*Off-Street Parking: As discussed above for the requested variances regarding setbacks and frontage occupancy, the “pole” portion of the subject property is very limited with respect to what can be built there. It is naturally configured for access, and its 55-ft width provides enough room for an accessway and parking but not enough space for a building. Land downtown is a valuable commodity, and off-street parking is required in conjunction with residential development. Denying the use of at least some portion of the accessway for parking would force the applicant to either reduce the number of dwelling units in the main building in order to provide more structured parking or simply reduce the number of parking spaces and therefore reduce the amenities offered by the proposed development.*

*Open Space: With over 14,000 sq ft of area in the accessway portion of the subject property, the requirement to use 50% of that area as open space represents a significant imposition and a limitation on the applicant's options for programming the site. The need to provide access for vehicles and pedestrians within the “pole” portion of the property requires at least 50% of the area. The scale of the requirement as it applies to this particular site is noteworthy and very unique compared to the circumstances of most other properties downtown.*

*The Planning Commission finds that the applicant's submittal provides an adequate analysis of the impacts and benefits of the requested variances compared to the baseline requirements. This criterion is met.*

- (b) The proposed variance is the minimum variance necessary to allow for reasonable economic use of the property.

*Maximum Building Setback: The applicant has proposed to locate the new building within approximately 10 ft of the rear of the “pole” portion of the property, allowing space for required stormwater facilities and emergency vehicle turnarounds. The variance is the minimum necessary to make the primary developable portion of the site usable for the purpose of constructing a building.*

*Frontage Occupancy: Reducing the frontage occupancy requirement to zero is the minimum variance necessary to allow for reasonable development of the larger and less constrained portion of the property.*

*Off-Street Parking: Given the fact that there are minimum off-street parking requirements in the DMU zone, it is essential to allow at least some portion of the accessway to be used for parking. Although the proposed development is eligible for some reductions in the minimum number of parking spaces required, the*

*applicant's own market analysis indicates that providing as close to a 1:1 ratio of spaces to unit is advisable. As proposed, the development provides 173 spaces for 178 units; the 14 spaces proposed in the accessway to Main Street are essential for the project to approach a 1:1 ratio. In addition, the parking spaces in the accessway are the only ones that will be available to non-residents, as the parking structure and rear parking lot are secured and limited in access.*

*Open Space: In conjunction with the argument above for retaining as many off-street parking spaces as possible, the amount of open space provided in the front setback area (approximately 7%) is as much as can be provided without reducing the number of parking spaces or constricting the access for vehicles and pedestrians.*

*The Planning Commission finds that the requested variances are reasonable and appropriate and that each meets one or more of the criteria provided in MMC Subsection 19.911.B.1.b.*

- (c) Impacts from the proposed variance will be mitigated to the extent practicable.

*Maximum Building Setback: One result of setting the new building so far back from Main Street is to make it more difficult to create an engaging pedestrian environment along Main Street, one that pulls people into the site. The provision of a pedestrian walkway that links the public sidewalk on Main Street to the building entrance, as well as an approximately 950-sq-ft pedestrian plaza between Main Street and the first on-site parking space, both serve to connect the building to the street and give pedestrians a reason to stop at the site entrance.*

*Frontage Occupancy: Allowing the narrow site frontage to remain open and free of a building results in leaving more space available for the proposed pedestrian walkway that connects the public sidewalk to the new building entrance. Similarly, the open frontage provides room for a pedestrian plaza that will serve as a point of interest and a mechanism for pulling people into the site from Main Street.*

*Off-Street Parking: Allowing off-street parking between the front property line and the building will provide more opportunities for visiting vehicles to park off the street.*

*Open Space: The open space and off-street parking standards are intertwined in this case, as the allowance of parking in the setback reduces the area available for open space. By allowing a reduction in open space, the variance allows the provision of more parking, which provides a benefit to building residents, visitors, and other nearby properties.*

*The Planning Commission finds that the requested variances will not result in any impacts that require mitigation.*

*As proposed, the Planning Commission finds that the requested variances meet the approval criteria established in MMC 19.911.4.B.2 for Type III variances making the case for economic hardship.*

*As proposed, the Planning Commission finds that all of the requested variances meet the applicable approval criteria for Type III variances as established in MMC Subsection 19.911.4.*

*The Planning Commission finds that the requested variances are allowable as per the applicable standards of MMC 19.911.*

#### 16. MMC Section 19.1011 Design Review Meetings

MMC 19.1011 establishes the procedures and requirements for the design review meetings that are required in conjunction with applications for downtown design review. These include designating the Design and Landmarks Committee (DLC) as the body that conducts design review meetings and setting rules of procedure, identifying requirements for providing public notice, and outlining the components of the recommendation report that is to be provided to the Planning Commission.

*The DLC held a public design review meeting to consider the proposed development on July 8, 2021. Public notice for that meeting was provided in advance as required by MMC Subsection 19.1011.2. This finding serves as the required report to Planning Commission.*

*The DLC reviewed the downtown design review portion of the proposed development against the approval criteria established for Type III design review in MMC Subsection 19.907.5.C. This includes review of the proposed development against the design standards of MMC Section 19.508, and where particular standards are not met the project is reviewed against the purpose statement(s) of those standards and any applicable downtown design guidelines. The facts that the DLC relied on for its determination are reflected in Finding 9. The DLC voted unanimously to approve the downtown design review portion of the development as proposed, with the conditions of approval noted in Finding 9. In addition, the DLC identified the following recommendations for consideration by the Planning Commission:*

##### ***Weather Protection***

- Recommendation to review the first-floor unit at the southeast corner of the building, which currently does not have a canopy.*
- Recommendation to revisit the main entry area, which is very close to the main parking garage entrance. The DLC understands that certain site constraints have limited options for locating the garage entrance, but the main pedestrian entrance feels like an afterthought. Consider extending the proposed pedestrian entry canopy over the parking garage entry so visual interest is drawn more to the canopy and less to the parking garage door.*

##### ***Exterior Building Materials***

- The DLC was supportive of the proposed percentages of materials that deviated from the applicable standards.*



- *Recommendation to provide additional information about the fiber cement lap siding and panels. It was suggested that a partial enlarged elevation be provided that highlights the transition points between materials, calls out where the shift occurs between horizontal lap siding and panels, and shows the intent for reveal locations within the panel portions of the siding.*
- *Recommendation to provide at least a conceptual idea of what the metal grilles at the parking level will look like, including any proposed patterns.*
- *Recommendation to add a note to the elevations calling out where the Packaged Terminal Heat Pump (PTHP) units are located—it is not clear in the elevations provided.*

### **Windows and Doors**

- *The DLC approved the window and door percentages as proposed. It was agreed that, while many of the windows have an overall square shape, the utilization of vertical mullions—as well as the vertical emphasis of the façade itself—creates an acceptable sense of verticality within the window system.*

### **Other**

- *Recommendation to provide information about exterior lighting. This element affects overall building aesthetics and also potentially affects the neighbors.*
- *Recommendation to provide more in-depth info about how the area near the pond is being addressed.*
- *Recommendation to provide further information about any Heating, Ventilation, and Air Conditioning (HVAC) equipment that will be placed on the roof. While a majority of the units have their own self-contained systems, the shared amenity spaces in the building will have rooftop equipment. The applicant team mentioned a probable placement of these rooftop units near the proposed elevator overrun. If screening will be needed for any of this equipment, it would be helpful to see what the applicant team has in mind for design.*
- *Recommendation to document the existing Kellogg Bowl building to the greatest extent possible (drawings, photos, historical info, etc.) and make this information available to the public for future research purposes. The applicant indicated that the interior has already been largely dismantled, but many building components were salvaged. Perhaps some of these components could be repurposed within the new building (i.e., find a way to pay homage to the historically significant building that the new one will replace).*
- *Recommendation to consider the question of providing future pedestrian connections through the site, particularly on the north side of the building where people are likely to cut through between 23<sup>rd</sup> Avenue and the Pietro's Pizza site.*
- *Recommendation that the applicant work with adjacent neighbors to the east to arrange screening that is amenable to all.*

17. The application was referred to the following departments and agencies on June 15, 2021:

- Milwaukie Community Development Department
- Milwaukie Engineering Department

- Milwaukie Building Department
- Milwaukie Public Works Department
- Milwaukie Police Department
- City Attorney
- Historic Milwaukie Neighborhood District Association (NDA) Chairperson and Land Use Committee (LUC)
- Clackamas Fire District #1 (CFD #1)
- ESA (City's on-call Natural Resource consultant)
- Clackamas County Department of Transportation & Development
- Metro
- ODOT
- TriMet
- North Clackamas School District
- NW Natural

The comments received are summarized as follows:

- **Alex McGladrey, Lieutenant – Deputy Fire Marshal, CFD #1:** The subject property is in an area with public water supply. Fire apparatus access roads cannot route continuously around the exterior walls of the building due to site constraints. CFD #1 accepted the application for alternative or modification of the 2019 Oregon Fire Code (pending Milwaukie Building Department approval) where the applicant proposed the following:
  - The building will be equipped with an approved NFPA 13 automatic sprinkler system throughout.
  - There are no combustibles concealed in attic spaces.
  - All stairway enclosures have a fire-resistance rating of not less than 2-hour.
  - The roof slope is essentially flat with a slope of 3/8 inch per foot (less than 33% slope).
  - Approved access is provided to the roof from all the stairways. The north and south stairways extend to the roof within a 2-hour enclosure and a compliant roof hatch.
  - Each stairwell is equipped with a standpipe; both standpipes terminate at the roof.
- **Jeremy Lorence, East Metro Engineer, NW Natural:** No comments.
- **Cindy Detchon, Assistant Superintendent of Operations, North Clackamas School District:** No comments.
- **Jennifer Backhaus, Engineering Technician III, City of Milwaukie Engineering Department:** The Engineering Department has provided comments that have been incorporated into the findings for MMC Chapter 12.16 and MMC Chapter 19.700.

- **John Vlastelicia, Senior Environmental Scientist, ESA (City’s on-call natural resources consultant):** Peer review of the applicant’s Water Quality Resource Site Assessment was provided in a memo dated July 16, 2021, and was incorporated into the findings for MMC Section 19.402.
- **Kate Hawkins, Associate Transportation Planner, ODOT:** Confirmation of the assessment provided by the applicant’s Traffic Impact Study. No other comments.
- **Richard Recker, Chair, Historic Milwaukie NDA:** No specific comments on the proposed development; general suggestion to revisit the overall process of community engagement in development review.

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**Recommended Conditions of Approval**  
**Master File #DR-2021-003, Kellogg Bowl Redevelopment**

**Conditions**

1. At the time of submittal of the associated development permit application(s), the following must be resolved:
  - a. Final plans submitted for development permit review must be in substantial conformance with the plans and drawings approved by this action, which are the revised plans and drawings received by the City on June 28, 2021, except as otherwise modified by these conditions of approval.
  - b. Provide a narrative describing all actions taken to comply with these conditions of approval. In addition, describe any changes made after the issuance of this land use decision that are not related to these conditions of approval.
  - c. As per Finding 7, revise the landscaping plan to expand the planting area along the southern property boundary adjacent to the off-site pond to provide approximately 3,250 sq ft of mitigation planting area. Increase the number of trees and shrubs within the mitigation planting area to meet the plant-spacing requirements of MMC Subsection 19.402.11.B, and provide at least one additional species of native tree in sufficient quantity so that no more than 50% of the trees are of the same genus.
  - d. As per Finding 9, provide documentation to confirm that (1) the garage doors are painted to match the color palette of the building exterior, (2) all nonresidential ground-floor windows have a visible transmittance (VT) of 0.6 or higher, and (3) all non-exempt rooftop equipment will be screened and set back from the roof edge.
  - e. As per Finding 10, provide confirmation of the necessary green building certification submittal.
  - f. As per Finding 11-c(3), provide a revised photometric plan that confirms a light trespass of no more than 0.5 footcandles measured vertically at the boundaries of the site where adjacent to parking and maneuvering areas. As per Finding 11-g(2), the revised photometric plan should also demonstrate adequate lighting to ensure motorist and pedestrian safety within the structured parking facility.
  - g. As per Finding 11-e, provide sufficient detail to confirm that the dimensional requirements for bicycle parking are met (as established in MMC Subsection 19.609.3) for the exterior racks and those in the various storage rooms. This includes showing the location of the 90 in-unit spaces.
  - h. As per Finding 12-c, record a development restriction, covenant, or similar restrictive mechanism deemed appropriate by the City Attorney to formalize the “trip cap” on the portion of the subject property being rezoned from residential R-5 to Downtown Mixed Use (DMU). The trip cap was proposed by the applicant and discussed in the applicant’s Traffic Impact Study and is described in Finding 12-c as being equivalent

to 18 daily, one weekday AM peak hour, and two weekday PM peak hour trips. The restriction or covenant will remain in place until the formerly R-5 portion of the subject property is redeveloped in the future and the trip cap can be re-evaluated relative to Oregon’s Transportation Planning Rule requirements.

2. Prior to final inspection of the required building permit and issuance of a certificate of occupancy, the following must be resolved:
  - a. Provide confirmation of the award of the necessary green building certification.
  - b. Submit documentation from the project landscape designer attesting that all required site plantings have been completed in conformance with the approved site plans and with City standards.

### **Additional Requirements**

The following items are not conditions of approval necessary to meet applicable land use review criteria. They relate to other development standards and permitting requirements contained in the Milwaukie Municipal Code (MMC) and Public Works Standards that are required at various points in the development and permitting process.

1. At the time of submittal of the associated development permit application(s), the following must be resolved:
  - a. The applicant must submit an application for Development Review in accordance with the standards established in MMC Section 19.906.
  - b. Submit a final stormwater management plan to the City of Milwaukie Engineering Department for review and approval. The plan must be prepared in accordance with Section 2 – Stormwater Design Standards of the City of Milwaukie Public Works Standards. Submit full-engineered plans for construction of all required public improvements, reviewed and approved by the City of Milwaukie Engineering Department. All utilities must conform to the Milwaukie Public Works Standards.
2. Prior to commencement of any earth-disturbing activities, the applicant must obtain a City erosion control permit.
3. Obtain a City right-of-way (ROW) permit for construction of all required public improvements.
  - a. Pay an inspection fee equal to 5.5% of the cost of the public improvements.
  - b. Provide a payment and performance bond for 100% of the cost of the required public improvements.
  - c. Install all underground utilities, including stubs for utility service prior to surfacing any streets. Utilities must be designed to minimize or eliminate infiltration of floodwaters into the system. New and replacement sanitary sewage systems must be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the systems into floodwaters. Relocate or provide a private utility easement for all utilities encroaching onto adjacent properties.

- d. Clear vision areas must be maintained at all driveways and accessways and on the corners of all property adjacent to an intersection. Remove all signs, structures, or vegetation more than 3 ft in height located in “vision clearance areas” at intersections of streets, driveways, and alleys fronting the proposed development.
  - e. The final site plan must be approved by the City Engineer prior to construction.
  - f. Provide a 12-month Maintenance Bond upon completion of the construction.
  - g. Provide a final approved set of Mylar and electronic PDF “As Constructed” drawings to the City of Milwaukie prior to final inspection.
4. Requirements from Clackamas Fire District #1 (CFD)

A land use plan review was conducted for the listed property. It has been determined that this property is in an area with public water supply. Fire apparatus access roads cannot route continuously around the exterior walls of the building due to site constraints. CFD accepted the application for alternative or modification of the 2019 Oregon Fire Code (OFC) (pending Milwaukie Building Department approval) where the applicant proposed the following:

- a. The building will be equipped with an approved NFPA 13 automatic sprinkler system throughout.
- b. There are no combustible concealed attic spaces.
- c. All stairway enclosures have a fire-resistance rating of not less than 2-hour.
- d. The roof slope is essentially flat with a slope of 3/8” per foot (less than 33% slope).
- e. Approved access is provided to the roof from all the stairways. The North and South stairways extend to the roof within a 2-hour enclosure and a compliant roof hatch.
- f. Each stairwell is equipped with a standpipe; both standpipes terminate at the roof.

Fire department access and water supply are reviewed in accordance with the 2019 edition of the OFC.

When submitting plans for fire department access and water supply approval please include the following information:

- Fire apparatus access
- Fire lanes
- Fire hydrants
- Fire lines
- Available fire flow
- FDC location (if applicable)
- Building square footage
- Construction type
- Fire flow test per NFPA 291 no older than 12 months

Note: This review is to determine if the project can be designed and constructed to meet the requirements of the OFC, and should not be considered approval of the design as submitted.

5. As discussed in Finding 11-c(2), note that perimeter parking landscaping adjacent to a residential use must have a continuous visual screen in the abutting landscape perimeter area (opaque year-round from one ft to four ft above the ground). These standards must be met at the time of planting.

6. Landscaping Maintenance

As per MMC Subsection 19.402.11.B.9, a minimum of 80% of all required mitigation plantings for WQR or HCA disturbance must remain alive on the second anniversary of the date the planting is completed. An annual report on the survival rate of all plantings must be submitted for two years.

7. Expiration of Approval

As per MMC Subsection 19.1001.7.E, the land use approval granted with this decision will expire and become void unless the following criteria are satisfied. For proposals requiring any kind of development permit, the development must complete both of the following steps:

- a. Obtain and pay for all necessary development permits and start construction within two years of land use approval.
- b. Pass final inspection and/or obtain a certificate of occupancy within four years of land use approval.





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## **Exhibit A: Land Use Application Forms**

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**MILWAUKIE PLANNING**  
 6101 SE Johnson Creek Blvd  
 Milwaukie OR 97206  
 503-786-7630  
 planning@milwaukieoregon.gov

# Application for Land Use Action

Master File #: DR-2021-003

Review type\*:  I  II  III  IV  V

**CHECK ALL APPLICATION TYPES THAT APPLY:**

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Amendment to Maps and/or Ordinances: | <input type="checkbox"/> Land Division:                       | <input type="checkbox"/> Residential Dwelling:                       |
| <input type="checkbox"/> Comprehensive Plan Text Amendment               | <input type="checkbox"/> Final Plat                           | <input type="checkbox"/> Accessory Dwelling Unit                     |
| <input type="checkbox"/> Comprehensive Plan Map Amendment                | <input type="checkbox"/> Lot Consolidation                    | <input type="checkbox"/> Duplex                                      |
| <input type="checkbox"/> Zoning Text Amendment                           | <input type="checkbox"/> Partition                            | <input type="checkbox"/> Manufactured Dwelling Park                  |
| <input checked="" type="checkbox"/> Zoning Map Amendment                 | <input type="checkbox"/> Property Line Adjustment             | <input type="checkbox"/> Temporary Dwelling Unit                     |
| <input type="checkbox"/> Code Interpretation                             | <input type="checkbox"/> Replat                               | <input checked="" type="checkbox"/> Sign Review                      |
| <input type="checkbox"/> Community Service Use                           | <input type="checkbox"/> Subdivision                          | <input checked="" type="checkbox"/> Transportation Facilities Review |
| <input type="checkbox"/> Conditional Use                                 | <input type="checkbox"/> Miscellaneous:                       | <input checked="" type="checkbox"/> Variance:                        |
| <input type="checkbox"/> Development Review                              | <input type="checkbox"/> Barbed Wire Fencing                  | <input type="checkbox"/> Use Exception                               |
| <input type="checkbox"/> Director Determination                          | <input type="checkbox"/> Mixed Use Overlay Review             | <input type="checkbox"/> Variance                                    |
| <input checked="" type="checkbox"/> Downtown Design Review               | <input type="checkbox"/> Modification to Existing Approval    | <input type="checkbox"/> Willamette Greenway Review                  |
| <input type="checkbox"/> Extension to Expiring Approval                  | <input checked="" type="checkbox"/> Natural Resource Review** | <input type="checkbox"/> Other: _____                                |
| <input type="checkbox"/> Historic Resource:                              | <input type="checkbox"/> Nonconforming Use Alteration         | <input type="checkbox"/> Use separate application forms for:         |
| <input type="checkbox"/> Alteration                                      | <input type="checkbox"/> Parking:                             | Annexation and/or Boundary Change                                    |
| <input type="checkbox"/> Demolition                                      | <input type="checkbox"/> Quantity Determination               | • Compensation for Reduction in Property                             |
| <input type="checkbox"/> Status Designation                              | <input type="checkbox"/> Quantity Modification                | • Value (Measure 37)   |
| <input type="checkbox"/> Status Deletion                                 | <input type="checkbox"/> Shared Parking                       | • Daily Display Sign   |
|  | <input type="checkbox"/> Structured Parking                   | • Appeal   |
|  | <input type="checkbox"/> Planned Development                  | • Appeal   |

**RESPONSIBLE PARTIES:**

**APPLICANT** (owner or other eligible applicant—see reverse): Pahlisch Commercial, Inc.

Mailing address: 15333 SW Sequoia Pkwy, Suite 190, Portland State/Zip: OR/97224

Phone(s): Contact Applicant's Consultant Email: Contact Applicant's Consultant

Please note: The information submitted in this application may be subject to public records law.

**APPLICANT'S REPRESENTATIVE** (if different than above): AKS Engineering & Forestry (Applicant's Consultant)

Mailing address: 12965 SW Herman Road, Suite 100, Tualatin State/Zip: OR/97062

Phone(s): (503) 563-6151 Email: chrisg@aks-eng.com

**SITE INFORMATION:**

Address: 10306 SE Main Street Map & Tax Lot(s): 11E25CC Tax Lots 401 & 402

Comprehensive Plan Designation: TC Zoning: DMU & R5 Size of property: ±1.94 acres

**PROPOSAL (describe briefly):**

Multi-family apartment building with a ground floor live/work component and structured parking. Project involves a change in zoning from R5 to DMU on a portion of the site, variances to certain development standards and Natural Resource Review.

**SIGNATURE:**

**ATTEST:** I am the property owner or I am eligible to initiate this application per Milwaukie Municipal Code (MMC) Subsection 19.1001.6.A. If required, I have attached written authorization to submit this application. To the best of my knowledge, the information provided within this application package is complete and accurate.

Submitted by: X [Signature] Date: 5/26/21

**IMPORTANT INFORMATION ON REVERSE SIDE**

\*For multiple applications, this is based on the highest required review type. See MMC Subsection 19.1001.6.B.1.

**WHO IS ELIGIBLE TO SUBMIT A LAND USE APPLICATION** (excerpted from MMC Subsection 19.1001.6.A):

**Type I, II, III, and IV** applications may be initiated by the property owner or contract purchaser of the subject property, any person authorized in writing to represent the property owner or contract purchaser, and any agency that has statutory rights of eminent domain for projects they have the authority to construct.

**Type V** applications may be initiated by any individual.

**PREAPPLICATION CONFERENCE:**

A preapplication conference may be required or desirable prior to submitting this application. Please discuss with Planning staff.

**REVIEW TYPES:**

This application will be processed per the assigned review type, as described in the following sections of the Milwaukie Municipal Code:

- Type I: Section 19.1004
- Type II: Section 19.1005
- Type III: Section 19.1006
- Type IV: Section 19.1007
- Type V: Section 19.1008

**\*\*Note:** Natural Resource Review applications **may require a refundable deposit**. Deposits require completion of a Deposit Authorization Form, found at [www.milwaukieoregon.gov/building/deposit-authorization-form](http://www.milwaukieoregon.gov/building/deposit-authorization-form).

**THIS SECTION FOR OFFICE USE ONLY:**

FILE TYPE	FILE NUMBER	AMOUNT (after discount, if any)	PERCENT DISCOUNT	DISCOUNT TYPE	DATE STAMP
Master file	DR-2021-003	\$2,000 (Type III)			First submittal = <b>March 9, 2021</b> Resubmittal = <b>May 28, 2021</b>  Payments received <b>March 10 &amp; May 19, 2021</b>
Concurrent application files	ZA-2021-001	\$1,500 (Type III)	25%	Multiple applications	
	VR-2021-004	\$1,500 (Type III)	25%	Multiple applications	
	TFR-2021-002	\$750 (Type II)	25%	Multiple applications	
	NR-2021-003	\$1,500 (Type III)	25%	Multiple applications	
	VR-2021-010	\$1,500 (Type III)	25%	Multiple applications	
		\$			
Deposit (NR only)				<input type="checkbox"/> Deposit Authorization Form received	
TOTAL AMOUNT RECEIVED: <b>\$8,750</b>			RECEIPT #:	RCD BY:	
Associated application file #s (appeals, modifications, previous approvals, etc.):					
Neighborhood District Association(s): Historic Milwaukie					
Notes: \$2,500 Engineering deposit received for review of Transportation Impact Study (TIS) by DKS.  \$3,000 deposit received for peer review of natural resource report by ESA.					



**MILWAUKIE PLANNING**  
6101 SE Johnson Creek Blvd  
Milwaukie OR 97206  
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planning@milwaukieoregon.gov

# Submittal Requirements

**For all Land Use Applications  
(except Annexations and Development Review)**

All land use applications must be accompanied by a signed copy of this form (see reverse for signature block) and the information listed below. The information submitted must be sufficiently detailed and specific to the proposal to allow for adequate review. Failure to submit this information may result in the application being deemed incomplete per the Milwaukie Municipal Code (MMC) and Oregon Revised Statutes.

Contact Milwaukie Planning staff at 503-786-7630 or [planning@milwaukieoregon.gov](mailto:planning@milwaukieoregon.gov) for assistance with Milwaukie's land use application requirements.

1. **All required land use application forms and fees**, including any deposits.

*Applications without the required application forms and fees will not be accepted.*

2. **Proof of ownership or eligibility to initiate application** per MMC Subsection 19.1001.6.A.

*Where written authorization is required, applications without written authorization will not be accepted.*

3. **Detailed and comprehensive description** of all existing and proposed uses and structures, including a summary of all information contained in any site plans.

*Depending upon the development being proposed, the description may need to include both a written and graphic component such as elevation drawings, 3-D models, photo simulations, etc. Where subjective aspects of the height and mass of the proposed development will be evaluated at a public hearing, temporary onsite "story pole" installations, and photographic representations thereof, may be required at the time of application submittal or prior to the public hearing.*

4. **Detailed statement** that demonstrates how the proposal meets the following:

A. All applicable development standards (listed below):

1. **Base zone standards** in Chapter 19.300.
2. **Overlay zone standards** in Chapter 19.400.
3. **Supplementary development regulations** in Chapter 19.500.
4. **Off-street parking and loading standards and requirements** in Chapter 19.600.
5. **Public facility standards and requirements**, including any required street improvements, in Chapter 19.700.

B. All applicable application-specific approval criteria (check with staff).

*These standards can be found in the MMC, here: [www.qcode.us/codes/milwaukie/](http://www.qcode.us/codes/milwaukie/)*

5. **Site plan(s), preliminary plat, or final plat** as appropriate.

*See Site Plan, Preliminary Plat, and Final Plat Requirements for guidance.*

6. **Copy of valid preapplication conference report**, when a conference was required.

**APPLICATION PREPARATION REQUIREMENTS:**

- Five hard copies of all application materials are required at the time of submittal. Staff will determine how many additional hard copies are required, if any, once the application has been reviewed for completeness. Provide an electronic version, if available.
- All hard copy application materials larger than 8½ x 11 in. must be folded and be able to fit into a 10- x 13-in. or 12- x 16-in. mailing envelope.
- All hard copy application materials must be collated, including large format plans or graphics.

**ADDITIONAL INFORMATION:**

- Neighborhood District Associations (NDAs) and their associated Land Use Committees (LUCs) are important parts of Milwaukie's land use process. The City will provide a review copy of your application to the LUC for the subject property. They may contact you or you may wish to contact them. Applicants are strongly encouraged to present their proposal to all applicable NDAs prior to the submittal of a land use application and, where presented, to submit minutes from all such meetings. NDA information: [www.milwaukieoregon.gov/citymanager/what-neighborhood-district-association](http://www.milwaukieoregon.gov/citymanager/what-neighborhood-district-association).
- By submitting the application, the applicant agrees that City of Milwaukie employees, and appointed or elected City Officials, have authority to enter the project site for the purpose of inspecting project site conditions and gathering information related specifically to the project site.
- Submittal of a full or partial electronic copy of all application materials is strongly encouraged.

As the authorized applicant I, (print name) \_\_\_\_\_, attest that all required application materials have been submitted in accordance with City of Milwaukie requirements. I understand that any omission of required items or lack of sufficient detail may constitute grounds for a determination that the application is incomplete per MMC Subsection 19.1003.3 and Oregon Revised Statutes 227.178. I understand that review of the application may be delayed if it is deemed incomplete.

Furthermore, I understand that, if the application triggers the City's sign-posting requirements, I will be required to post signs on the site for a specified period of time. I also understand that I will be required to provide the City with an affidavit of posting prior to issuance of any decision on this application.

Applicant Signature: X *[Signature]*  
Date: 5/26/21

**Official Use Only**

Date Received (date stamp below):

Received with resubmittal on  
**May 28, 2021**

Received by: Brett Kelter, Associate Planner



**CITY OF MILWAUKIE**  
 6101 SE Johnson Creek Blvd  
 Milwaukie OR 97206  
 503.786.7600  
 planning@milwaukieoregon.gov  
 building@milwaukieoregon.gov  
 engineering@milwaukieoregon.gov

# Preapplication Conference Report

Project ID: 20-006PA

This report is provided as a follow-up to the meeting that was held on 8/27/2020 at 10:00 AM

The Milwaukie Municipal Code is available here: [www.qcode.us/codes/milwaukie/](http://www.qcode.us/codes/milwaukie/)

## APPLICANT AND PROJECT INFORMATION

<b>Applicant:</b>	Kurt Schultz	<b>Applicant Role:</b> Architect
<b>Applicant Address:</b>	338 SW 5 <sup>th</sup> Ave, Portland, OR 97209	
<b>Company:</b>	SERA Architects	
<b>Project Name:</b>	Kellogg Bowl redevelopment	
<b>Project Address:</b>	10306 SE Main St	<b>Zone:</b> Downtown Mixed Use (DMU)
<b>Project Description:</b>	Redevelop the site to establish a six-story multifamily building with approximately 150 units	
<b>Current Use:</b>	Bowling alley	
<b>Applicants Present:</b>	Kurt Schultz (SERA Architects); Chris Goodell (AKS); Scott Melton and Kathryn Joseph (Pahlisch Development)	
<b>Staff Present:</b>	Brett Kelter, Associate Planner; Steve Adams, City Engineer; Leila Aman, Community Development Director; Matt Amos (Clackamas Fire District #1); Kate Hawkins and Avi Tayar (ODOT)	

## PLANNING COMMENTS

### Zoning Compliance (MMC Title 19)

<input checked="" type="checkbox"/>	<b>Use Standards (e.g., residential, commercial, accessory)</b>	In the Downtown Mixed Use (DMU) zone, multifamily residential housing is an outright permitted use, as per Milwaukie Municipal Code (MMC) Table 19.304.2. For properties with frontage on Main Street, ground-floor residential is permitted only on the blocks north of Scott Street (including the subject property). As per MMC Subsection 19.304.3, there are no other use limitations or restrictions for the proposed development.  A small portion of the site (NE corner) is currently zoned Residential R-5, which does not allow multifamily development or its associated off-street parking as a permitted use. For the proposed development, the zoning map would have to be amended to change the R-5 designation to DMU.
<input checked="" type="checkbox"/>	<b>Dimensional Standards</b>	The basic development standards for the DMU zone are provided in MMC Subsection 19.304.4, with additional detailed development standards provided in MMC Subsection 19.304.5.

		<p>The minimum Floor Area Ratio (FAR) is not applicable to residential-only projects like the one proposed, as stand-alone residential densities are controlled by minimum density requirements (30 units per acre); maximum FAR is 4:1.</p> <p>The base maximum height is 4 stories or 55 ft (whichever is less), with a one-story height bonus available for devoting at least one story or 25% of gross floor area to residential use and another one-story height bonus available for green building certification.</p> <p>The site is not on a block with a first-floor build-to line requirement, but the maximum building setback is 10 ft (MMC Subsection 19.304.5.D.2.b(2)). A variance may be necessary to address this standard.</p> <p>For that portion of the site with frontage on Main Street, a minimum of 50% of the frontage must be occupied by a building or buildings. The NE corner of the site also has some frontage on 23<sup>rd</sup> Avenue, and MMC Subsection 19.304.5.E.2.c allows the 50% frontage occupancy requirement to be met along one or the other frontage. As proposed, it appears the project would need to request a variance from this standard, or else revise the plans to provide a building(s) along a minimum of 50% of one frontage or another.</p> <p>At least one primary entrance must be oriented to face an abutting street (Main Street or 23<sup>rd</sup> Avenue). The applicant may elect to apply for a variance from this standard as well.</p> <p>Off-street parking is required for residential uses at the ratios established in MMC Table 19.605.1. Parking requirements are addressed in more detail below.</p> <p>As per MMC Subsection 19.304.5.H.2, where a building is set back from the sidewalk, at least 50% of the setback area must provide usable open space such as a plaza or pedestrian amenities.</p> <p>As per MMC Subsection 19.304.5.I, transition measures apply to those portions of a building within 50 ft of the adjacent R-5 zone to the east. Those measures include providing a step back of at least 6 ft for any portion of the building over 35 ft and precluding use of any height bonus.</p>
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**Land Use Review Process**

<input checked="" type="checkbox"/>	<b>Applications Needed</b>	<p>As proposed, the project would require the following applications:</p> <ul style="list-style-type: none"> <li>• Zoning Map Amendment (<u>Note:</u> Because the subject property has a Town Center (TC) land use designation in the City's Comprehensive Plan, an amendment to the Comprehensive Plan Map is not necessary.)</li> <li>• Downtown Design Review</li> <li>• Transportation Facilities Review</li> <li>• Variance (if needed)</li> <li>• Parking Modification (if needed)</li> </ul>
<input checked="" type="checkbox"/>	<b>Review Type</b>	<ul style="list-style-type: none"> <li>• Zoning Map Amendment = Type III</li> <li>• Downtown Design Review = Type I, II, or III</li> <li>• Transportation Facilities Review = Type II</li> <li>• Variance = Type III</li> <li>• Parking Modification = Type II</li> </ul>
<input checked="" type="checkbox"/>	<b>Fees</b>	<ul style="list-style-type: none"> <li>• Type III application = \$2,000</li> <li>• Type II = \$1,000</li> <li>• Type I = \$200</li> </ul> <p><u>Note:</u> For multiple applications, there is a 25% discount offered for each application fee beyond the most expensive one. Also, up to three (3) variance requests may be included in one variance application; additional variance requests would need a second variance application and fee.</p>
<input checked="" type="checkbox"/>	<b>Application Process</b>	<p>The applicant should submit a complete electronic copy of all application materials for the City's initial review. Due to the COVID pandemic, hard copies of materials are not currently desired. A determination of the application's completeness will be issued within 30 days.</p>

		<p>Once the application is deemed complete, a public hearing with the Planning Commission will be scheduled. As long as measures remain in place to address the COVID pandemic, the public hearing will be conducted online. Public notice will be sent to property owners and current residents within 300 ft of the subject property no later than 20 days prior to the hearing date. At least 14 days before the hearing, a sign giving notice of the application must be posted on the subject property, to remain until the decision is issued. Staff will prepare a report with analysis of the proposal and a recommendation for decision that will be made available one week before the hearing. Both staff and the applicant will have the opportunity to make presentations at the hearing, followed by public testimony and then deliberation by the Commission.</p> <p>Issuance of a decision starts a 15-day appeal period for the applicant and any party who establishes standing. Development permits submitted during the appeal period may be reviewed but are not typically approved until the appeal period has ended.</p>
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**Overlay Zones (MMC 19.400)**

<input type="checkbox"/>	<b>Willamette Greenway</b>	
<input checked="" type="checkbox"/>	<b>Natural Resources</b>	<p>On the City's current Natural Resources Administrative Map, a small portion of the existing off-street parking and maneuvering area on the site (including the public right-of-way on 23<sup>rd</sup> Avenue) appears to be within 50 ft of a protected water feature and may meet the definition of a Water Quality Resource (WQR). MMC Subsection 19.402.4 establishes activities that are exempt from the natural resource regulations, including any activity in a public right-of-way as well as alterations or replacement of existing parking improvements.</p> <p>It appears that the proposed development would be exempt from review against the natural resource regulations established in MMC Section 19.402.</p>
<input type="checkbox"/>	<b>Historic Preservation</b>	
<input type="checkbox"/>	<b>Flex Space Overlay</b>	

**Site Improvements/Site Context**

<input checked="" type="checkbox"/>	<b>Landscaping Requirements</b>	<p>The landscaping requirements depend on whether the applicant elects to utilize the multifamily design standards/guidelines established in MMC Subsection 19.505.3 or the downtown design standards of MMC Section 19.508.</p> <p>With the multifamily option, the standards include the following: one tree planted or preserved for every 2,000 sq ft of site area; trees planted to provide canopy coverage (within five years) of at least one-third of any common open space; sight-obscuring screening (minimum 6-ft height) along the boundary adjacent to the R-5 zone; for projects with more than 20 units, an irrigation system that minimizes water use and highly reflective paving materials (minimum solar reflective index of at least 29) on at least 25% of hardscape surfaces.</p> <p>Alternately, the applicant could choose to address the multifamily guideline for landscaping, which includes landscaping to provide a canopy for open spaces and courtyards and a buffer from adjacent properties; water-conservation strategies for landscaping; and shading of hardscapes.</p> <p>If the applicant opts to address the downtown design standards of MMC 19.508, the primary standard related to landscaping is the requirement to provide a minimum of 50 sq ft of private or common open space per dwelling unit (MMC Subsection 19.508.4.G). Common open space may take the form of decks, shared patios, roof gardens, recreation rooms, lobbies, or other gathering spaces. With the exception of roof decks or gardens, common open space must be abutted on at least two sides by residential units or by nonresidential uses with windows and entrances fronting on the open space. Private open space may take the form of a porch, deck, balcony, patio, terrace, or other private outdoor area. The private open space provided must be contiguous with the unit.</p>
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		<p>Regardless of which of the above options are chosen, the applicant must address the downtown open space requirement of MMC Subsection 19.304.5.H, which requires the provision of usable open space within at least 50% of any setback area between the building and the abutting sidewalk.</p> <p>Note that there are specific landscaping requirements for off-street parking areas, provided in MMC Section 19.606. Requirements include perimeter landscaping areas at least 4 ft wide where adjacent to the public right-of-way, though no perimeter landscaping is required adjacent to other properties in downtown zones. Interior landscaping areas are required, at the ratio of 25 sq ft per required parking space, with planting areas at least 120 sq ft in size (at least 6 ft wide) and dispersed throughout the parking area. Within perimeter areas, at least one tree is required every 30 lineal feet; within interior areas, one tree is required per landscaped island or one tree every 40 lineal feet for divider medians. Required trees must be species that can be expected to provide a 20-ft-diameter shade canopy within 10 years of planting. Where off-street parking areas are adjacent to residential uses, a continuous visual screen (fencing or landscaping) is required, from 1 ft to 4 ft above the ground.</p>
<input checked="" type="checkbox"/>	<p><b>Onsite Pedestrian/Bike Improvements (MMC 19.504, 19.606, and 19.609)</b></p>	<p>MMC Subsection 19.504.9 establishes standards for on-site pedestrian walkways, but they would only apply directly to this project if the applicant elects not to address the standards/guidelines provided in MMC Subsection 19.505.3 for multifamily projects. MMC 19.504.9 requires walkways to link the site with the public sidewalk system as well as between parts of a site where the public is invited to walk. Walkways must be constructed with a hard surface material, permeable for stormwater, no less than 5 ft in width, and lighted to a minimum average of 0.5 footcandles.</p> <p>MMC Section 19.609 establishes general standards for bicycle parking. For multifamily development, a minimum of 1 space per unit is required, and a minimum of 50% of the spaces must be covered and/or enclosed (in lockers or a secure room). Bike parking spaces must be at least 2 ft wide and 6 ft deep, with a 5-ft-wide access aisle, with 7 ft of overhead clearance for covered spaces. Bike racks must be securely anchored and designed to allow the frame and one wheel to be locked to the rack with a U-shaped shackle lock.</p> <p>If the applicant opts to address the multifamily standards of MMC 19.505.3, note that those standards for pedestrian circulation are essentially the same as those established in MMC 19.504.9. For bicycle parking, there are specific standards for the required covered parking, including that the entrance to the parking area be secured and accessible for residents only, have minimum stall dimensions of 2.5 ft by 6.5 ft, illuminated at least to a 1.0-footcandle level, and located 30 ft or less from the main entrance to the dwelling structure.</p> <p>If the applicant chooses to address the multifamily design guidelines, the pedestrian circulation should provide safe, direct, and usable pedestrian facilities and connections throughout the development. The bicycle parking should be secure, sheltered, and conveniently located.</p>
<input checked="" type="checkbox"/>	<p><b>Connectivity to surrounding properties</b></p>	<p>As per the Engineering notes for Chapter 19.700 below, an opportunity exists to provide pedestrian and bicycle connectivity from the development to Scott Park and Ledding Library in an easement to meet goals of the City's Transportation System Plan (TSP) and Public Area Requirements (PAR) for downtown. The site design should address the possibility of a bike-ped connection from the south and indicate how the proposed layout would not preclude such a connection.</p> <p>Note that, although the site does have frontage on the narrow public right-of-way on 23<sup>rd</sup> Avenue to the east, the street is essentially a dead-end local street serving a moderate-density residential area. The City has no plans to significantly widen the section of 23<sup>rd</sup> Avenue adjacent to the subject property and does not envision it being used as an accessway for anything other than pedestrians, bicycles, and emergency vehicles.</p>
<input type="checkbox"/>	<p><b>Circulation</b></p>	
<input checked="" type="checkbox"/>	<p><b>Building Design Standards (MMC 19.505)</b></p>	<p>Reference has already been made to the multifamily design standards and guidelines established in MMC Subsection 19.505.3. As noted earlier, the applicant has the option of choosing to address the multifamily standards or guidelines instead of the downtown design standards of MMC Section 19.508.</p>

<input checked="" type="checkbox"/>	<b>Downtown Design Standards (MMC 19.508)</b>	<p>Design standards for downtown development are established in MMC Section 19.508. For the proposed residential-only multifamily development, the applicant may elect to address the standards or guidelines for multifamily design provided in MMC Subsection 19.505.3; or the applicant may choose to address the downtown design standards of MMC 19.508 and/or the downtown design guidelines (provided in a separate document incorporated into the zoning code by reference).</p> <p>The downtown design standards cover seven elements: building façade details, corners, weather protection, exterior building materials, windows and doors, roofs and rooftop equipment, and open space/plazas. If the applicant elects to address these design elements (instead of the multifamily elements) and cannot meet all of the standards for a particular element, the applicant must then address the purpose statement of that design standard(s) as well as any relevant downtown design guidelines (which are established in a separate document).</p>
<b>Off-Street Parking Standards (MMC 19.600)</b>		
<input type="checkbox"/>	<b>Residential Off-Street Parking Requirements</b>	
<input checked="" type="checkbox"/>	<b>Multifamily/Commercial Parking Requirements</b>	<p>The minimum required parking ratios for multifamily development are based on the size of units being provided. For units with 800 sq ft of floor area or less, a minimum of one space per unit is required; for units over 800 sq ft in floor area, a minimum of 1.25 spaces per unit are required. Regardless of unit size, no more than two spaces per unit are allowed without a parking modification (Type II review).</p> <p>MMC Section 19.606 establishes standards for parking stall and drive aisle dimension, landscaping, and other elements such as wheel stops, pedestrian access, internal circulation, and lighting.</p> <p>As per MMC Subsection 19.304.5.G, off-street parking is not allowed within 50 ft of the Main Street right-of-way except through a Type III variance request. The applicant would have to demonstrate that the overall project meets the intent of providing a continuous façade of buildings close to Main Street, that the off-street parking area is visually screened from view from Main Street, and that the community need for the proposed parking within 50 ft of Main Street outweighs the need to provide a continuous façade of buildings in that area. Staff suggests that, if the applicant chooses to apply for a variance from this standard, the connection to Main Street should be designed as if it were a street, with parallel parking instead of perpendicular parking spaces, with sidewalks and street trees.</p>
<b>Approval Criteria</b>		
<input checked="" type="checkbox"/>	<b>Zoning Map Amendment (MMC 19.902)</b>	<p>MMC Subsection 19.902.6.B establishes the approval criteria for zoning map amendments, including consideration of compatibility, demonstrated need, the availability of suitable alternative areas, adequate public facilities, consistency of the functional classification and capacity of the transportation system, and consistency with the City's Comprehensive Plan, the Metro Urban Growth Management Functional Plan and policies, and relevant State statutes and administrative rules.</p>
<input checked="" type="checkbox"/>	<b>Downtown Design Review (MMC 19.907)</b>	<p>MMC Subsection 19.907.5 establishes the approval criteria for downtown design review, which essentially serves as development review for projects proposed in downtown zones. Although the level of review depends on the applicant's choice, the approval criteria for each level are essentially the same: compliance with all other applicable standards throughout the zoning code (MMC Title 19) and with the applicable downtown design standards of MMC Section 19.508 as well as the applicable downtown design guidelines as necessary.</p> <p>If the applicant chooses to address the multifamily design elements of MMC 19.505.3, then those standards or guidelines would replace the design elements of MMC 19.508 as approval criteria.</p>

<input checked="" type="checkbox"/>	<b>Transportation Facilities Review (MMC 19.703)</b>	MMC Subsection 19.703.3 establishes the approval criteria for transportation facilities review, including compliance with the procedures, requirements, and standards of MMC Chapter 19.700 and the Public Works Standards; provision of transportation improvements and mitigation in rough proportion to potential impacts; and compliance with the City's basic safety and functionality standards (e.g., street drainage, safe access and clear vision, public utilities, frontage improvements, level of service).
<input checked="" type="checkbox"/>	<b>Variance (MMC 19.911)</b>	<p>MMC Subsection 19.911.4.B establishes the approval criteria for Type III variances, which is the type of variance that would be needed if the applicant opts to adjust some of the standards noted above in this report. (Type II variances are limited to very specific numerical adjustments for a short list of particular standards.) There are two sets of criteria, one for general discretionary relief and one for economic hardship.</p> <p>The discretionary relief track is the more commonly chosen one, as it is usually difficult to show that unusual site characteristics preclude any reasonable economic use of the property. The discretionary relief criteria include the requirement to provide an alternatives analysis of, at a minimum, the impacts and benefits of the proposed variance as compared to the baseline code requirements. In addition, the applicant must show that the proposed variance is reasonable and appropriate and that it meets at least one of three sub-criteria (avoid or minimize impacts to surrounding properties, have desirable public benefits, or respond to the existing built or natural environment in a creative or sensitive manner). Finally, the applicant must show that impacts from the proposed variance will be mitigated to the extent practicable.</p> <p>Up to three distinct variance requests may be included in a single variance application (a fourth would require a separate variance application), but the applicant must address the approval criteria for each individual variance separately.</p>
<input checked="" type="checkbox"/>	<b>Parking Modification (MMC 19.605.2)</b>	MMC Subsection 19.605.2.C establishes the approval criteria for parking modifications. The applicant must demonstrate that the proposed parking quantities are reasonable based on existing parking demand for similar uses in other locations, parking requirements for a similar use in other jurisdictions, and professional literature about the parking demand of the proposed use. Furthermore, depending on the nature of the proposed modification (decreasing the minimum or increasing the maximum), Subsections C-2 and C-3, respectively, provide additional approval criteria.
<b>Land Division (MMC Title 17)</b>		
<input type="checkbox"/>	<b>Design Standards</b>	No boundary change or land division has been proposed.
<input type="checkbox"/>	<b>Preliminary Plat Requirements</b>	
<input type="checkbox"/>	<b>Final Plat Requirements (See Engineering Section of this Report)</b>	
<b>Sign Code Compliance (MMC Title 14)</b>		
<input checked="" type="checkbox"/>	<b>Sign Requirements</b>	Although no signage has been proposed at this point, note that MMC Section 14.16.060 provides the standards and limitations for signage proposed in downtown zones like the underlying DMU zone. Specific standards for sign lighting (including electronic display signs) are provided in MMC Section 14.24.020.
<b>Noise (MMC Title 16)</b>		
<input type="checkbox"/>	<b>Noise Mitigation (MMC 16.24)</b>	
<b>Neighborhood District Associations</b>		

<input checked="" type="checkbox"/>	<b>Historic Milwaukie</b>	<p>Prior to submitting the application, the applicant is encouraged (but not required) to present the project at a regular meeting of the relevant Neighborhood District Association (NDA), in this case the Historic Milwaukie NDA.</p> <p><b>Historic Milwaukie NDA Chair</b>  Ray Bryan  <a href="mailto:historicmilwaukienda@gmail.com">historicmilwaukienda@gmail.com</a>  Regular meeting—second Monday, 6:30pm (online)</p>
	Choose an item.	
	Choose an item.	

**Other Permits/Registration**

<input type="checkbox"/>	<b>Business Registration</b>	
<input type="checkbox"/>	<b>Home Occupation Compliance (MMC 19.507)</b>	

**Additional Planning Notes**

**Note on variances**—If the applicant elects to apply for variances from the frontage occupancy and 50-ft parking separation standards, staff suggests that the connection to Main Street should be designed as if it were a street, with parallel parking instead of perpendicular parking spaces and with sidewalks and street trees.

**ENGINEERING & PUBLIC WORKS COMMENTS**

**Public Facility Improvements (MMC 19.700)**

<input checked="" type="checkbox"/>	<b>Applicability (MMC 19.702)</b>	<p>MMC Section 19.702 establishes the applicability of the public facility improvements regulations of MMC Chapter 19.700, including to new construction and modification and/or expansions of existing structures or uses that produce a projected increase in vehicle trips.</p> <p>The proposed activity would result in a significant change in vehicle trips and does therefore trigger the applicability of MMC 19.700.</p>
<input checked="" type="checkbox"/>	<b>Transportation Facilities Review (MMC 19.703)</b>	<p>As per MMC Subsection 19.703.2, because the proposed development triggers a transportation impact study (TIS), a Transportation Facilities Review (TFR) application is required. The TFR application will be processed and reviewed concurrently with the other required applications discussed in these notes.</p>
<input checked="" type="checkbox"/>	<b>Transportation Impact Evaluation (MMC 19.704)</b>	<p>A TIS is required. A scope for the TIS will be prepared by the Engineering Department and the City's traffic consultant (DKS). Actual costs are charged for both the scope preparation and technical review of the completed TIS; a reserve deposit of \$1,500 will be collected for the scoping and a reserve deposit of \$2,500 will be collected for the technical report review.</p>
<input checked="" type="checkbox"/>	<b>Agency Notification (MMC 19.707)</b>	<p>As per the stipulations of MMC Subsection 19.707.1, the following agencies will receive notification of the proposed development: Oregon Department of Transportation (ODOT), Metro, Clackamas County, and TriMet.</p>
<input checked="" type="checkbox"/>	<b>Transportation Requirements (MMC 19.708)</b>  1. <b>General Requirements</b> 2. <b>N/A Subject to PAR</b> 3. <b>Sidewalk Requirements</b> 4. <b>Bicycle Requirements</b> 5. <b>Pedestrian/Bicycle Path Requirements</b> 6. <b>Transit Requirements</b>	<p>1. All development in downtown zones subject to MMC 19.700 is required to comply with access management standards contained in MMC 12.16, clear vision standards found in 12.24, and downtown streetscape design found in the Public Works Standards.</p> <p>Street layout connectivity and intersection design spacing must comply with standards in this chapter, including extending streets to the boundary lines of developing property where necessary to give access or allow future development of adjoining properties. The adjacent properties and the proposed development gain access from a collector street with access spacing requirements of 300 ft. The proposed development greatly impedes the adjacent properties ability to retain access with the additional trips and accessway location. Extending a public street across taxlot 1S1E25CC00402 would meet the standards</p>

		<p>in this chapter. The standards of this chapter were not clearly met by the materials made available on time of this conference.</p> <p>3. Pedestrian improvements shall be provided on the public street frontage of all development per the requirements of this chapter and goals, objectives, and policies related to Chapter 5 of the Transportation System Plan (TSP) and ADA requirements.</p> <p>4. In the City's Public Area Requirements (PAR) document, the identified bicycle elements adjacent to the development are for a shared travel lane located along Main Street. Any improvements to Main Street should include installation of sharrows or other shared lane markings as deemed appropriate by the City Engineer.</p> <p>5. Opportunity exists to provide pedestrian and bicycle connectivity from the development to Scott Park and Ledding Library in an easement to meet goals of the TSP and PAR. This could connect to the road extension mentioned above, further meeting published goals of a 21<sup>st</sup> Avenue connection north of Scott Park and the library.</p> <p>6. Transit facilities must be provided in accordance with goals objectives, and policies of chapter 7 of the TSP. Two bus stops already existing within 500 sq ft of adjacent right-of-way of the proposed developments. The bust stops are unsheltered. The applicant should reach out to Trimet to determine if ridership levels require bus shelter or safety improvements.</p>
<input checked="" type="checkbox"/>	<b>Utility Requirements (MMC 19.709)</b>	Note that an underground public stormwater pipe extends across a portion of the subject property (running southeast to northwest midway across the lot providing access to Main Street). Public utility system upsizing is not expected.
<b>Flood Hazard Area (MMC 18)</b>		
<input checked="" type="checkbox"/>	<b>Development Permit (MMC 18.04.100)</b>	The development parcel is within the 500-yr Flood Hazard Zone but is not within the 100-yr Flood Hazard Zone or Floodway, so a floodplain development permit is not required.
<input type="checkbox"/>	<b>General Standards (MMC 18.04.150)</b>	
<input type="checkbox"/>	<b>Specific Standards (MMC 18.04.160)</b>	
<input type="checkbox"/>	<b>Floodways (MMC 18.04.170)</b>	
<b>Environmental Protection (MMC 16)</b>		
<input type="checkbox"/>	<b>Weak Foundation Soils (MMC 16.16)</b>	The proposed development is not within the regulatory City-mapped soil hazard area.
<input checked="" type="checkbox"/>	<b>Erosion Control (MMC 16.28)</b>	An erosion control permit will be required for disturbances over 500 sq ft.
<input checked="" type="checkbox"/>	<b>Tree Cutting (MMC 16.32)</b>	Any tree removal within the public right-of-way or on City-owned land requires a permit.
<b>Public Services (MMC 13)</b>		
<input checked="" type="checkbox"/>	<b>Water System (MMC 13.04)</b>	Connection to water mains for service lines 2" and less shall be made by City crews. Excavation and paving shall be the responsibility of the applicant. A utility billing form must be submitted, and fees paid prior to connection. A 6" water main is adjacent to the development lot.
<input checked="" type="checkbox"/>	<b>Sewer System (MMC 13.12)</b>	All structures with sanitary facilities are required to be connected to the City sanitary sewer system. The sewer system user at all times shall, at their expense, operate and maintain the service lateral and building sewer in a sanitary manner to the collection trunk or interceptor sewer at no expense to the City. Grease interceptors and/or traps shall be provided by the

		food service facility owner to prevent FOG (fats, oil, and grease) from entering the sanitary sewer system.
<input checked="" type="checkbox"/>	<b>Stormwater Management (MMC 13.14)</b>	All stormwater shall be managed on site with mitigation facilities designed in accordance with the 2016 Portland Stormwater Management Manual. Where onsite infiltration has been determined to be unfeasible by a geotech professional, connection to the public storm sewer system may be applied for.
<input checked="" type="checkbox"/>	<b>System Development Charge (MMC 13.28.040)</b>	Based on the information available at the time of this conference, estimated SDCs: <ul style="list-style-type: none"> <li>•Transportation \$106,000</li> <li>•Stormwater \$0</li> <li>•Water \$15,000</li> <li>•Milwaukie Wastewater (WW) \$175,000</li> <li>•County WW \$1,055,000</li> <li>•Parks &amp; Rec \$616,000</li> </ul> <p>These numbers are subject to change and are provided for reference only. Final determination shall be made at building permit process.</p>
<input checked="" type="checkbox"/>	<b>Fee in Lieu of Construction (MMC 13.32)</b>	A fee in lieu of construction may be available for some public improvements. One or more of the following conditions must be met: an inability to achieve proper design standard, the creation of a safety hazard, are already included in a funded city project, cannot be completed without significant offsite improvements, or the full improvements are not proportional to proposed impacts.

**Public Places (MMC 12)**

<input checked="" type="checkbox"/>	<b>Right of Way Permit (MMC 12.08.020)</b>	Any work within the right-of-way shall require a right-of-way permit. The permit application should include a site plan for all work proposed and a traffic control plan where traffic, including bike and pedestrian, is impacted.
<input checked="" type="checkbox"/>	<b>Access Requirements (MMC 12.16.040)</b>	<p>Modification of existing nonconforming accessways shall be brought into conformance with the access management requirements of this chapter.</p> <p>Spacing for accessways on collector streets, as identified in the Milwaukie Transportation System Plan, shall be a minimum of three hundred (300) feet.</p> <p>The nearest edge of the driveway apron shall be at least ten (10) feet from the side property line. This standard does not apply to accessways shared between two (2) or more properties.</p> <p>At least three hundred (300) feet minimum distance from the nearest intersecting street face of curb to the nearest edge of driveway apron shall be maintained.</p> <p>The number of accessways on collector streets shall be minimized through the use of shared accessways and coordinated on-site circulation patterns. Within commercial, industrial, and multifamily areas, shared accessways and internal access between similar uses are required to reduce the number of access points to the higher-classified roadways, to improve internal site circulation, and to reduce local trips or movements on the street system. Shared accessways or internal access between uses shall be established by means of common access easements.</p> <p>Multifamily residential uses with more than eight (8) dwelling units, and off-street parking areas with sixteen (16) or more spaces, shall have a minimum driveway apron width of twenty-four (24) feet and a maximum width of thirty (30) feet. Commercial, office, and institutional uses shall have a minimum driveway apron width of twelve (12) feet and a maximum width of thirty-six (36) feet. Mixed commercial residential meeting the above criteria shall have an accessway between twelve (12) and (30) thirty feet.</p>

<input checked="" type="checkbox"/>	<b>Clear Vision (MMC 12.24)</b>	<p>The clear vision area for all street intersections and all street and railroad intersections shall be that area described in the most recent edition of the "AASHTO Policy on Geometric Design of Highways and Streets." The clear vision area for all street and driveway or accessway intersections shall be that area within a twenty (20)-foot radius from where the lot line and the edge of a driveway intersect.</p> <p>The clear vision area shall contain no planting, fence, wall, structure, or temporary or permanent obstruction, except for an occasional utility pole or tree, exceeding three (3) feet in height, measured from the top of the curb, or where no curb exists, from the street centerline grade. Trees exceeding this height may be located in this area; provided, all branches and foliage are removed to the height of eight (8) feet above the grade. Open wire fencing that does not obscure sight more than ten percent (10%) is allowed to a maximum height of six (6) feet.</p>
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**Additional Engineering & Public Works Notes**

**BUILDING COMMENTS**

All drawings must be submitted electronically through [www.buildingpermits.oregon.gov](http://www.buildingpermits.oregon.gov)

New buildings or remodels shall meet all the provisions of the current applicable Oregon Building Codes. All State adopted building codes can be found online at: <https://www.oregon.gov/bcd/codes-stand/Pages/adopted-codes.aspx>.

All building permit applications are electronic and can be applied for online with a valid CCB license number or engineer/architect license at [www.buildingpermits.oregon.gov](http://www.buildingpermits.oregon.gov) . Each permit type and sub-permit type are separate permits and will need to be applied for individually. Plans need to be uploaded to their specific permits in PDF format as a total plan set (not individual pages) if size allows.

Note: Plumbing and electrical plan reviews (when required) are done off site. Reviews are currently being done by Clackamas County and plan review times for these reviews vary and are not under the control of the Milwaukie building division. Please allow appropriate time to obtain these permits, as courtesy inspections are not allowed prior to permits being issued. Site utilities follow this process and require a separate plumbing permit, they are not done with the grading/utility permit supplied to Milwaukie Engineering.

If you have any building related questions, please email us at [building@milwaukieoregon.gov](mailto:building@milwaukieoregon.gov).

**Additional Building Notes**

This project will require multiple permits, including but not limited to: Building, plumbing, electrical, mechanical, fire sprinkler, fire alarms, fire line (in ground install), backflow, and site utility (plumbing). Each of these submittals is subject to the initial review time that the building department is experiencing. (Currently 6-8 weeks). Based on information provided by the applicant, a preliminary estimate of fees is included as Attachment 1.

**OTHER FEES**

<input type="checkbox"/>	<b>Construction Excise Tax</b> Affordable Housing CET – Applies to any project with a construction value of over 100,000.	<b>Calculation:</b> Valuation *12% (.12)
<input type="checkbox"/>	<b>Metro Excise Tax</b>	<b>Calculation:</b> Valuation *.12% (.0012)

	Metro – Applies to any project with a construction value of over \$100,000.	(Note: There is a cap of \$12,000 on this tax.)
<input type="checkbox"/>	<b>School Excise Tax</b> School CET – Applies to any new square footage.	<b>Calculation:</b> Commercial = \$0.67 a square foot, Residential = \$1.35 a square foot (not including garages)

**FIRE DISTRICT COMMENTS**

Matt Amos, Fire Inspector for Clackamas Fire District 1 has provided comments that are attached to these notes (see Attachment 2).

**COORDINATION WITH OTHER AGENCIES**

- Applicant must communicate directly with outside agencies. These may include the following:**
- Metro
  - Trimet
  - North Clackamas School District
  - North Clackamas Parks and Recreation District (NCPRD)
  - Oregon Parks and Recreation
  - ODOT/ODOT Rail – **See Attachment 3 for ODOT comments.**
  - Department of State Lands
  - Oregon Marine Board
  - Oregon Department of Fish and Wildlife (ODOT)
  - State Historic Preservation Office
  - Clackamas County Transportation and Development

**MISCELLANEOUS**

**State or County Approvals Needed**

<input type="checkbox"/>	<b>Boiler Approval (State)</b>	
<input type="checkbox"/>	<b>Elevator Approval (State)</b>	
<input type="checkbox"/>	<b>Health Department Approval (County)</b>	

**Arts Tax**

<input type="checkbox"/>	<b>Neighborhood Office Permit</b>	
--------------------------	-----------------------------------	--

**Other Right-of-Way Permits**

<input type="checkbox"/>	<b>Major:</b>	
<input type="checkbox"/>	<b>Minor:</b>	
<input type="checkbox"/>	<b>Painted Intersection Program Permits:</b>	
<input type="checkbox"/>	<b>artMOB Application</b>	



<input type="checkbox"/>	<input type="checkbox"/>	Traffic Control Plan (Engineering)	
<input type="checkbox"/>	Parklet:		
<input type="checkbox"/>	<input type="checkbox"/>	Parklet Application/ Planning Approval	
<input type="checkbox"/>	<input type="checkbox"/>	Engineering Approval	
<input type="checkbox"/>	<input type="checkbox"/>	Building Approval	
<input type="checkbox"/>	Sidewalk Café:		
<input type="checkbox"/>	Tree Removal Permit:		

**Infrastructure/Utilities**

**Applicant must communicate directly with utility providers. These may include the following:**

- PGE
- NW Natural
- Clackamas River Water (CRW)
- Telecomm (Comcast, Century Link)
- Water Environmental Services (WES)
- Garbage Collection (Waste Management, Hoodview Disposal and Recycling)

**Economic Development/Incentives**

<input type="checkbox"/>	Enterprise Zone:	
<input type="checkbox"/>	Vertical Housing Tax Credit:	
<input type="checkbox"/>	New Market Tax Credits:	
<input type="checkbox"/>	Housing Resources:	

**PLEASE SEE NOTE AND CONTACT INFORMATION ON THE FOLLOWING PAGE**

---

This preliminary preapplication conference information is based only on the applicant's proposal, and does not cover all possible development scenarios. Other requirements may be added after an applicant submits land use applications or building permits. City policies and code requirements are subject to change. If a note in this report contradicts the Milwaukie Municipal Code, the MMC supersedes the note. If you have any questions, please contact the City staff that attended the conference (listed on Page 1). Contact numbers for these staff are City staff listed at the end of the report.

Sincerely,

City of Milwaukie Development Review Team

---

#### **BUILDING DEPARTMENT**

<b>Samantha Vandagriff</b>	<b>Building Official</b>	<b>503-786-7611</b>
<b>Harmony Drake</b>	<b>Permit Specialist</b>	<b>503-786-7623</b>
<b>Stephanie Marcinkiewicz</b>	<b>Inspector/Plans Examiner</b>	<b>503-786-7636</b>

#### **ENGINEERING DEPARTMENT**

<b>Steve Adams</b>	<b>City Engineer</b>	<b>503-786-7605</b>
<b>Dalton Vodden</b>	<b>Associate Engineer</b>	<b>503-786-7617</b>

#### **PLANNING DEPARTMENT**

<b>Laura Weigel</b>	<b>Planning Manager</b>	<b>503-786-7654</b>
<b>Vera Koliass</b>	<b>Senior Planner</b>	<b>503-786-7653</b>
<b>Brett Kolver</b>	<b>Associate Planner</b>	<b>503-786-7657</b>
<b>Mary Heberling</b>	<b>Assistant Planner</b>	<b>503-786-7658</b>
<b>Janine Gates</b>	<b>Assistant Planner</b>	<b>503-786-7627</b>

#### **COMMUNITY DEVELOPMENT DEPARTMENT**

<b>Leila Aman</b>	<b>Community Development Director</b>	<b>503-786-7616</b>
<b>Alison Wicks</b>	<b>Development Programs Manager</b>	<b>503-786-7661</b>
<b>Christina Fadenrecht</b>	<b>Housing &amp; Economic Dev. Asst.</b>	<b>503-786-7624</b>
<b>Alicia Martin</b>	<b>Administrative Specialist II</b>	<b>503-786-7600</b>
<b>Tempest Blanchard</b>	<b>Administrative Specialist II</b>	<b>503-786-7600</b>

#### **CLACKAMAS FIRE DISTRICT**

<b>Mike Boumann</b>	<b>Lieutenant Deputy Fire Marshal</b>	<b>503-742-2673</b>
<b>Matt Amos</b>	<b>Fire Inspector</b>	<b>503-742-2661</b>

# Attachment 1

## Structural Permit

### Fees based on Valuation of 32,000,000 provided by applicant

Fee Item	Fees	
Structural plan review fee	\$ 145,537.88	
State of Oregon Surcharge - Bldg (12% of applicable fees)	\$ 23,286.06	
Technology Fee	\$ 9,702.53	
Fire life safety plan review	\$ 97,025.25	
Structural building permit fee	\$ 194,050.50	
		\$ 469,602.22

### CET Taxes collected on the building permit:

Affordable Housing - Developer incentives (Com)	\$ 153,600.00	
Affordable Housing - Programs and incentives (Com)	\$ 153,600.00	
Affordable Housing Construction Excise Tax - Admin Fee (Com)	\$ 12,800.00	
Metro Construction Excise Tax	\$ 11,400.00	
Metro Construction Excise Tax - Admin Fee	\$ 600.00	
CET - North Clackamas - Com Use	\$ 33,363.00	
CET - North Clackamas - Admin Fee - Com Use	\$ 337.00	
		\$ 365,700.00

## Mechanical Permit

### Fees based on Valuation of 3,000,000 provided by applicant

Commercial mechanical permit (based on mechanical job value)	\$ 36,954.30	
Mechanical plan review	\$ 18,477.15	
State of Oregon Surcharge - Mech (12% of applicable fees)	\$ 4,434.52	
Technology Fee	\$ 1,847.72	
		\$ 61,713.69

## Fire Sprinkler Permit

### Fees based on Valuation of 416,000 provided by applicant

Structural plan review fee	\$ 2,225.48	
Fire life safety plan review	\$ 1,483.65	
Structural building permit fee	\$ 2,967.30	
State of Oregon Surcharge - Bldg (12% of applicable fees)	\$ 356.08	
Technology Fee	\$ 148.37	
		\$ 7,180.88

## Fire Alarm Permit

### Fees based on Valuation of 200,000 provided by applicant

Structural plan review fee	\$ 1,245.38	
Fire life safety plan review	\$ 830.25	
Structural building permit fee	\$ 1,660.50	
State of Oregon Surcharge - Bldg (12% of applicable fees)	\$ 199.26	
Technology Fee	\$ 83.03	
		\$ 4,018.42

Note: These fees are based on the parameters given and subject to change of the parameters change.

Plumbing and Electrical fees are shown on the individual applications. To obtain a fee estimate for either, please fill out the application and email it to [building@milwaueiOregon.gov](mailto:building@milwaueiOregon.gov) and note that this is for estimation purposes only in the description of work box.

# Clackamas County Fire District #1 Fire Prevention Office



## E-mail Memorandum

**To:** City of Milwaukie Planning Department

**From:** Matt Amos, Fire Inspector, Clackamas Fire District #1

**Date:** 27/08/2020

**Re:** 10306 SE Main St.

---

This review is based upon the current version of the Oregon Fire Code (OFC), as adopted by the Oregon State Fire Marshal's Office. The scope of review is typically limited to fire apparatus access and water supply, although the applicant must comply with all applicable OFC requirements. When buildings are completely protected with an approved automatic fire sprinkler system, the requirements for fire apparatus access and water supply may be modified as approved by the fire code official. The following items should be addressed by the applicant:

### COMMENTS:

**A Fire Access and Water Supply plan is required for subdivisions and commercial buildings over 1000 square feet in size or when required by Clackamas Fire District #1. The plan shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, FDC location (if applicable), building square footage, and type of construction. The applicant shall provide fire flow tests per NFPA 291, and shall be no older than 12 months. Work to be completed by experienced and responsible persons and coordinated with the local water authority.**

**Prior to the start of the project, a pre-construction meeting shall be held with Clackamas Fire District #1. The project manager/contractor is responsible for developing a written fire safety program. This program shall be made available for review by Clackamas Fire District #1. The plan should address the following:**

- a. **Good Housekeeping**
- b. **On-site security**
- c. **Fire protection systems**
  - i. **For construction operations, installation of new fire protection systems as construction progress**
  - ii. **For demolition operations, preservation of existing fire protection systems during demolition**
- d. **Development of a pre-fire plan with the local fire department**

- e. **Consideration of special hazards resulting from previous occupancies**
- f. **Protection of existing structures and equipment from exposure fires resulting from construction, alteration and demolition operations.**

**For additional information please refer to the Oregon Fire Code Chapter 33, and NFPA 241.**

**Access:**

- 1) Provide address numbering that is clearly visible from the street.
- 2) Buildings exceeding 30 feet in height shall require extra width and proximity provisions for aerial apparatus.
- 3) Access streets between 26 feet and less than 32 feet in width must have parking restricted to one side of the street. Access streets less than 26 feet in width must have parking restricted on both sides of the street. No parking restrictions for access roads 32 feet wide or more.

**Water Supply**

- 1) All new buildings shall have a firefighting water supply that meets the fire flow requirements of the Fire Code. Maximum spacing between hydrants on street frontage shall not exceed 500 feet. Additional private on-site fire hydrants may be required for larger buildings. Fire sprinklers may reduce the water supply requirements.
- 2) The fire department connection (FDC) for any fire sprinkler system shall be placed as near as possible to the street, and within 100 feet of a fire hydrant.



Oregon

Kate Brown, Governor

Department of Transportation

Region 1 Headquarters  
 123 NW Flanders Street  
 Portland, Oregon 97209  
 (503) 731.8200  
 FAX (503) 731.8259

September 1, 2020

ODOT #11789

## ODOT Response

<b>Project Name:</b> Kellogg Bowl Redevelopment	<b>Applicant:</b> Kurt Schultz, SERA Architects
<b>Jurisdiction:</b> City of Milwaukie	<b>Jurisdiction Case #:</b> N/A
<b>Site Address:</b> 10306 SE Main St, Milwaukie, OR	<b>Legal Description:</b> 01S 01E 25CC <b>Tax Lot(s):</b> 00401
<b>State Highway:</b> OR 99E	<b>Mileposts:</b> 5.53

The site of this proposed land use action is in the vicinity of OR 99E (SE McLoughlin Blvd). ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

**Please direct the applicant to the District Contact indicated below to determine permit requirements and obtain application information.**

### COMMENTS/FINDINGS

ODOT has reviewed the submitted materials for the proposed six-story apartment building at 10306 SE Main Street in Milwaukie. The proposal includes approximately 150 residential apartments of new construction, where the existing Kellogg Bowl is currently located.

Given the site's proximity to OR 99E and the OR 224 on and off ramps, ODOT recommends that the applicant conduct a traffic study to evaluate impacts to the state highway system. Please contact the ODOT traffic representative listed below in order to scope the traffic study.

### ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL

#### Traffic Impacts

- The applicant shall submit a traffic impact analysis to assess the impacts of the proposed use on the State highway system. The analysis must be conducted by a Professional Engineer registered in Oregon. **Contact the ODOT Traffic representative identified below and the local jurisdiction to scope the study.**

**Please send a copy of the Land Use Notice to:**

ODOT Region 1 Planning  
 Development Review  
 123 NW Flanders St  
 Portland, OR 97209

[ODOT\\_R1\\_DevRev@odot.state.or.us](mailto:ODOT_R1_DevRev@odot.state.or.us)

Development Review Planner: Kate Hawkins	503.731.3049 kate.w.hawkins@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 abraham.tayar@odot.state.or.us
District Contact: District 2B	d2bup@odot.state.or.us



# Henley Place Milwaukie, Oregon

## Preliminary Stormwater Report

**Date:** March 3, 2021

**Client:** Pahlisch Commercial, Inc.  
15333 Sequoia Parkway, Suite 190  
Portland, OR 97224

**Engineering Contact:** Jonathon Morse, PE  
503-563-6151 | jonm@aks-eng.com

**Prepared By:** Greg Harris

**Engineering Firm:** AKS Engineering & Forestry, LLC  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062

**AKS Job Number:** 8145



RENEWAL DATE: 12/31/22



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**Appendix E:** Geotechnical Engineer and Infiltration Report

---

## Preliminary Stormwater Report

HENLEY PLACE  
MILWAUKIE, OREGON

### 1.0 Purpose of Report

The purpose of this report is to analyze the effects the proposed development will have on the existing stormwater conveyance system; document the criteria, methodology, and informational sources used to design the proposed stormwater system; and present the results of the preliminary hydraulic analysis.

### 2.0 Project Location/Description

The subject site includes Tax Lots 401 and 402 of Clackamas County Assessor's Map 1S 1E 25CC which is located approximately 600-feet north of the intersection of SE Scott Street and SE Main Street and encompasses approximately 1.94 acres.

This project will consist of the removal of an existing commercial structure (and associated parking areas, utilities, etc.), and the construction of a new apartment building with surface parking facilities and private stormwater management systems.

### 3.0 Regulatory Design Criteria

The subject site is located within the City of Milwaukie and is required to meet the current (2020) City of Portland *Stormwater Management Manual* (SWMM) standards as amended and adopted by Section 2 of the City of Milwaukie *Public Works Standards (March 1, 2021)*.

#### 3.1. Stormwater Quantity

Per City of Milwaukie *Public Works Design Standards, Section 2.0013 - Minimum Design Criteria*:

*Storm detention facilities shall be designed to provide storage up to the 25-year storm event, with the safe overflow conveyance of the 100-year storm event. Calculations of site discharge for both the existing and proposed conditions shall be required using the Unit Hydrograph Method. Storms to be evaluated shall include the 2-, 5-, 10-, 25-, and 100-year storm events. Allowable post-development discharge rate for the 2-, 5-, 10-, and 25-year storm events shall be that of the predevelopment discharge rate. An outfall structure such as a 'V-Notch' weir or a single or multiple orifice structure shall be designed to control the release rate for the above events. No flow control orifice smaller than 1 inch shall be allowed. If the maximum release rate cannot be met with all the site drainage controlled by a single 1-inch orifice, the allowable release rate provided by a 1-inch orifice will be considered adequate as approved by the City Engineer.*

Due to the presence of a seasonally-high groundwater table, stormwater detention requirements will be achieved by using subsurface stormwater detention pipes sized to store the 2-year through 25-year design storm events prior to discharging to the public system. The rate of stormwater runoff leaving the detention pipes will be controlled using flow control manholes that have been designed to limit the post-developed release rates to not exceed their respective pre-developed levels.

The subsurface stormwater detention and flow control system has also been designed with an emergency overflow outlet that can safely convey the 100-year storm event to the public system.

### 3.2. Stormwater Quality

Per City of Milwaukie *Public Works Design Standards, Section 2.0013 - Minimum Design Criteria*:

*All water quality facilities shall meet the design requirements of the current City of Portland, Stormwater Management Manual, as amended and adopted by the City of Milwaukie.*

Stormwater quality requirements will be achieved by using Manufactured Stormwater Treatment Technologies (MSTTs) that have been approved for use within the City of Portland and designed in accordance with Chapter 6 of the City of Portland SWMM.

## 4.0 Design Methodology

The Santa Barbara Urban Hydrograph (SBUH) Method was used to analyze stormwater runoff from the site. This method uses the Natural Resource Conservation Service (NRCS) Type 1A 24-hour design storm. HydroCAD computer software aided in the stormwater analysis calculations. Representative pre-developed and post-developed runoff Curve Numbers (CN) were obtained from the City of Portland SWMM and the NRCS *Urban Hydrology for Small Watersheds* (Technical Release 55). See Appendix C for additional information.

## 5.0 Design Parameters

### 5.1. Design Storms

Table 5-1 provides a summary of the 24-hour rainfall intensities used as well as the design storms recurrence interval and were obtained from the 2014 City of Milwaukie Stormwater Master Plan –*Table 3-1, Design Storm Depths*:

**Table 5-1: Rainfall Intensities**

24-hour Design Storm Event	Total Precipitation Depth (Inches)
Water Quality	1.0
2-Year	2.4
5-Year	3.0
10-Year	3.5
25-Year	4.0
100-Year	4.7

### 5.2. Pre-Developed Site Conditions

#### 5.2.1. Site Topography

The majority of the existing site consists of a paved parking lot with slopes varying from  $\pm 1$  to  $\pm 3$  percent. The parking areas are sloped to direct stormwater runoff towards existing area drains where it is captured and conveyed to an existing 36-inch storm main that runs diagonally across Tax Lot 402.

#### 5.2.2. Land Use

The existing site is currently occupied by a commercial building with surface parking facilities and minimal on-site landscaping.

### 5.3. Soil Type

The on-site soils are classified as Urban Land and Woodburn Silt Loam, according to the Natural Resources Conservation Service (NRCS) Soil Survey for Clackamas County (Appendix D). Table 5-2 provides a summary of the Hydrologic Soil Group rating for each soil type:

**Table 5-2: Hydrologic Soil Groupings**

NRCS Map Unit Identification	NRCS Soil Classification	Hydrologic Soil Group Rating
82	Urban Land	No/Unclassified
91B	Woodburn Silt Loam	C

### 5.4. Post-Developed Site Conditions

#### 5.4.1. Site Topography

The on-site topography will be modified with cuts and fills to accommodate the construction of a new multifamily apartment building, surface parking facilities/access, and private stormwater facilities.

#### 5.4.2. Land Use

The post-developed land use will consist of a six-story multifamily apartment building, with associated parking, sidewalks, and underground utilities.

#### 5.4.3. Post-Developed Site Parameters

See the HydroCAD Analysis in the attached appendices.

#### 5.4.4. Description of Off-Site Contributing Basins

The adjacent commercial properties share a common parking area with the project. However, they appear to have independent stormwater management systems and do not direct stormwater runoff towards the subject site.

## 6.0 Stormwater Analyses

### 6.1. Proposed Stormwater Conduit Sizing and Inlet Spacing

The proposed on-site area drain inlets will be spaced to provide adequate drainage for the new parking areas and to convey stormwater runoff to the subsurface stormwater detention facilities. The stormwater conveyance pipes will be sized using Manning’s equation to accommodate the peak flows from the 25-year storm event.

Stormwater runoff leaving the subject site via the flow control manholes will be routed to a new manhole that will be installed over the existing 36-inch public storm main crossing Tax Lot 402.

### 6.2. Proposed Stormwater Quality Control Facility

Due to a seasonally-high groundwater table, this project will use City of Portland and City of Milwaukie approved MSTTs (stormwater filter cartridges) to provide water quality treatment for stormwater runoff generated by the new drive aisles and parking areas prior to being conveyed to the detention pipe. Stormwater runoff generated by the new buildings roof area will be routed through a sumped settling manhole prior to being conveyed to the detention pipe.

Due to site topography, a portion of the new buildings’ patio and landscaped open space on the south side of the new building will be graded to direct stormwater runoff to sumped landscape drains where it will be captured and conveyed to the existing public storm system.

### 6.3. Proposed Stormwater Quantity Facility

The subsurface stormwater detention pipes have been sized to detain the 2-year through 25-year design storm events prior to discharging to the public. As designed, the post-developed release rates are less than the pre-developed release rates, thus meeting City requirements.

**Table 6-1: Pre-Developed vs Post-Developed Stormwater Runoff Comparison**

Design Storm Event	Pre-Developed Runoff (cfs)	Post-Developed Runoff (cfs)
2-Year	0.25	0.18
5-Year	0.43	0.22
10-Year	0.60	0.39
25-Year	0.78	0.64

### 7.0 Downstream Analysis

Detained stormwater runoff leaving the subject site will be discharged to the public storm system via a new manhole that is to be installed over the existing 36-inch storm main. Stormwater runoff entering the public storm system is then conveyed for approximately 500 feet underground before ultimately discharging to Johnson Creek.

The private stormwater system has been designed to limit the post-developed stormwater runoff release rates to the pre-developed release rates.

There are no known downstream deficiencies and a downstream analysis is not proposed at this time.

### 8.0 Operation and Maintenance

Operation and maintenance (O&M) of the proposed stormwater management facilities will be the responsibility of the property owner. An O&M procedure, which includes maintenance procedures and inspection frequencies, will be provided with the project’s final stormwater report.

## **Figure 1: Site Vicinity Map with Aerial Overlay**

---



DATE: 03/03/2021



**HENLEY PLACE  
SITE VICINITY MAP WITH AERIAL OVERLAY**

**FIGURE  
1**

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.563.6151 [WWW.AKS-ENG.COM](http://WWW.AKS-ENG.COM)



DRWN: GSH  
CHKD: JMM  
AKS JOB:  
8145



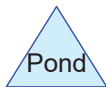
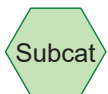
## Appendix A: Pre-Developed Hydrograph



Pre-Developed Site



Pre-Developed Flow Summary



**Routing Diagram for 8145 Pre-Developed**  
Prepared by AKS Engineering and Forestry, llc, Printed 3/1/2021  
HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

## 8145 Pre-Developed

Prepared by AKS Engineering and Forestry, llc  
HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

Printed 3/1/2021  
Page 2

### Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
33,423	81	NRCS 81 - Urban Land (Ex)
50,637	79	NRCS 91B - Woodburn Silt Loam (Ex)
<b>84,060</b>	<b>80</b>	<b>TOTAL AREA</b>

**8145 Pre-Developed**

Type IA 24-hr 2-Year Storm Rainfall=2.40"

Prepared by AKS Engineering and Forestry, llc

Printed 3/1/2021

HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

Page 3

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Ex: Pre-Developed Site**

Runoff Area=84,060 sf 0.00% Impervious Runoff Depth=0.82"

Flow Length=100' Slope=0.0500 '/' Tc=17.2 min CN=80 Runoff=0.25 cfs 5,747 cf

**Link Pre: Pre-Developed Flow Summary**

Inflow=0.25 cfs 5,747 cf

Primary=0.25 cfs 5,747 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 5,747 cf Average Runoff Depth = 0.82"**  
**100.00% Pervious = 84,060 sf 0.00% Impervious = 0 sf**

**8145 Pre-Developed**

Type IA 24-hr 2-Year Storm Rainfall=2.40"

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**Summary for Subcatchment Ex: Pre-Developed Site**

Runoff = 0.25 cfs @ 8.01 hrs, Volume= 5,747 cf, Depth= 0.82"

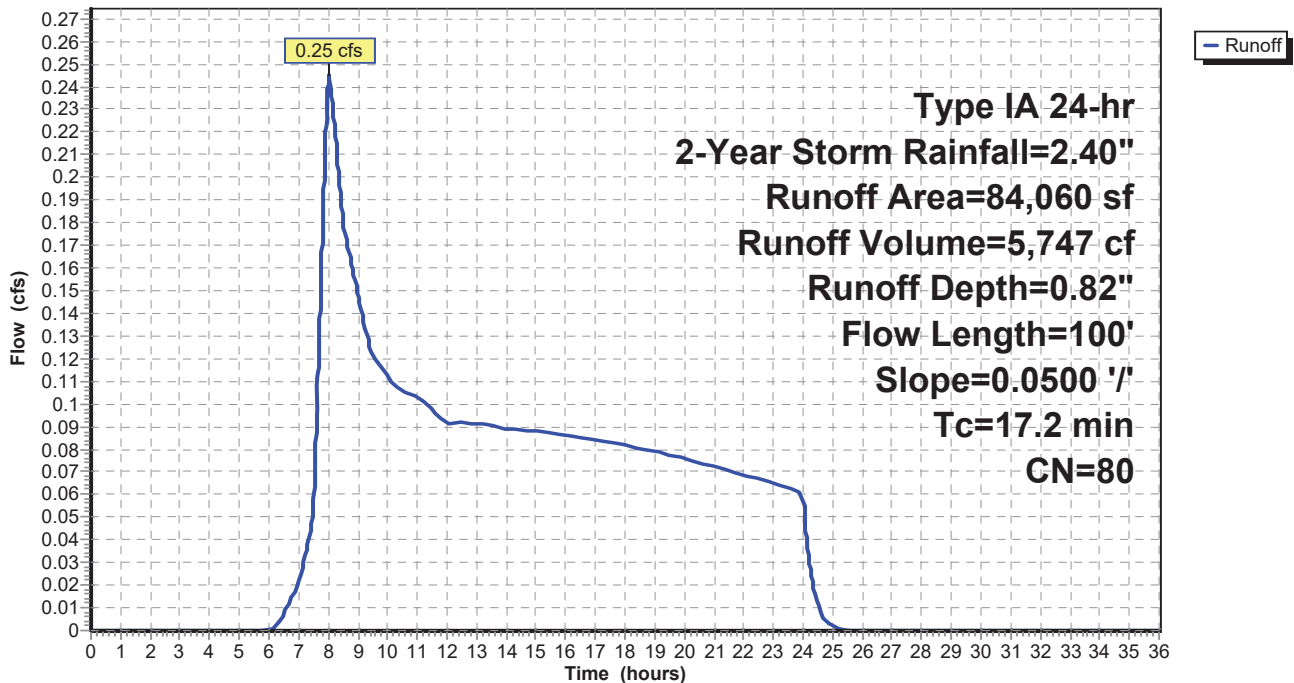
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 2-Year Storm Rainfall=2.40"

	Area (sf)	CN	Description
*	33,423	81	NRCS 81 - Urban Land
*	50,637	79	NRCS 91B - Woodburn Silt Loam
	84,060	80	Weighted Average
	84,060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0500	0.10		Sheet Flow, Pre-Developed Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.40"

**Subcatchment Ex: Pre-Developed Site**

Hydrograph



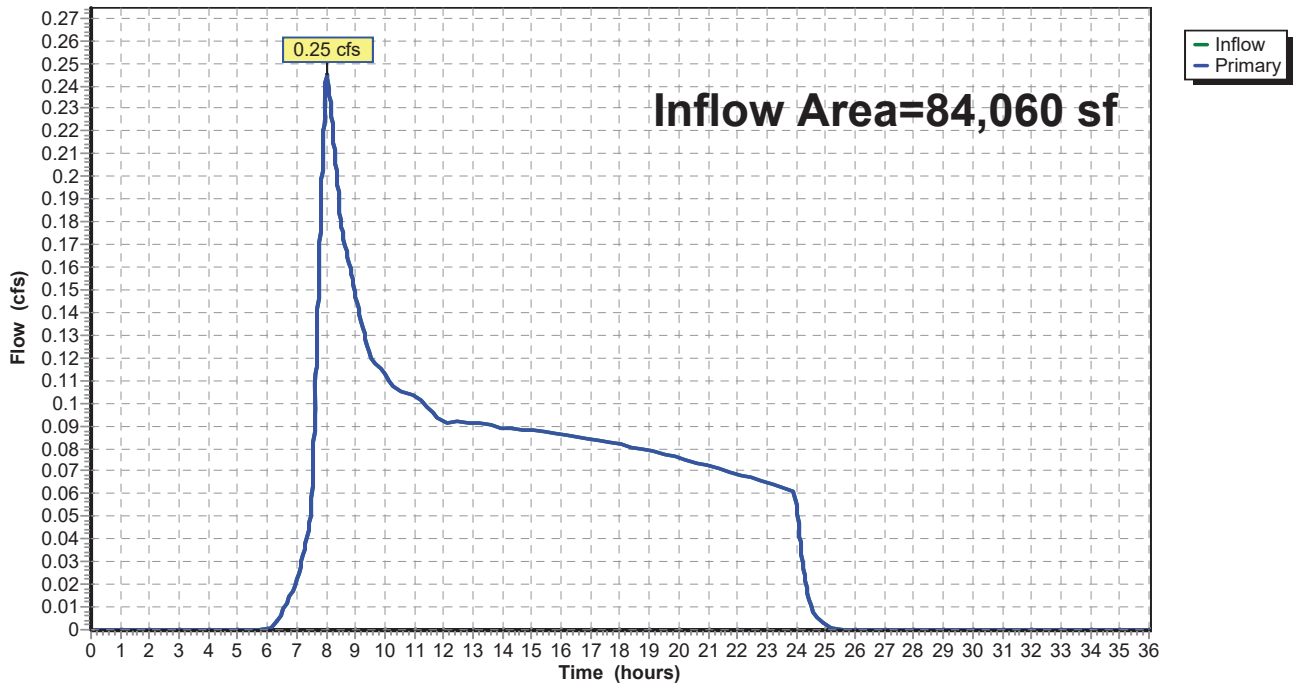
### Summary for Link Pre: Pre-Developed Flow Summary

Inflow Area = 84,060 sf, 0.00% Impervious, Inflow Depth = 0.82" for 2-Year Storm event  
Inflow = 0.25 cfs @ 8.01 hrs, Volume= 5,747 cf  
Primary = 0.25 cfs @ 8.01 hrs, Volume= 5,747 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Pre: Pre-Developed Flow Summary

Hydrograph



**8145 Pre-Developed**

Type IA 24-hr 5-Year Storm Rainfall=3.00"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Ex: Pre-Developed Site**

Runoff Area=84,060 sf 0.00% Impervious Runoff Depth=1.25"

Flow Length=100' Slope=0.0500 '/' Tc=17.2 min CN=80 Runoff=0.43 cfs 8,756 cf

**Link Pre: Pre-Developed Flow Summary**

Inflow=0.43 cfs 8,756 cf

Primary=0.43 cfs 8,756 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 8,756 cf Average Runoff Depth = 1.25"**  
**100.00% Pervious = 84,060 sf 0.00% Impervious = 0 sf**

**8145 Pre-Developed**

Type IA 24-hr 5-Year Storm Rainfall=3.00"

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**Summary for Subcatchment Ex: Pre-Developed Site**

Runoff = 0.43 cfs @ 8.01 hrs, Volume= 8,756 cf, Depth= 1.25"

Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 5-Year Storm Rainfall=3.00"

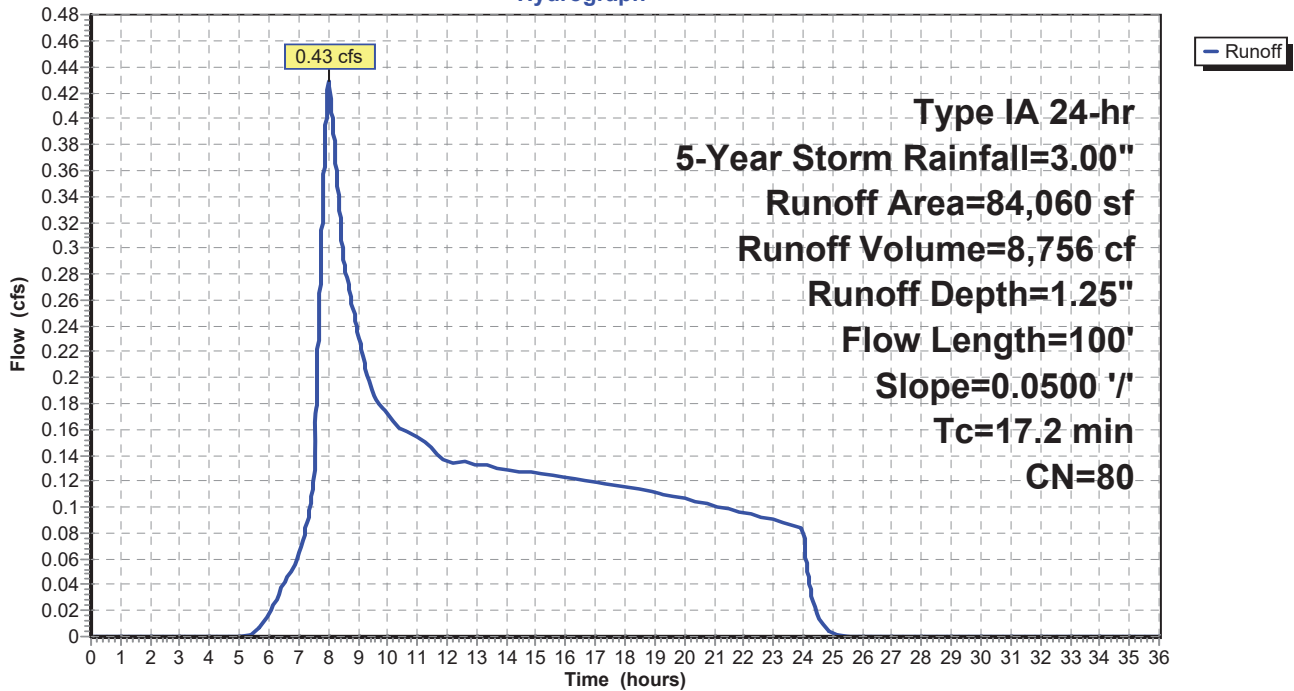
	Area (sf)	CN	Description
*	33,423	81	NRCS 81 - Urban Land
*	50,637	79	NRCS 91B - Woodburn Silt Loam
	84,060	80	Weighted Average
	84,060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0500	0.10		

**Sheet Flow, Pre-Developed Sheet Flow**  
Woods: Light underbrush n= 0.400 P2= 2.40"

**Subcatchment Ex: Pre-Developed Site**

Hydrograph



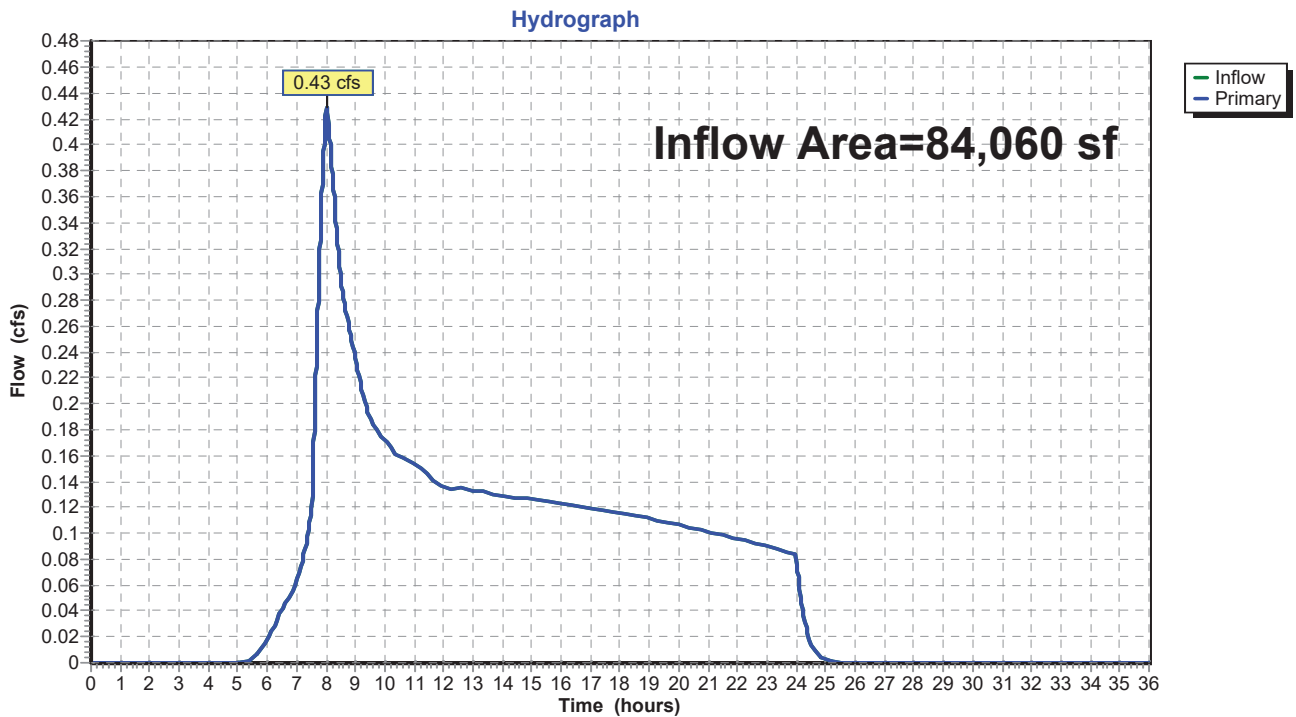


### Summary for Link Pre: Pre-Developed Flow Summary

Inflow Area = 84,060 sf, 0.00% Impervious, Inflow Depth = 1.25" for 5-Year Storm event  
Inflow = 0.43 cfs @ 8.01 hrs, Volume= 8,756 cf  
Primary = 0.43 cfs @ 8.01 hrs, Volume= 8,756 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Pre: Pre-Developed Flow Summary



**8145 Pre-Developed**

Type IA 24-hr 10-Year Storm Rainfall=3.50"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Ex: Pre-Developed Site**

Runoff Area=84,060 sf 0.00% Impervious Runoff Depth=1.64"

Flow Length=100' Slope=0.0500 '/' Tc=17.2 min CN=80 Runoff=0.60 cfs 11,463 cf

**Link Pre: Pre-Developed Flow Summary**

Inflow=0.60 cfs 11,463 cf

Primary=0.60 cfs 11,463 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 11,463 cf Average Runoff Depth = 1.64"**  
**100.00% Pervious = 84,060 sf 0.00% Impervious = 0 sf**

**8145 Pre-Developed**

Type IA 24-hr 10-Year Storm Rainfall=3.50"

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**Summary for Subcatchment Ex: Pre-Developed Site**

Runoff = 0.60 cfs @ 8.01 hrs, Volume= 11,463 cf, Depth= 1.64"

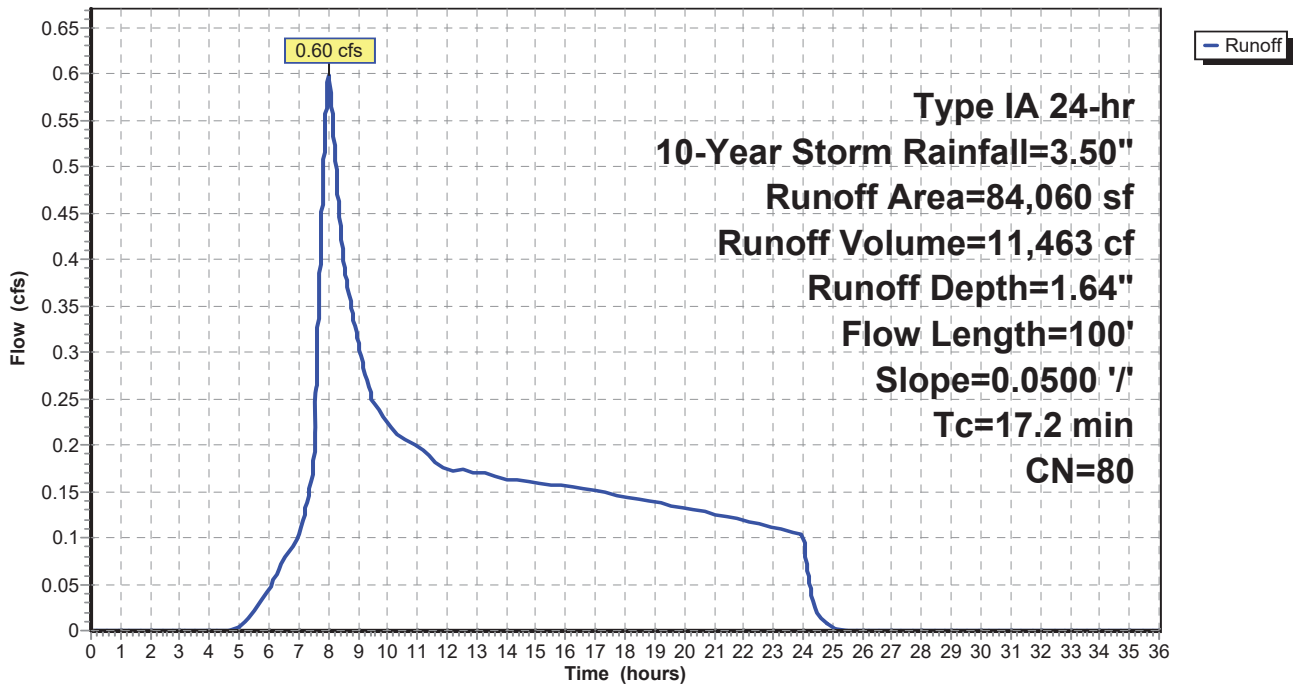
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 10-Year Storm Rainfall=3.50"

	Area (sf)	CN	Description
*	33,423	81	NRCS 81 - Urban Land
*	50,637	79	NRCS 91B - Woodburn Silt Loam
	84,060	80	Weighted Average
	84,060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0500	0.10		Sheet Flow, Pre-Developed Sheet Flow Woods: Light underbrush n= 0.400 P2= 2.40"

**Subcatchment Ex: Pre-Developed Site**

Hydrograph



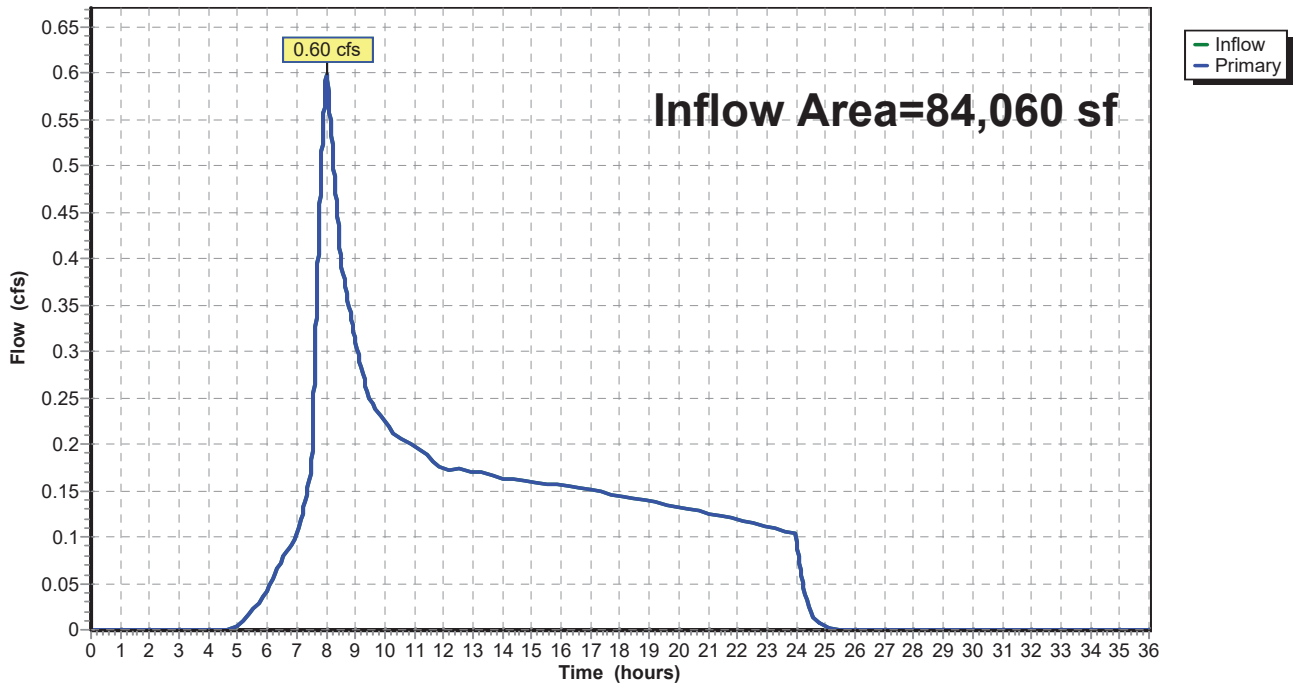
### Summary for Link Pre: Pre-Developed Flow Summary

Inflow Area = 84,060 sf, 0.00% Impervious, Inflow Depth = 1.64" for 10-Year Storm event  
Inflow = 0.60 cfs @ 8.01 hrs, Volume= 11,463 cf  
Primary = 0.60 cfs @ 8.01 hrs, Volume= 11,463 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Pre: Pre-Developed Flow Summary

Hydrograph



**8145 Pre-Developed**

Type IA 24-hr 25-Year Storm Rainfall=4.00"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment Ex: Pre-Developed Site**

Runoff Area=84,060 sf 0.00% Impervious Runoff Depth=2.04"

Flow Length=100' Slope=0.0500 '/' Tc=17.2 min CN=80 Runoff=0.78 cfs 14,302 cf

**Link Pre: Pre-Developed Flow Summary**

Inflow=0.78 cfs 14,302 cf

Primary=0.78 cfs 14,302 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 14,302 cf Average Runoff Depth = 2.04"**  
**100.00% Pervious = 84,060 sf 0.00% Impervious = 0 sf**

**8145 Pre-Developed**

Type IA 24-hr 25-Year Storm Rainfall=4.00"

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**Summary for Subcatchment Ex: Pre-Developed Site**

Runoff = 0.78 cfs @ 8.01 hrs, Volume= 14,302 cf, Depth= 2.04"

Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 25-Year Storm Rainfall=4.00"

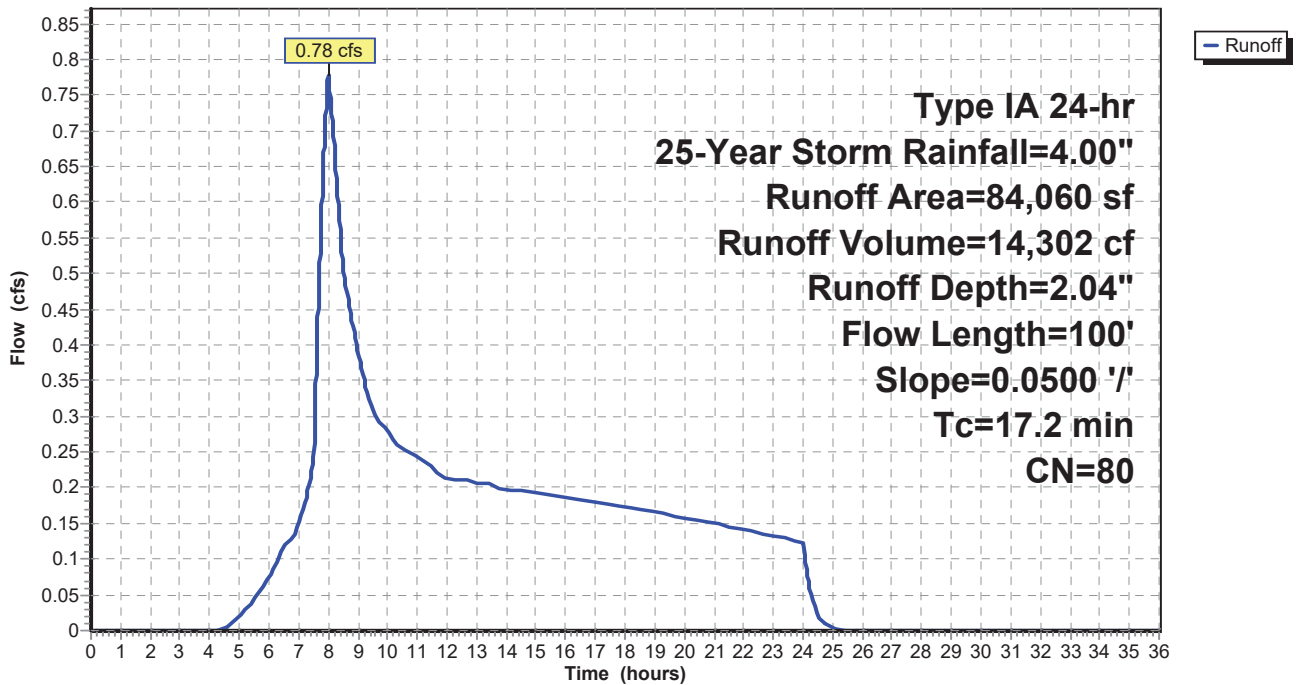
	Area (sf)	CN	Description
*	33,423	81	NRCS 81 - Urban Land
*	50,637	79	NRCS 91B - Woodburn Silt Loam
	84,060	80	Weighted Average
	84,060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0500	0.10		

**Sheet Flow, Pre-Developed Sheet Flow**  
Woods: Light underbrush n= 0.400 P2= 2.40"

**Subcatchment Ex: Pre-Developed Site**

Hydrograph



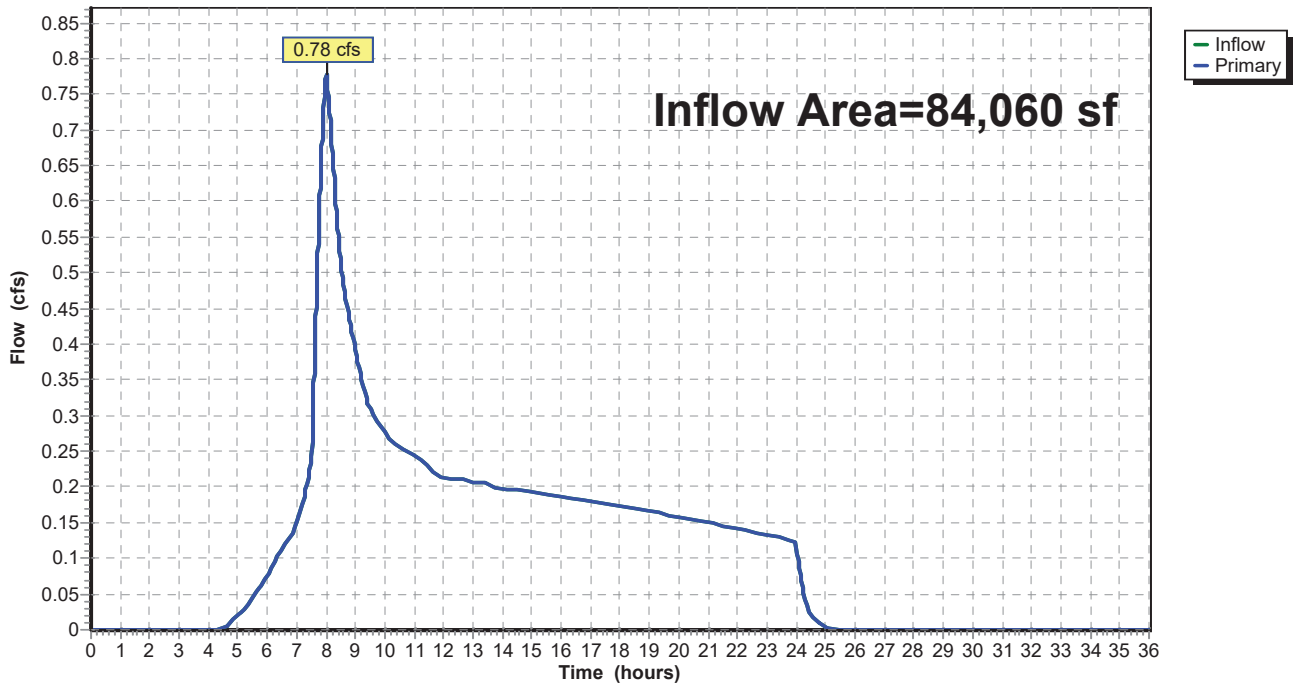
### Summary for Link Pre: Pre-Developed Flow Summary

Inflow Area = 84,060 sf, 0.00% Impervious, Inflow Depth = 2.04" for 25-Year Storm event  
Inflow = 0.78 cfs @ 8.01 hrs, Volume= 14,302 cf  
Primary = 0.78 cfs @ 8.01 hrs, Volume= 14,302 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Pre: Pre-Developed Flow Summary

Hydrograph



## **Appendix B:** **Post-Developed Basin Map and Hydrograph**

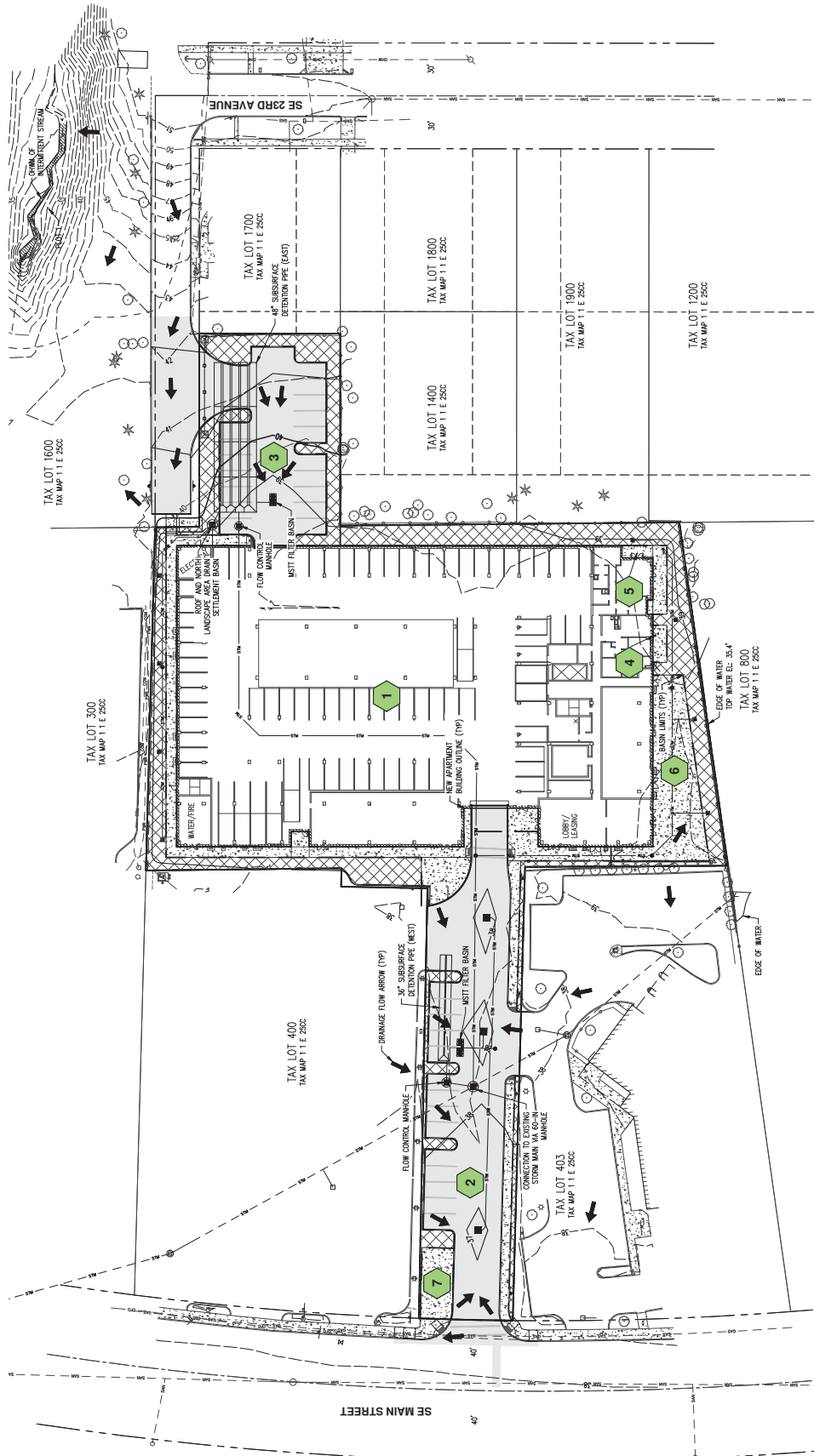
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PROJECT DATE: 12/27/2022  
 JOB NUMBER: 8145  
 DATE: 03/24/2021  
 DESIGNED BY: CSJ  
 DRAWN BY: CSJ  
 CHECKED BY: JMM  
 ORDER BY: JMM

POST

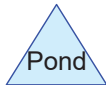
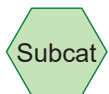
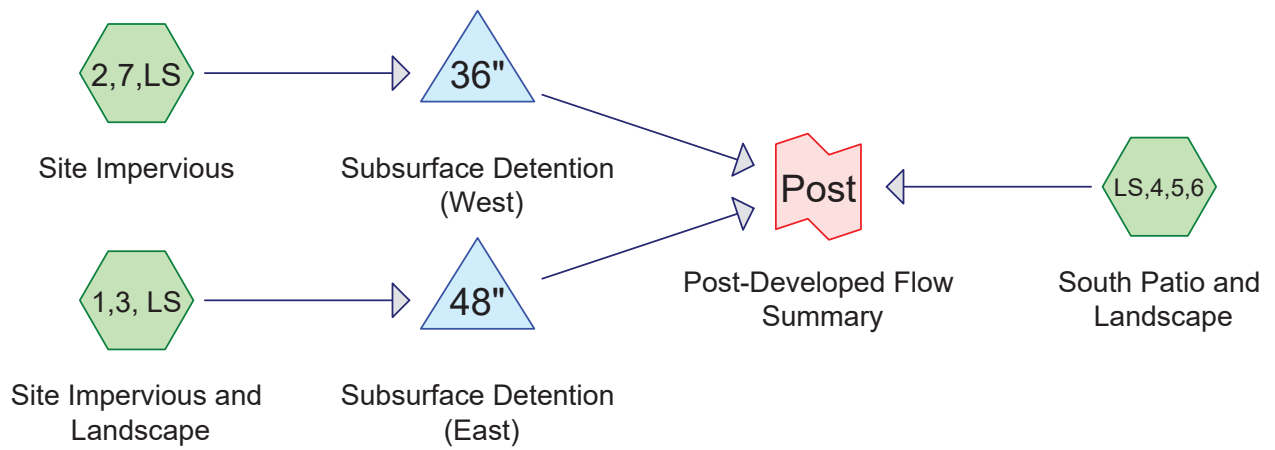


**LEGEND**

- EXISTING GROUND CONTOUR (1 FT)
- EXISTING GROUND CONTOUR (5 FT)
- FINISHED GRADE CONTOUR (1 FT)
- FINISHED GRADE CONTOUR (5 FT)
- DRAINAGE FLOW DIRECTION
- ▨ PLANNED SITE LANDSCAPING AREA
- ▨ PLANNED IMPERVIOUS HARDSCAPE AREA



SCALE: 1" = 30' FEET  
 ORIGINAL PLOT SIZE: 27' x 34'



**Routing Diagram for 8145 Post-Developed**  
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## 8145 Post-Developed

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### Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
12,444	74	>75% Grass cover, Good, HSG C (1,3, LS, 2,7,LS, LS,4,5,6)
3,066	98	Impervious Sidewalk (Basins 4,5,6) (LS,4,5,6)
6,531	98	Paved parking, HSG C (Basin 3) (1,3, LS)
15,621	98	Paved parking/Hardscape, HSG C (Basin 2) (2,7,LS)
725	98	Paved parking/Hardscape, HSG C (Basin 7) (2,7,LS)
45,673	98	Roofs, HSG C (Basin 1) (1,3, LS)
<b>84,060</b>	<b>94</b>	<b>TOTAL AREA</b>

**8145 Post-Developed**

Type IA 24-hr 2-Year Storm Rainfall=2.40"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1,3, LS: Site Impervious** Runoff Area=55,172 sf 94.62% Impervious Runoff Depth=2.06"  
Flow Length=20' Slope=0.0100 '/' Tc=9.1 min CN=97 Runoff=0.65 cfs 9,494 cf

**Subcatchment 2,7,LS: Site Impervious** Runoff Area=21,587 sf 75.72% Impervious Runoff Depth=1.60"  
Flow Length=20' Slope=0.0050 '/' Tc=10.4 min CN=92 Runoff=0.19 cfs 2,880 cf

**Subcatchment LS,4,5,6: South Patio and** Runoff Area=7,301 sf 41.99% Impervious Runoff Depth=1.04"  
Flow Length=10' Slope=0.0150 '/' Tc=5.2 min CN=84 Runoff=0.04 cfs 632 cf

**Pond 36": Subsurface Detention (West)** Peak Elev=1.50' Storage=371 cf Inflow=0.19 cfs 2,880 cf  
Outflow=0.07 cfs 2,880 cf

**Pond 48": Subsurface Detention (East)** Peak Elev=2.71' Storage=3,499 cf Inflow=0.65 cfs 9,494 cf  
Outflow=0.10 cfs 9,440 cf

**Link Post: Post-Developed Flow Summary** Inflow=0.18 cfs 12,952 cf  
Primary=0.18 cfs 12,952 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 13,006 cf Average Runoff Depth = 1.86"**  
**14.80% Pervious = 12,444 sf 85.20% Impervious = 71,616 sf**

**8145 Post-Developed**

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Type IA 24-hr 2-Year Storm Rainfall=2.40"

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**Summary for Subcatchment 1,3, LS: Site Impervious and Landscape**

Runoff = 0.65 cfs @ 7.96 hrs, Volume= 9,494 cf, Depth= 2.06"

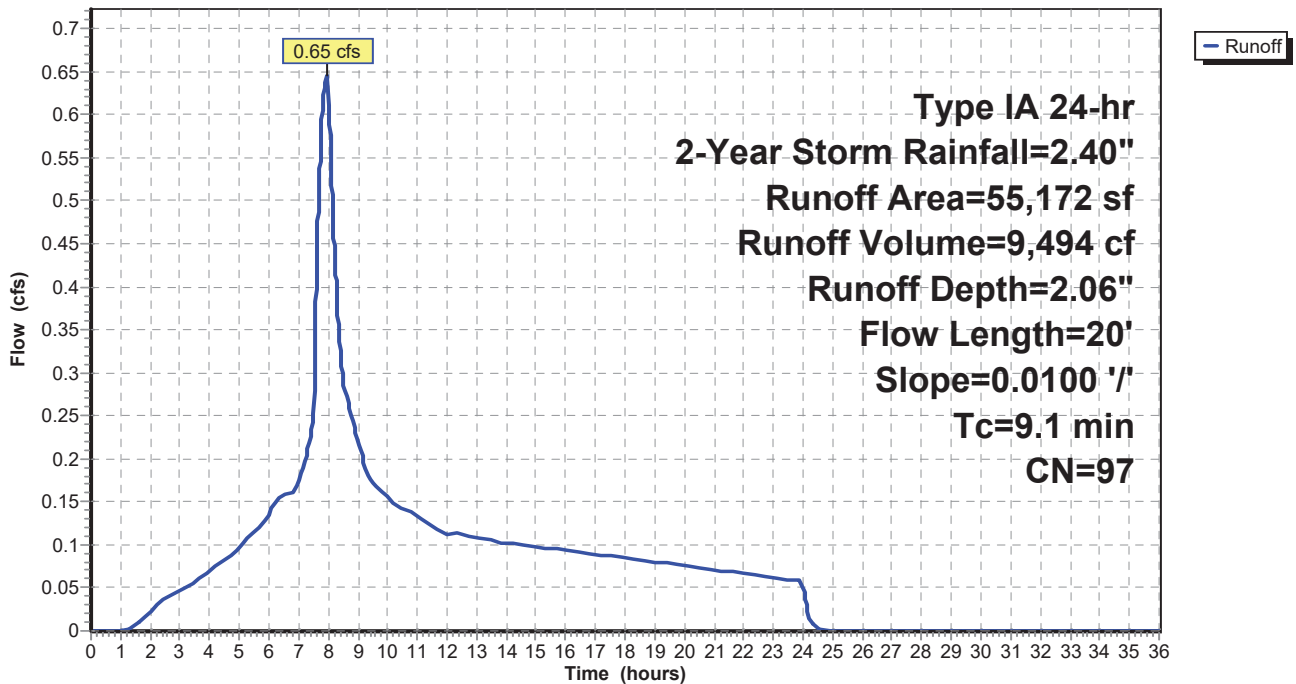
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 2-Year Storm Rainfall=2.40"

	Area (sf)	CN	Description
*	6,531	98	Paved parking, HSG C (Basin 3)
*	45,673	98	Roofs, HSG C (Basin 1)
	2,968	74	>75% Grass cover, Good, HSG C
	55,172	97	Weighted Average
	2,968		5.38% Pervious Area
	52,204		94.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
4.1	20	0.0100	0.08		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
9.1	20	Total			

**Subcatchment 1,3, LS: Site Impervious and Landscape**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 2-Year Storm Rainfall=2.40"

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**Summary for Subcatchment 2,7,LS: Site Impervious**

Runoff = 0.19 cfs @ 8.00 hrs, Volume= 2,880 cf, Depth= 1.60"

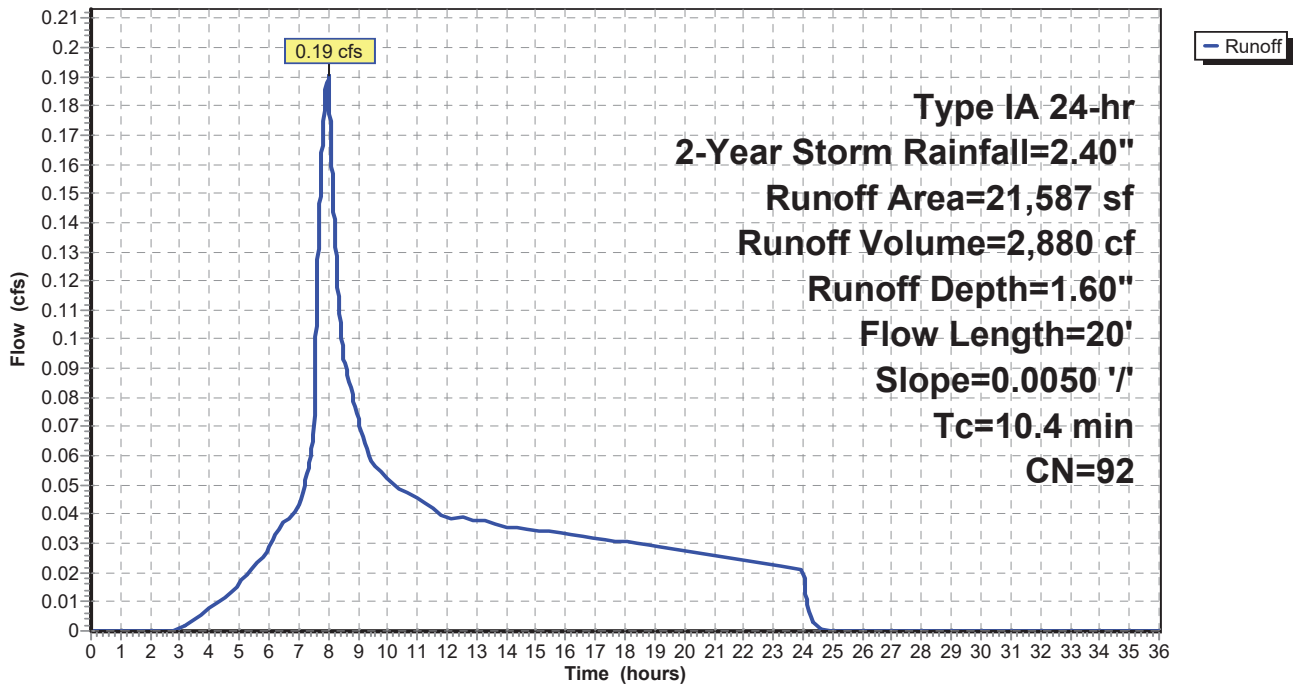
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 2-Year Storm Rainfall=2.40"

	Area (sf)	CN	Description
*	15,621	98	Paved parking/Hardscape, HSG C (Basin 2)
*	725	98	Paved parking/Hardscape, HSG C (Basin 7)
	5,241	74	>75% Grass cover, Good, HSG C
	21,587	92	Weighted Average
	5,241		24.28% Pervious Area
	16,346		75.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
5.4	20	0.0050	0.06		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
10.4	20	Total			

**Subcatchment 2,7,LS: Site Impervious**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 2-Year Storm Rainfall=2.40"

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**Summary for Subcatchment LS,4,5,6: South Patio and Landscape**

Runoff = 0.04 cfs @ 8.00 hrs, Volume= 632 cf, Depth= 1.04"

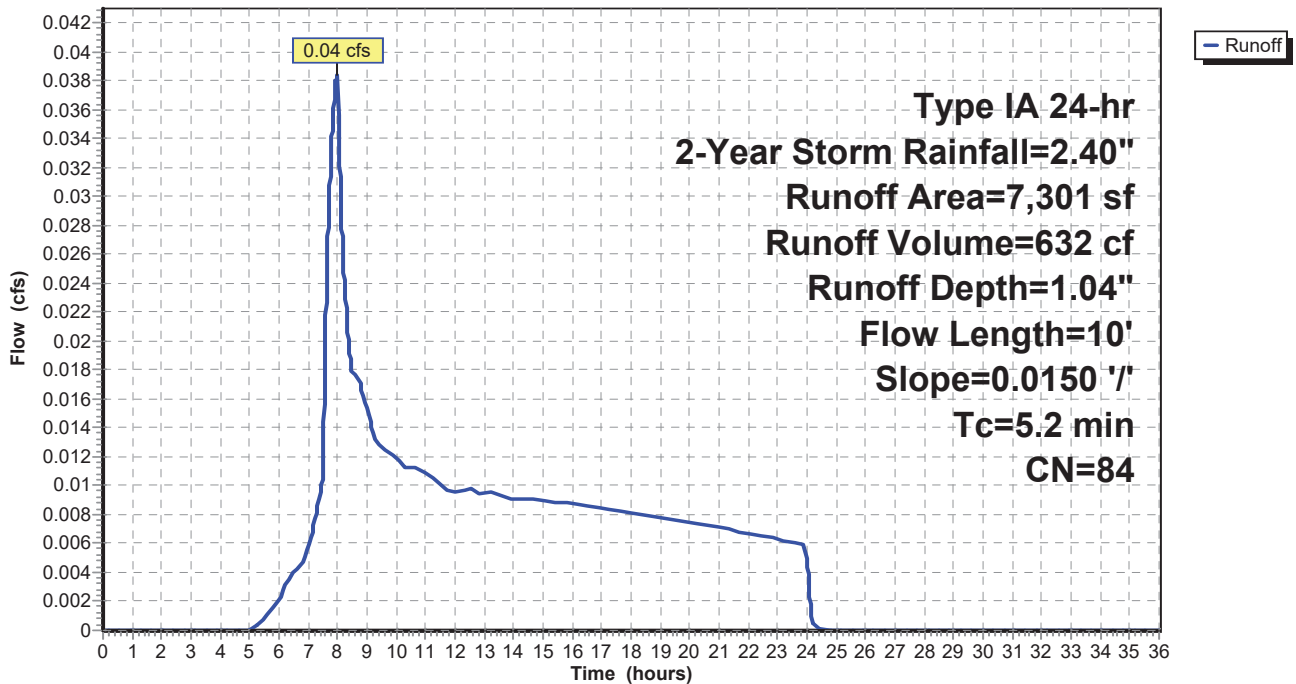
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 2-Year Storm Rainfall=2.40"

Area (sf)	CN	Description
3,066	98	Impervious Sidewalk (Basins 4,5,6)
4,235	74	>75% Grass cover, Good, HSG C
7,301	84	Weighted Average
4,235		58.01% Pervious Area
3,066		41.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0150	0.67		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
5.0					Direct Entry, Direct
5.2	10	Total			

**Subcatchment LS,4,5,6: South Patio and Landscape**

Hydrograph



**Summary for Pond 36": Subsurface Detention (West)**

Inflow Area = 21,587 sf, 75.72% Impervious, Inflow Depth = 1.60" for 2-Year Storm event  
 Inflow = 0.19 cfs @ 8.00 hrs, Volume= 2,880 cf  
 Outflow = 0.07 cfs @ 8.98 hrs, Volume= 2,880 cf, Atten= 62%, Lag= 59.3 min  
 Primary = 0.07 cfs @ 8.98 hrs, Volume= 2,880 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 1.50' @ 8.98 hrs Surf.Area= 358 sf Storage= 371 cf

Plug-Flow detention time= 38.3 min calculated for 2,879 cf (100% of inflow)  
 Center-of-Mass det. time= 38.3 min ( 793.9 - 755.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	848 cf	<b>36.0" Round Pipe Storage x 2</b> L= 60.0' S= 0.0050 '"/>

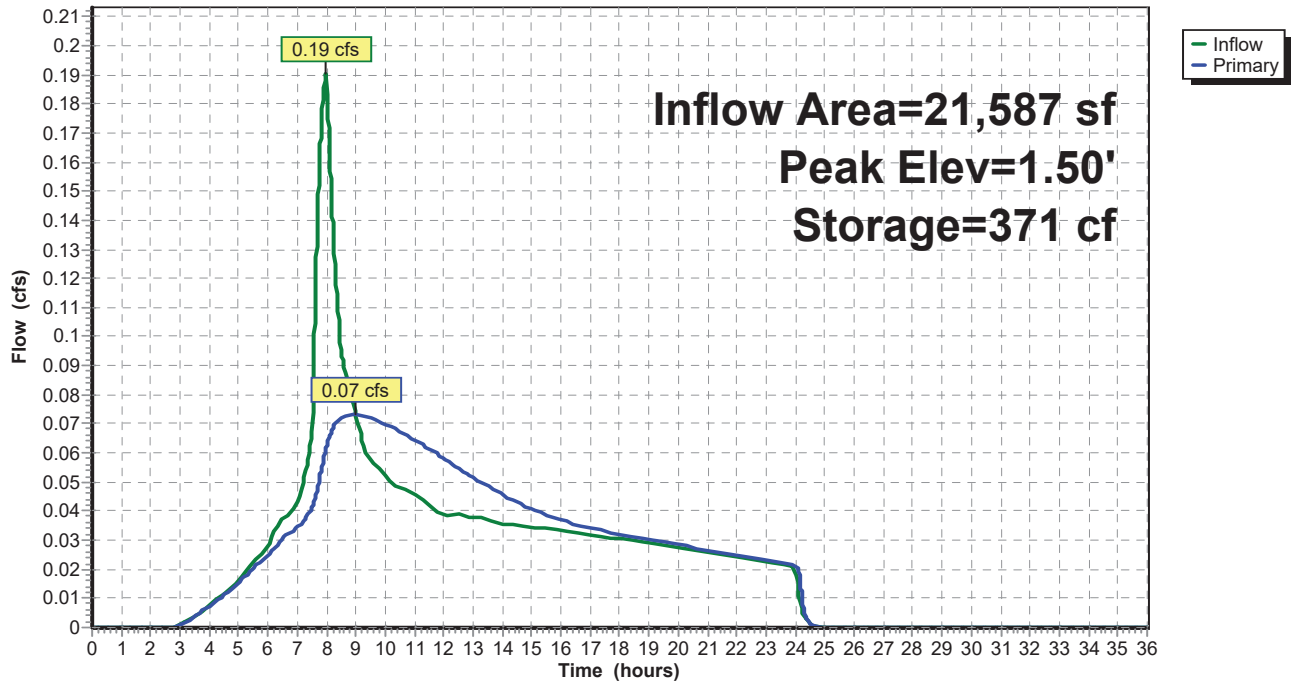
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	2.50'	<b>4.0" Vert. Upper Orifice</b> C= 0.620
#3	Primary	3.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.07 cfs @ 8.98 hrs HW=1.50' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.07 cfs @ 5.97 fps)
- 2=Upper Orifice ( Controls 0.00 cfs)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 36": Subsurface Detention (West)**

Hydrograph





**Summary for Pond 48": Subsurface Detention (East)**

Inflow Area = 55,172 sf, 94.62% Impervious, Inflow Depth = 2.06" for 2-Year Storm event  
 Inflow = 0.65 cfs @ 7.96 hrs, Volume= 9,494 cf  
 Outflow = 0.10 cfs @ 14.72 hrs, Volume= 9,440 cf, Atten= 85%, Lag= 405.9 min  
 Primary = 0.10 cfs @ 14.72 hrs, Volume= 9,440 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 2.71' @ 14.72 hrs Surf.Area= 1,644 sf Storage= 3,499 cf

Plug-Flow detention time= 442.4 min calculated for 9,440 cf (99% of inflow)  
 Center-of-Mass det. time= 438.1 min ( 1,132.0 - 693.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,341 cf	<b>48.0" Round CMP_Round 48" x 5</b> L= 85.0' S= 0.0050 1'

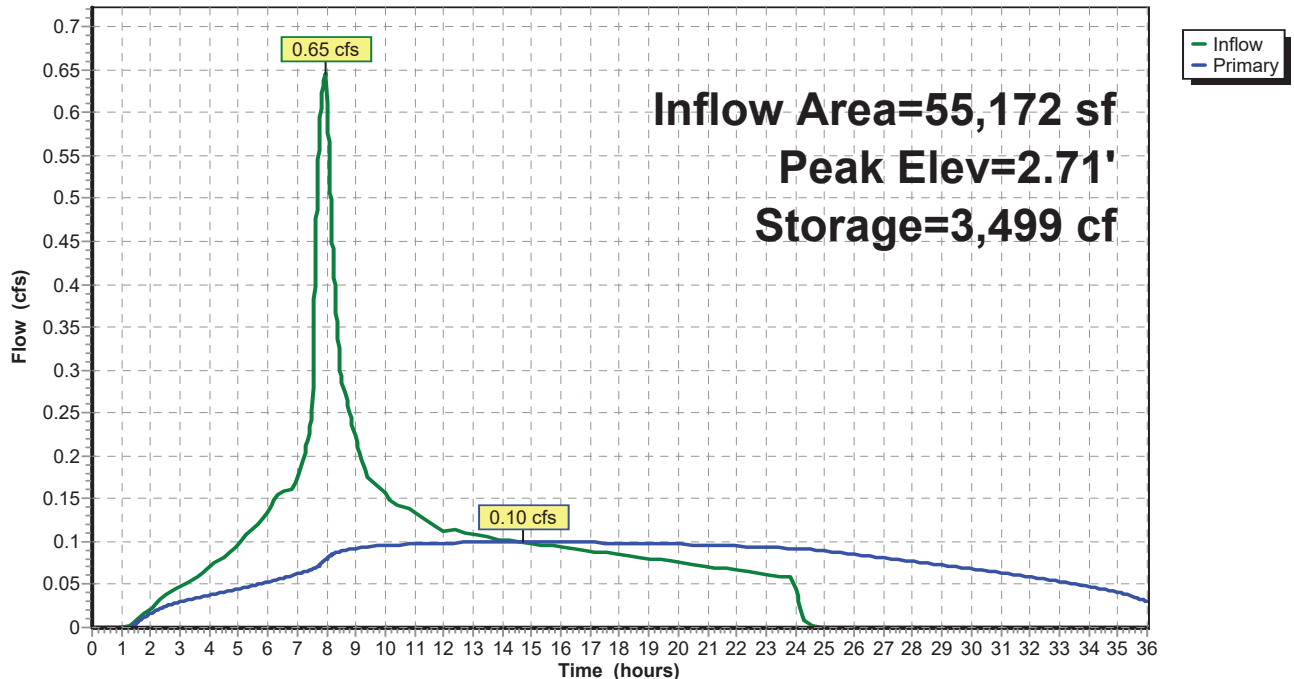
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	3.50'	<b>4.5" Vert. Upper Orifice</b> C= 0.620
#3	Primary	4.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.10 cfs @ 14.72 hrs HW=2.71' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.10 cfs @ 8.09 fps)
- 2=Upper Orifice ( Controls 0.00 cfs)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 48": Subsurface Detention (East)**

Hydrograph

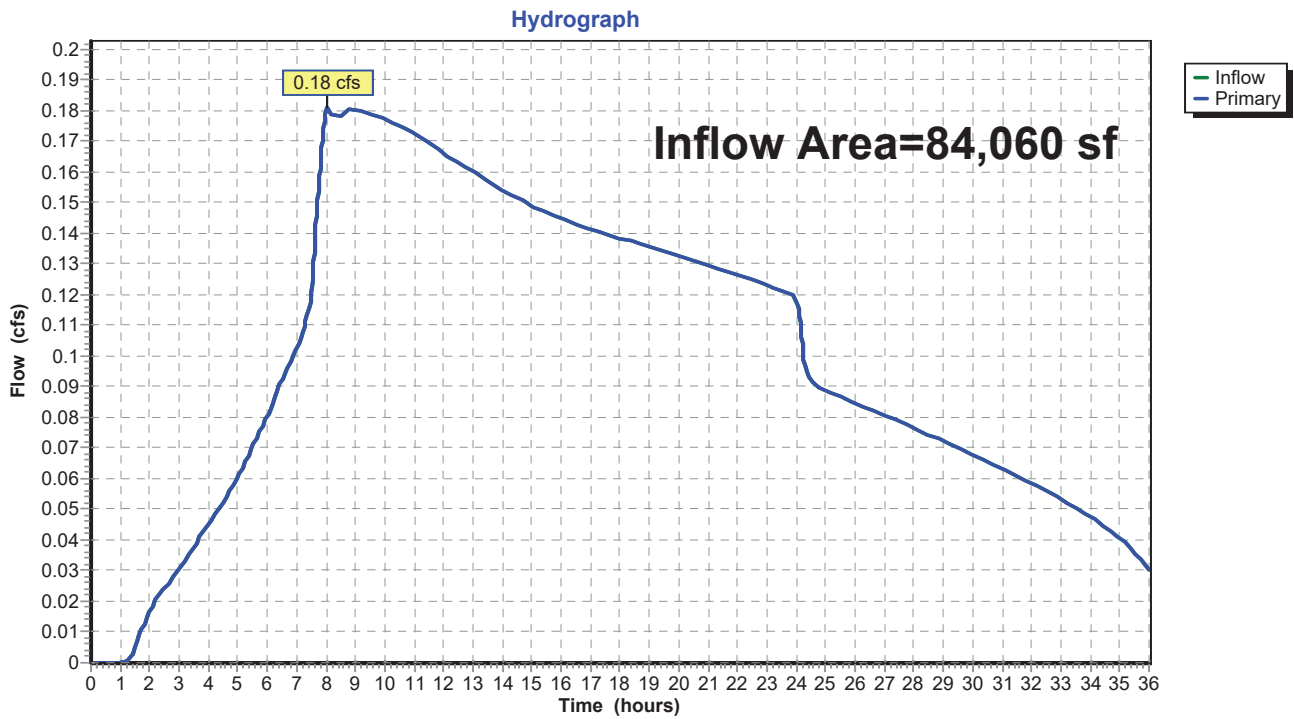


### Summary for Link Post: Post-Developed Flow Summary

Inflow Area = 84,060 sf, 85.20% Impervious, Inflow Depth > 1.85" for 2-Year Storm event  
Inflow = 0.18 cfs @ 8.01 hrs, Volume= 12,952 cf  
Primary = 0.18 cfs @ 8.01 hrs, Volume= 12,952 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Post: Post-Developed Flow Summary



**8145 Post-Developed**

Type IA 24-hr 5-Year Storm Rainfall=3.00"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1,3, LS: Site Impervious** Runoff Area=55,172 sf 94.62% Impervious Runoff Depth=2.66"  
Flow Length=20' Slope=0.0100 '/' Tc=9.1 min CN=97 Runoff=0.83 cfs 12,222 cf

**Subcatchment 2,7,LS: Site Impervious** Runoff Area=21,587 sf 75.72% Impervious Runoff Depth=2.16"  
Flow Length=20' Slope=0.0050 '/' Tc=10.4 min CN=92 Runoff=0.26 cfs 3,888 cf

**Subcatchment LS,4,5,6: South Patio and** Runoff Area=7,301 sf 41.99% Impervious Runoff Depth=1.52"  
Flow Length=10' Slope=0.0150 '/' Tc=5.2 min CN=84 Runoff=0.06 cfs 923 cf

**Pond 36": Subsurface Detention (West)** Peak Elev=2.19' Storage=613 cf Inflow=0.26 cfs 3,888 cf  
Outflow=0.09 cfs 3,888 cf

**Pond 48": Subsurface Detention (East)** Peak Elev=3.59' Storage=4,806 cf Inflow=0.83 cfs 12,222 cf  
Outflow=0.14 cfs 11,545 cf

**Link Post: Post-Developed Flow Summary** Inflow=0.22 cfs 16,355 cf  
Primary=0.22 cfs 16,355 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 17,032 cf Average Runoff Depth = 2.43"**  
**14.80% Pervious = 12,444 sf 85.20% Impervious = 71,616 sf**

**8145 Post-Developed**

Type IA 24-hr 5-Year Storm Rainfall=3.00"

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**Summary for Subcatchment 1,3, LS: Site Impervious and Landscape**

Runoff = 0.83 cfs @ 7.95 hrs, Volume= 12,222 cf, Depth= 2.66"

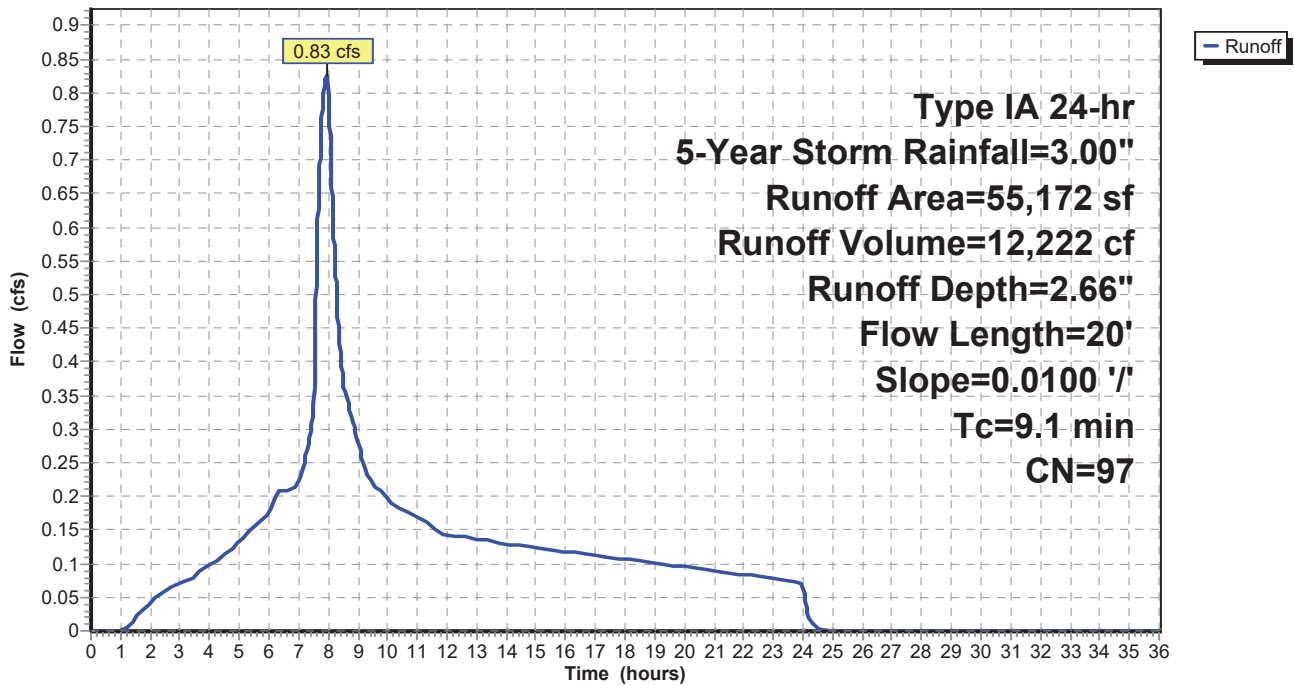
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 5-Year Storm Rainfall=3.00"

	Area (sf)	CN	Description
*	6,531	98	Paved parking, HSG C (Basin 3)
*	45,673	98	Roofs, HSG C (Basin 1)
	2,968	74	>75% Grass cover, Good, HSG C
	55,172	97	Weighted Average
	2,968		5.38% Pervious Area
	52,204		94.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
4.1	20	0.0100	0.08		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
9.1	20	Total			

**Subcatchment 1,3, LS: Site Impervious and Landscape**

Hydrograph



**8145 Post-Developed**

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Type IA 24-hr 5-Year Storm Rainfall=3.00"

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**Summary for Subcatchment 2,7,LS: Site Impervious**

Runoff = 0.26 cfs @ 8.00 hrs, Volume= 3,888 cf, Depth= 2.16"

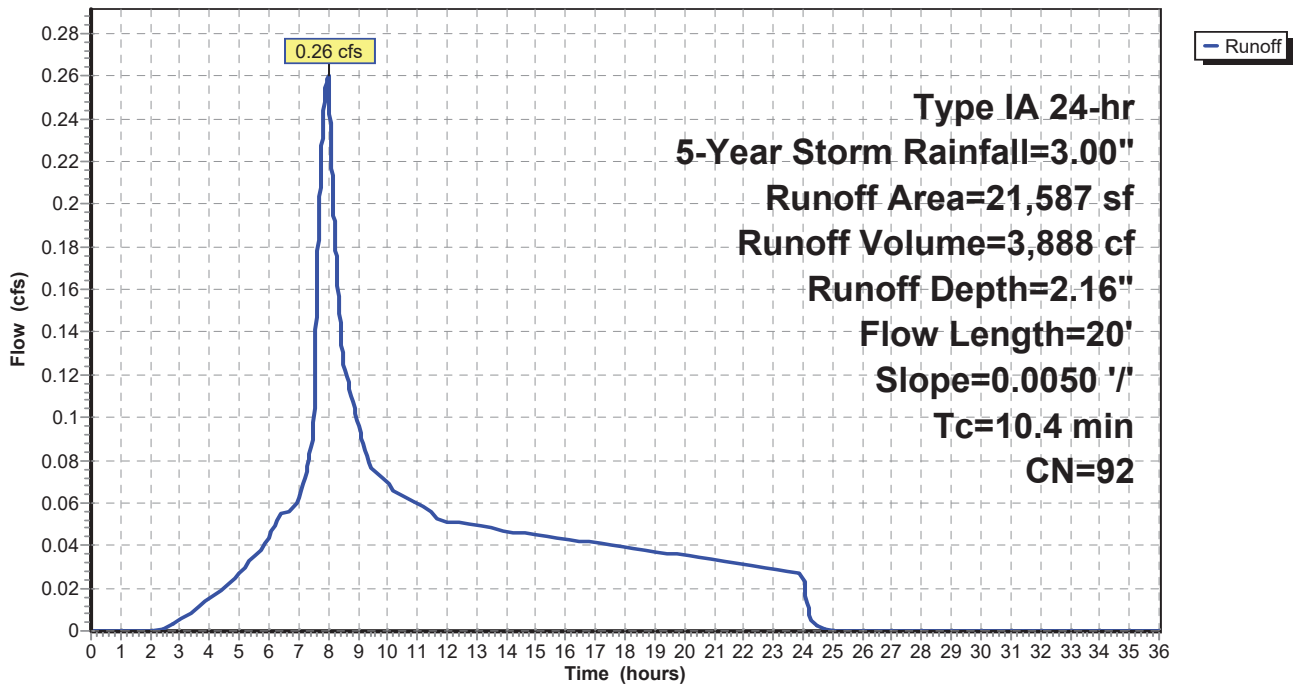
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 5-Year Storm Rainfall=3.00"

	Area (sf)	CN	Description
*	15,621	98	Paved parking/Hardscape, HSG C (Basin 2)
*	725	98	Paved parking/Hardscape, HSG C (Basin 7)
	5,241	74	>75% Grass cover, Good, HSG C
	21,587	92	Weighted Average
	5,241		24.28% Pervious Area
	16,346		75.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
5.4	20	0.0050	0.06		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
10.4	20	Total			

**Subcatchment 2,7,LS: Site Impervious**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 5-Year Storm Rainfall=3.00"

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**Summary for Subcatchment LS,4,5,6: South Patio and Landscape**

Runoff = 0.06 cfs @ 7.97 hrs, Volume= 923 cf, Depth= 1.52"

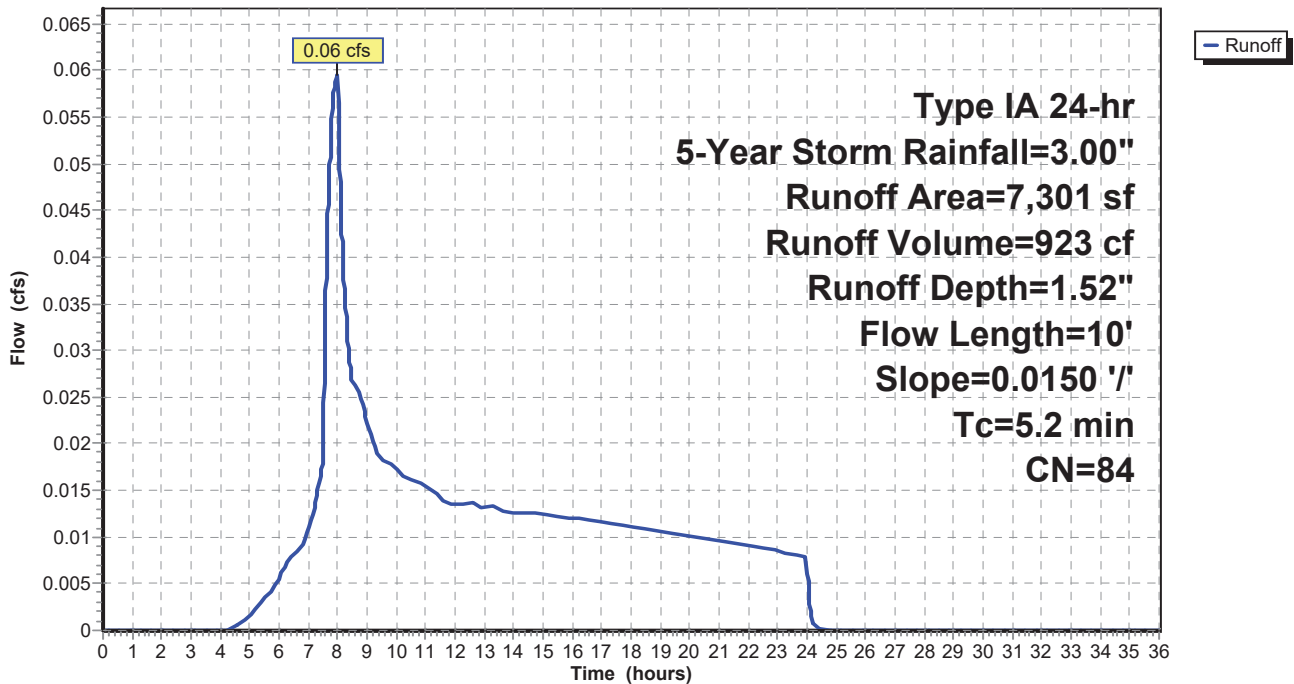
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 5-Year Storm Rainfall=3.00"

Area (sf)	CN	Description
3,066	98	Impervious Sidewalk (Basins 4,5,6)
4,235	74	>75% Grass cover, Good, HSG C
7,301	84	Weighted Average
4,235		58.01% Pervious Area
3,066		41.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0150	0.67		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
5.0					Direct Entry, Direct
5.2	10	Total			

**Subcatchment LS,4,5,6: South Patio and Landscape**

Hydrograph



**Summary for Pond 36": Subsurface Detention (West)**

Inflow Area = 21,587 sf, 75.72% Impervious, Inflow Depth = 2.16" for 5-Year Storm event  
 Inflow = 0.26 cfs @ 8.00 hrs, Volume= 3,888 cf  
 Outflow = 0.09 cfs @ 9.14 hrs, Volume= 3,888 cf, Atten= 66%, Lag= 68.6 min  
 Primary = 0.09 cfs @ 9.14 hrs, Volume= 3,888 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 2.19' @ 9.14 hrs Surf.Area= 335 sf Storage= 613 cf

Plug-Flow detention time= 61.3 min calculated for 3,887 cf (100% of inflow)  
 Center-of-Mass det. time= 61.2 min ( 801.0 - 739.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	848 cf	<b>36.0" Round Pipe Storage x 2</b> L= 60.0' S= 0.0050 '"/>

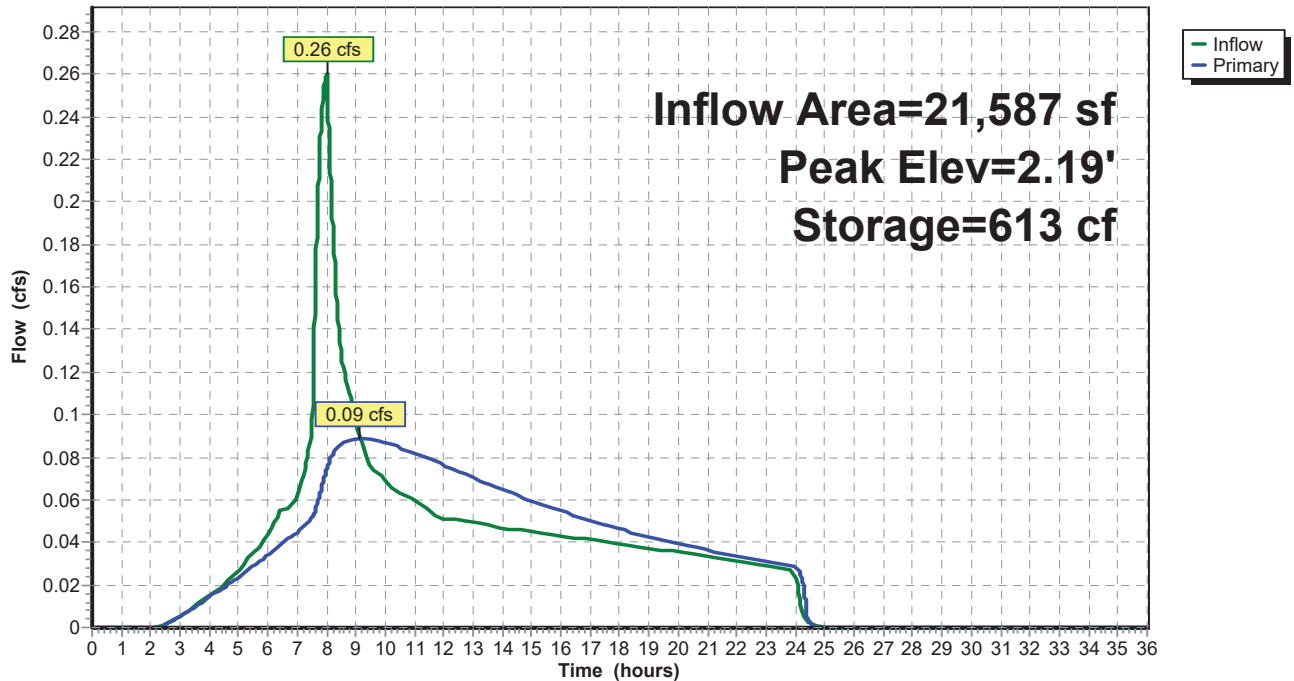
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	2.50'	<b>4.0" Vert. Upper Orifice</b> C= 0.620
#3	Primary	3.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.09 cfs @ 9.14 hrs HW=2.19' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.09 cfs @ 7.25 fps)
- 2=Upper Orifice ( Controls 0.00 cfs)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 36": Subsurface Detention (West)**

Hydrograph



**Summary for Pond 48": Subsurface Detention (East)**

Inflow Area = 55,172 sf, 94.62% Impervious, Inflow Depth = 2.66" for 5-Year Storm event  
 Inflow = 0.83 cfs @ 7.95 hrs, Volume= 12,222 cf  
 Outflow = 0.14 cfs @ 12.80 hrs, Volume= 11,545 cf, Atten= 83%, Lag= 290.7 min  
 Primary = 0.14 cfs @ 12.80 hrs, Volume= 11,545 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 3.59' @ 12.80 hrs Surf.Area= 1,223 sf Storage= 4,806 cf

Plug-Flow detention time= 498.2 min calculated for 11,541 cf (94% of inflow)  
 Center-of-Mass det. time= 457.8 min ( 1,142.7 - 684.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,341 cf	<b>48.0" Round CMP_Round 48" x 5</b> L= 85.0' S= 0.0050 1'

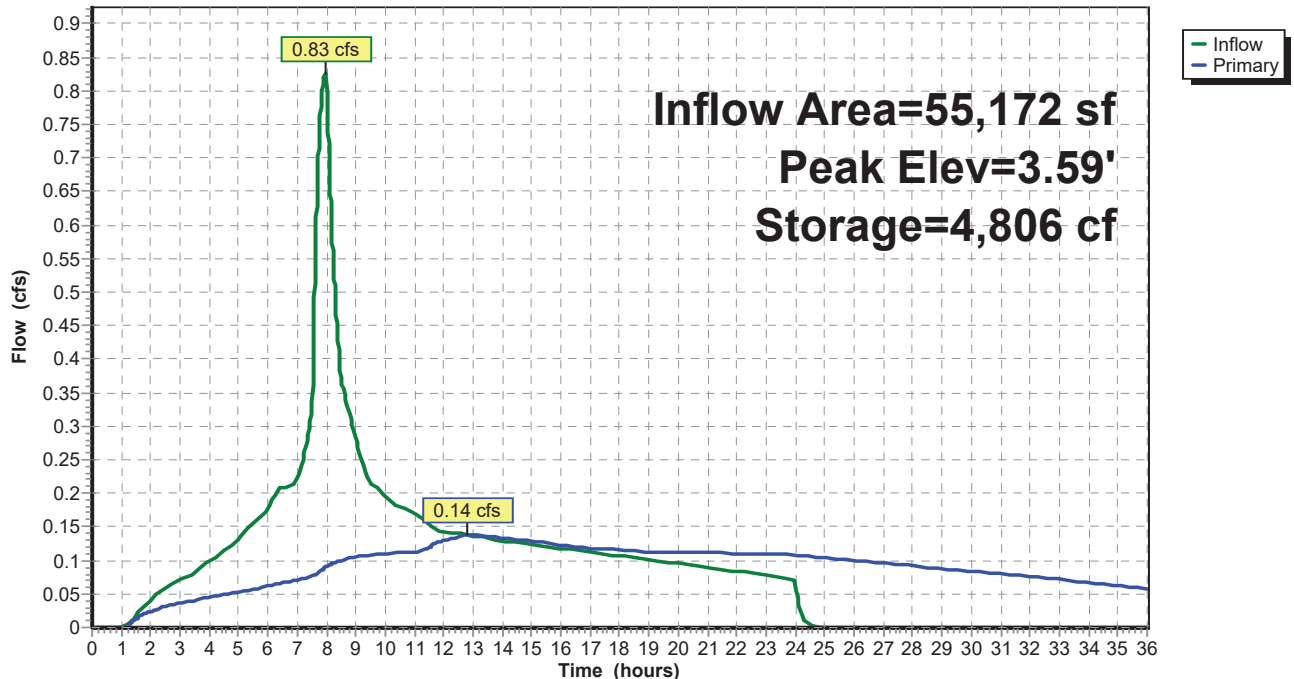
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	3.50'	<b>4.5" Vert. Upper Orifice</b> C= 0.620
#3	Primary	4.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.14 cfs @ 12.80 hrs HW=3.59' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.11 cfs @ 9.35 fps)
- 2=Upper Orifice (Orifice Controls 0.02 cfs @ 1.06 fps)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 48": Subsurface Detention (East)**

Hydrograph



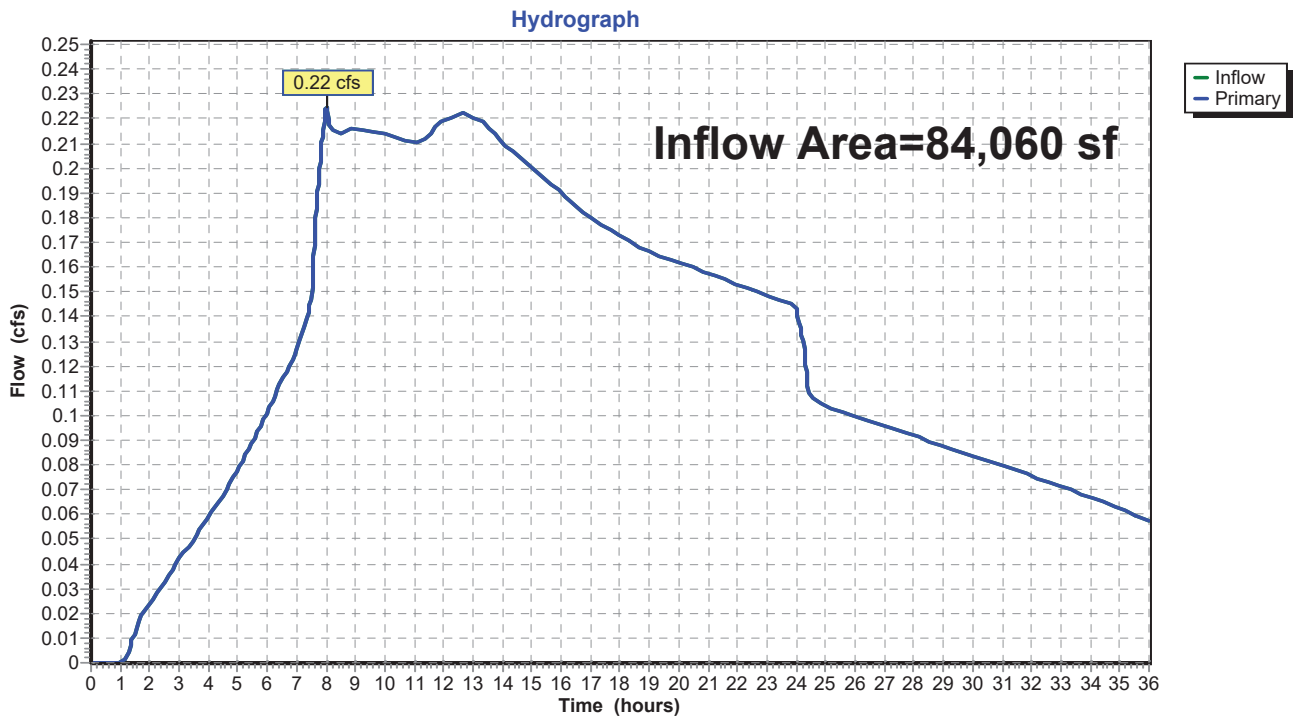


### Summary for Link Post: Post-Developed Flow Summary

Inflow Area = 84,060 sf, 85.20% Impervious, Inflow Depth > 2.33" for 5-Year Storm event  
Inflow = 0.22 cfs @ 8.00 hrs, Volume= 16,355 cf  
Primary = 0.22 cfs @ 8.00 hrs, Volume= 16,355 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Post: Post-Developed Flow Summary



**8145 Post-Developed**

Type IA 24-hr 10-Year Storm Rainfall=3.50"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1,3, LS: Site Impervious** Runoff Area=55,172 sf 94.62% Impervious Runoff Depth=3.15"  
Flow Length=20' Slope=0.0100 '/' Tc=9.1 min CN=97 Runoff=0.97 cfs 14,503 cf

**Subcatchment 2,7,LS: Site Impervious** Runoff Area=21,587 sf 75.72% Impervious Runoff Depth=2.64"  
Flow Length=20' Slope=0.0050 '/' Tc=10.4 min CN=92 Runoff=0.32 cfs 4,743 cf

**Subcatchment LS,4,5,6: South Patio and** Runoff Area=7,301 sf 41.99% Impervious Runoff Depth=1.94"  
Flow Length=10' Slope=0.0150 '/' Tc=5.2 min CN=84 Runoff=0.08 cfs 1,178 cf

**Pond 36": Subsurface Detention (West)** Peak Elev=2.64' Storage=753 cf Inflow=0.32 cfs 4,743 cf  
Outflow=0.15 cfs 4,743 cf

**Pond 48": Subsurface Detention (East)** Peak Elev=3.75' Storage=4,993 cf Inflow=0.97 cfs 14,503 cf  
Outflow=0.26 cfs 13,674 cf

**Link Post: Post-Developed Flow Summary** Inflow=0.39 cfs 19,595 cf  
Primary=0.39 cfs 19,595 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 20,424 cf Average Runoff Depth = 2.92"**  
**14.80% Pervious = 12,444 sf 85.20% Impervious = 71,616 sf**

**8145 Post-Developed**

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Type IA 24-hr 10-Year Storm Rainfall=3.50"

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**Summary for Subcatchment 1,3, LS: Site Impervious and Landscape**

Runoff = 0.97 cfs @ 7.95 hrs, Volume= 14,503 cf, Depth= 3.15"

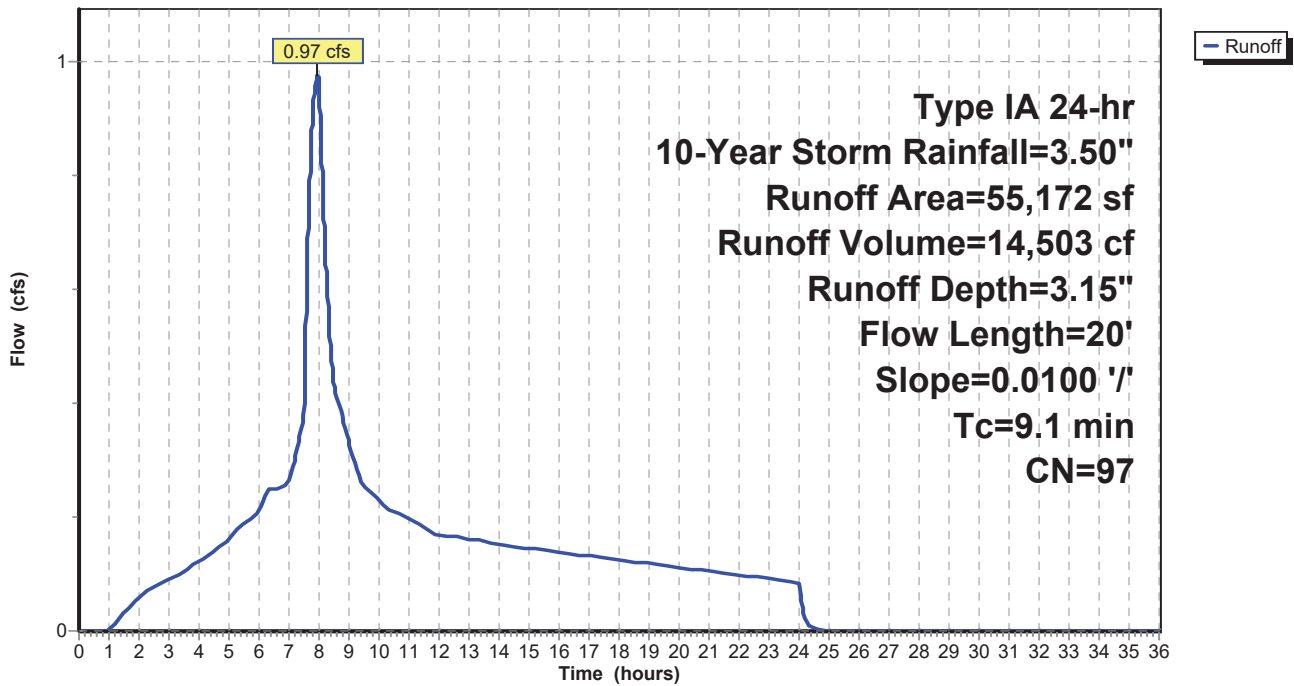
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 10-Year Storm Rainfall=3.50"

	Area (sf)	CN	Description
*	6,531	98	Paved parking, HSG C (Basin 3)
*	45,673	98	Roofs, HSG C (Basin 1)
	2,968	74	>75% Grass cover, Good, HSG C
	55,172	97	Weighted Average
	2,968		5.38% Pervious Area
	52,204		94.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
4.1	20	0.0100	0.08		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
9.1	20	Total			

**Subcatchment 1,3, LS: Site Impervious and Landscape**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 10-Year Storm Rainfall=3.50"

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**Summary for Subcatchment 2,7,LS: Site Impervious**

Runoff = 0.32 cfs @ 7.99 hrs, Volume= 4,743 cf, Depth= 2.64"

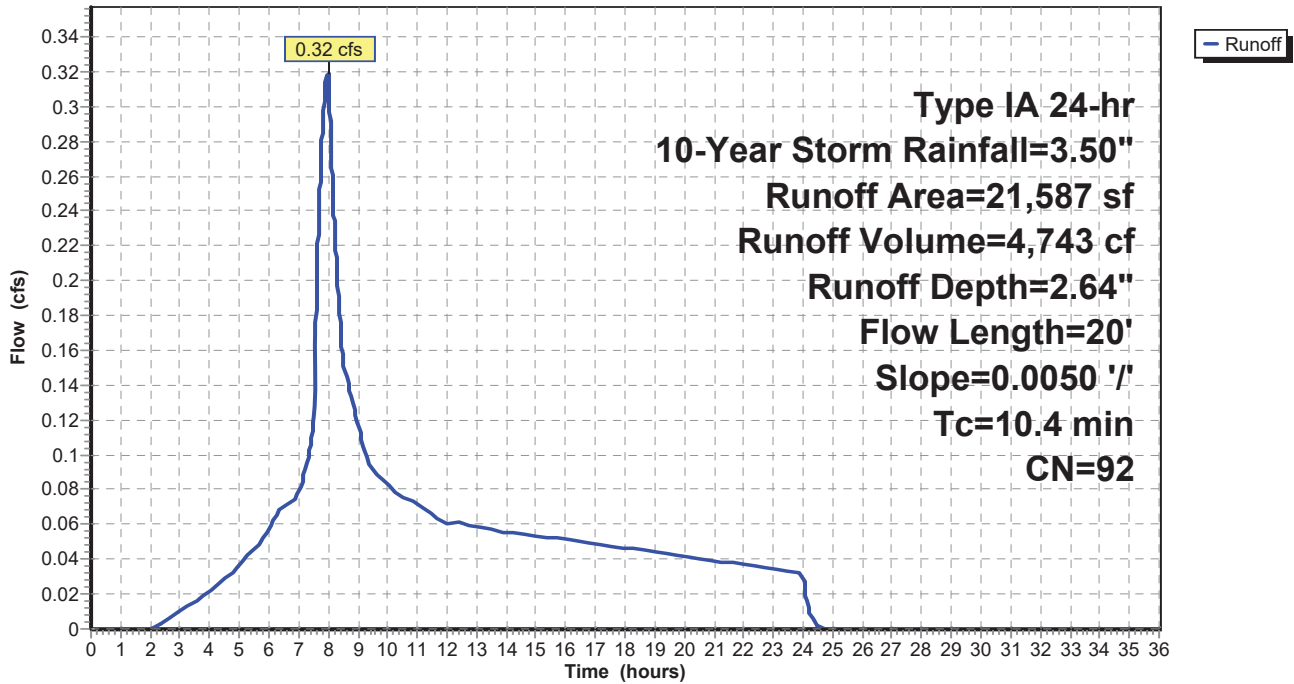
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 10-Year Storm Rainfall=3.50"

	Area (sf)	CN	Description
*	15,621	98	Paved parking/Hardscape, HSG C (Basin 2)
*	725	98	Paved parking/Hardscape, HSG C (Basin 7)
	5,241	74	>75% Grass cover, Good, HSG C
	21,587	92	Weighted Average
	5,241		24.28% Pervious Area
	16,346		75.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
5.4	20	0.0050	0.06		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
10.4	20	Total			

**Subcatchment 2,7,LS: Site Impervious**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 10-Year Storm Rainfall=3.50"

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**Summary for Subcatchment LS,4,5,6: South Patio and Landscape**

Runoff = 0.08 cfs @ 7.96 hrs, Volume= 1,178 cf, Depth= 1.94"

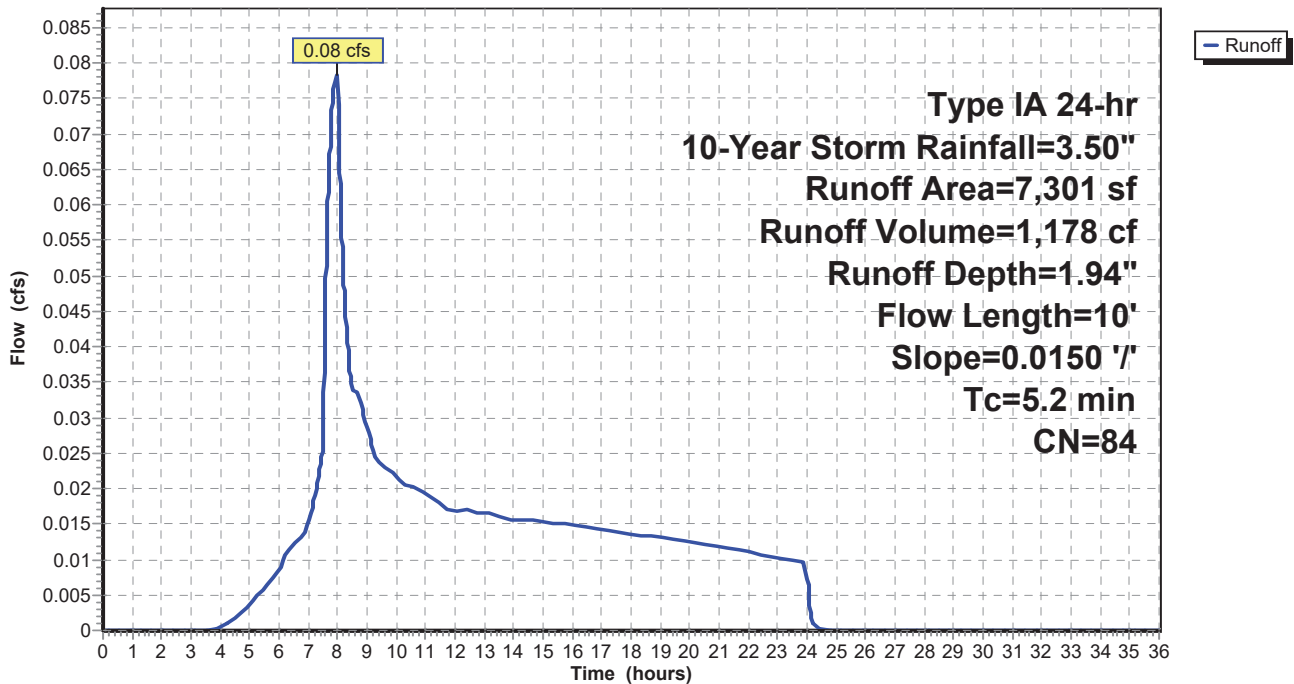
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 10-Year Storm Rainfall=3.50"

	Area (sf)	CN	Description
*	3,066	98	Impervious Sidewalk (Basins 4,5,6)
	4,235	74	>75% Grass cover, Good, HSG C
	7,301	84	Weighted Average
	4,235		58.01% Pervious Area
	3,066		41.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0150	0.67		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.40"
5.0					<b>Direct Entry, Direct</b>
5.2	10	Total			

**Subcatchment LS,4,5,6: South Patio and Landscape**

Hydrograph



**Summary for Pond 36": Subsurface Detention (West)**

Inflow Area = 21,587 sf, 75.72% Impervious, Inflow Depth = 2.64" for 10-Year Storm event  
 Inflow = 0.32 cfs @ 7.99 hrs, Volume= 4,743 cf  
 Outflow = 0.15 cfs @ 8.59 hrs, Volume= 4,743 cf, Atten= 54%, Lag= 35.8 min  
 Primary = 0.15 cfs @ 8.59 hrs, Volume= 4,743 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 2.64' @ 8.59 hrs Surf.Area= 268 sf Storage= 753 cf

Plug-Flow detention time= 73.5 min calculated for 4,742 cf (100% of inflow)  
 Center-of-Mass det. time= 73.5 min ( 803.2 - 729.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	848 cf	<b>36.0" Round Pipe Storage x 2</b> L= 60.0' S= 0.0050 '"/>

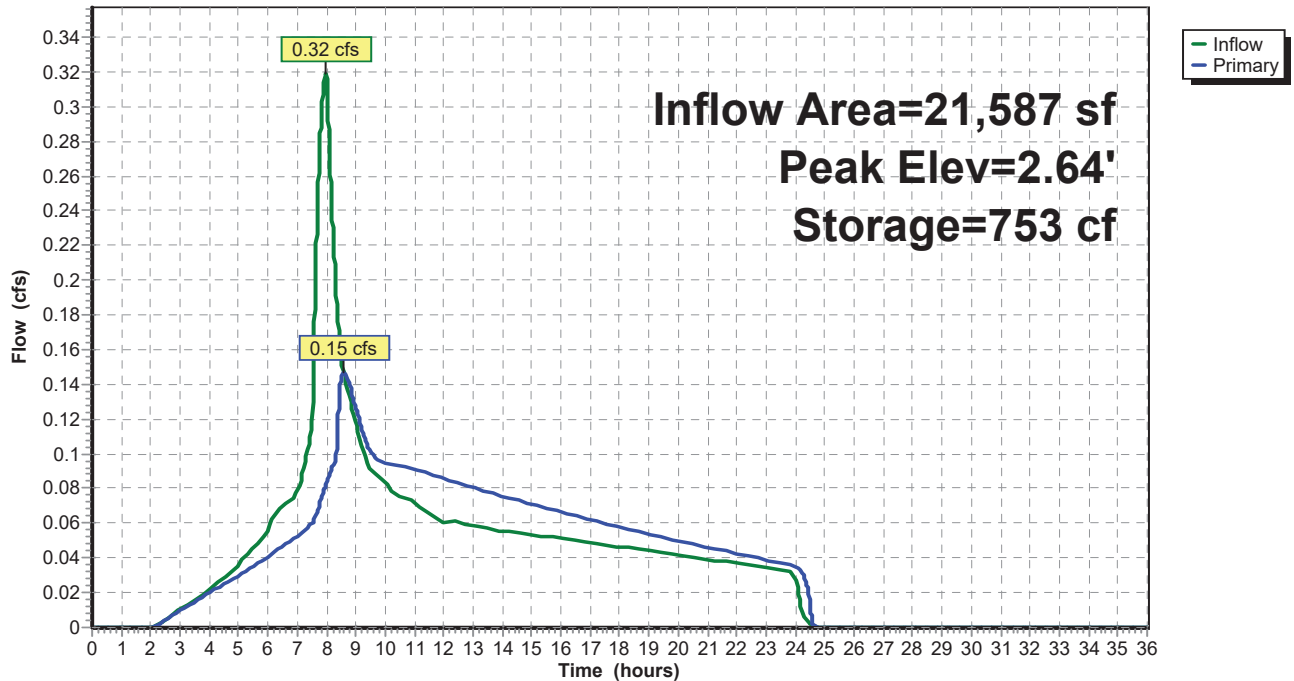
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	2.50'	<b>4.0" Vert. Upper Orifice</b> C= 0.620
#3	Primary	3.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.15 cfs @ 8.59 hrs HW=2.64' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.10 cfs @ 7.99 fps)
- 2=Upper Orifice (Orifice Controls 0.05 cfs @ 1.34 fps)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 36": Subsurface Detention (West)**

Hydrograph



**Summary for Pond 48": Subsurface Detention (East)**

Inflow Area = 55,172 sf, 94.62% Impervious, Inflow Depth = 3.15" for 10-Year Storm event  
 Inflow = 0.97 cfs @ 7.95 hrs, Volume= 14,503 cf  
 Outflow = 0.26 cfs @ 9.45 hrs, Volume= 13,674 cf, Atten= 73%, Lag= 89.6 min  
 Primary = 0.26 cfs @ 9.45 hrs, Volume= 13,674 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 3.75' @ 9.45 hrs Surf.Area= 1,070 sf Storage= 4,993 cf

Plug-Flow detention time= 445.1 min calculated for 13,670 cf (94% of inflow)  
 Center-of-Mass det. time= 403.3 min ( 1,082.6 - 679.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,341 cf	<b>48.0" Round CMP_Round 48" x 5</b> L= 85.0' S= 0.0050 1'

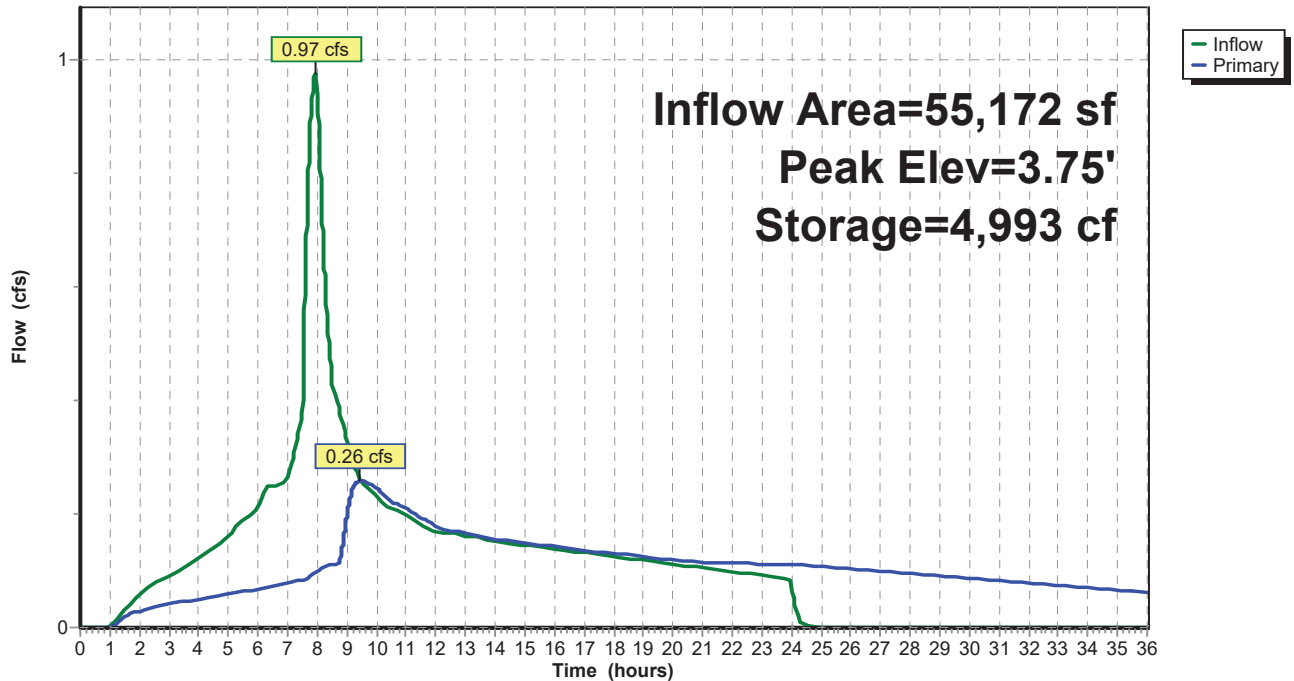
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	3.50'	<b>4.5" Vert. Upper Orifice</b> C= 0.620
#3	Primary	4.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.26 cfs @ 9.45 hrs HW=3.75' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.12 cfs @ 9.56 fps)
- 2=Upper Orifice (Orifice Controls 0.14 cfs @ 1.77 fps)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 48": Subsurface Detention (East)**

Hydrograph



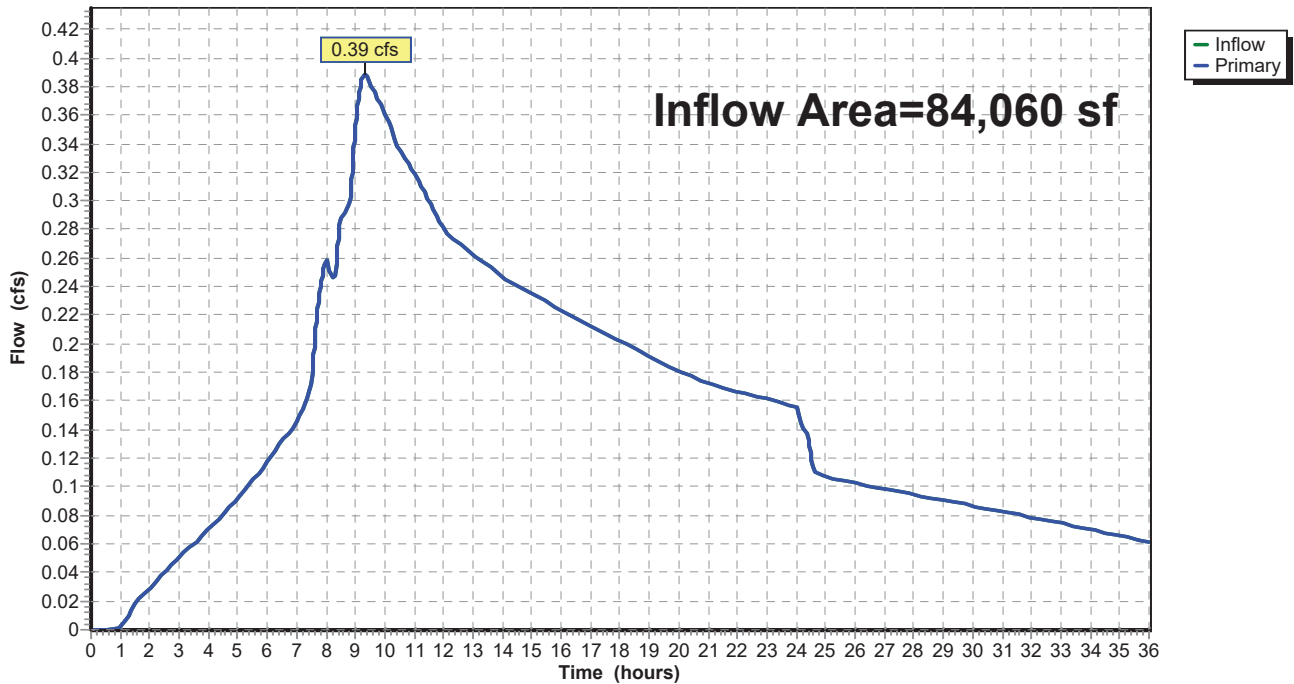
### Summary for Link Post: Post-Developed Flow Summary

Inflow Area = 84,060 sf, 85.20% Impervious, Inflow Depth > 2.80" for 10-Year Storm event  
Inflow = 0.39 cfs @ 9.33 hrs, Volume= 19,595 cf  
Primary = 0.39 cfs @ 9.33 hrs, Volume= 19,595 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Post: Post-Developed Flow Summary

Hydrograph





**8145 Post-Developed**

Type IA 24-hr 25-Year Storm Rainfall=4.00"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1,3, LS: Site Impervious** Runoff Area=55,172 sf 94.62% Impervious Runoff Depth=3.65"  
Flow Length=20' Slope=0.0100 '/' Tc=9.1 min CN=97 Runoff=1.12 cfs 16,788 cf

**Subcatchment 2,7,LS: Site Impervious** Runoff Area=21,587 sf 75.72% Impervious Runoff Depth=3.12"  
Flow Length=20' Slope=0.0050 '/' Tc=10.4 min CN=92 Runoff=0.38 cfs 5,608 cf

**Subcatchment LS,4,5,6: South Patio and** Runoff Area=7,301 sf 41.99% Impervious Runoff Depth=2.37"  
Flow Length=10' Slope=0.0150 '/' Tc=5.2 min CN=84 Runoff=0.10 cfs 1,443 cf

**Pond 36": Subsurface Detention (West)** Peak Elev=2.81' Storage=794 cf Inflow=0.38 cfs 5,608 cf  
Outflow=0.27 cfs 5,608 cf

**Pond 48": Subsurface Detention (East)** Peak Elev=4.00' Storage=5,215 cf Inflow=1.12 cfs 16,788 cf  
Outflow=0.43 cfs 15,872 cf

**Link Post: Post-Developed Flow Summary** Inflow=0.64 cfs 22,923 cf  
Primary=0.64 cfs 22,923 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 23,839 cf Average Runoff Depth = 3.40"**  
**14.80% Pervious = 12,444 sf 85.20% Impervious = 71,616 sf**

**8145 Post-Developed**

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Type IA 24-hr 25-Year Storm Rainfall=4.00"

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**Summary for Subcatchment 1,3, LS: Site Impervious and Landscape**

Runoff = 1.12 cfs @ 7.95 hrs, Volume= 16,788 cf, Depth= 3.65"

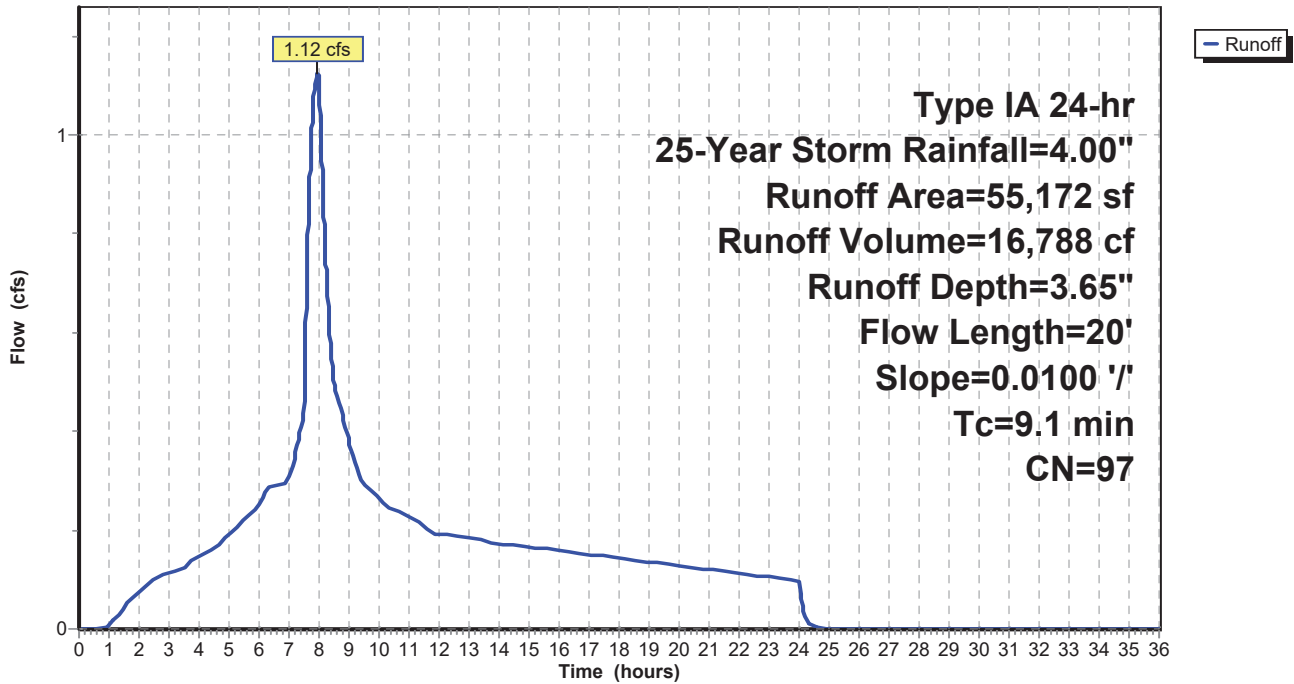
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 25-Year Storm Rainfall=4.00"

	Area (sf)	CN	Description
*	6,531	98	Paved parking, HSG C (Basin 3)
*	45,673	98	Roofs, HSG C (Basin 1)
	2,968	74	>75% Grass cover, Good, HSG C
	55,172	97	Weighted Average
	2,968		5.38% Pervious Area
	52,204		94.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
4.1	20	0.0100	0.08		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
9.1	20	Total			

**Subcatchment 1,3, LS: Site Impervious and Landscape**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 25-Year Storm Rainfall=4.00"

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**Summary for Subcatchment 2,7,LS: Site Impervious**

Runoff = 0.38 cfs @ 7.99 hrs, Volume= 5,608 cf, Depth= 3.12"

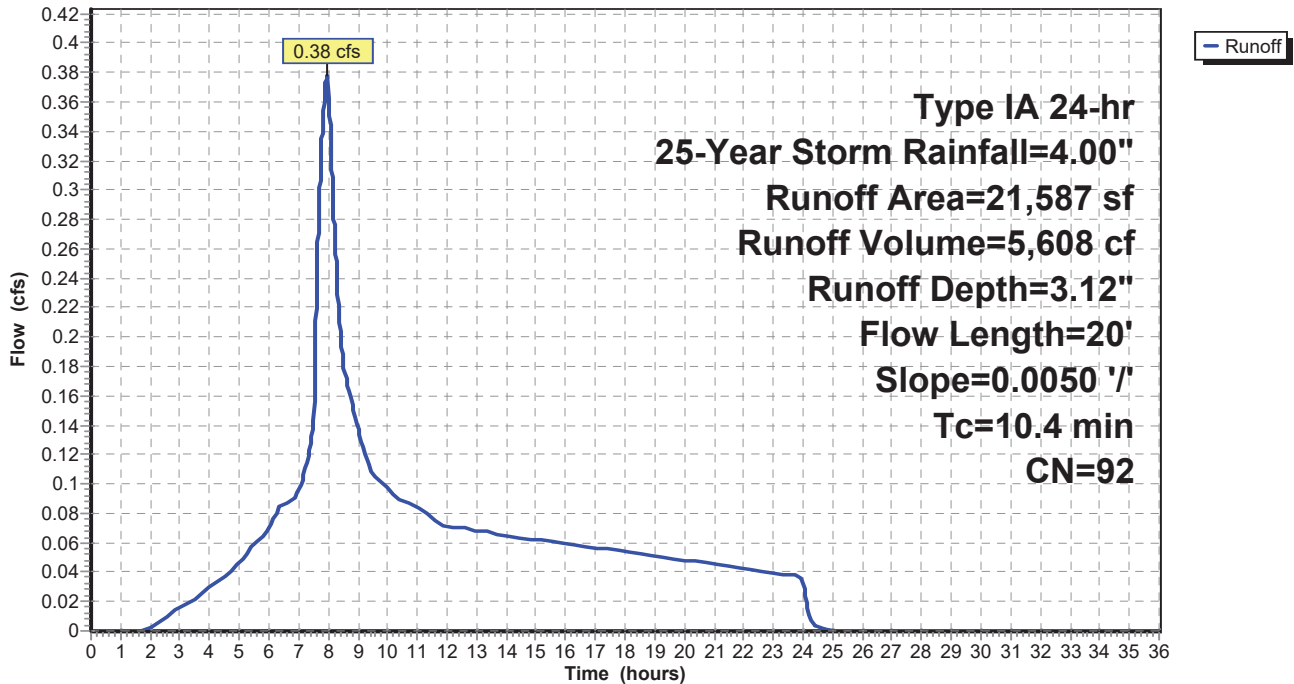
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 25-Year Storm Rainfall=4.00"

	Area (sf)	CN	Description
*	15,621	98	Paved parking/Hardscape, HSG C (Basin 2)
*	725	98	Paved parking/Hardscape, HSG C (Basin 7)
	5,241	74	>75% Grass cover, Good, HSG C
	21,587	92	Weighted Average
	5,241		24.28% Pervious Area
	16,346		75.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
5.4	20	0.0050	0.06		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
10.4	20	Total			

**Subcatchment 2,7,LS: Site Impervious**

Hydrograph



**Summary for Subcatchment LS,4,5,6: South Patio and Landscape**

Runoff = 0.10 cfs @ 7.95 hrs, Volume= 1,443 cf, Depth= 2.37"

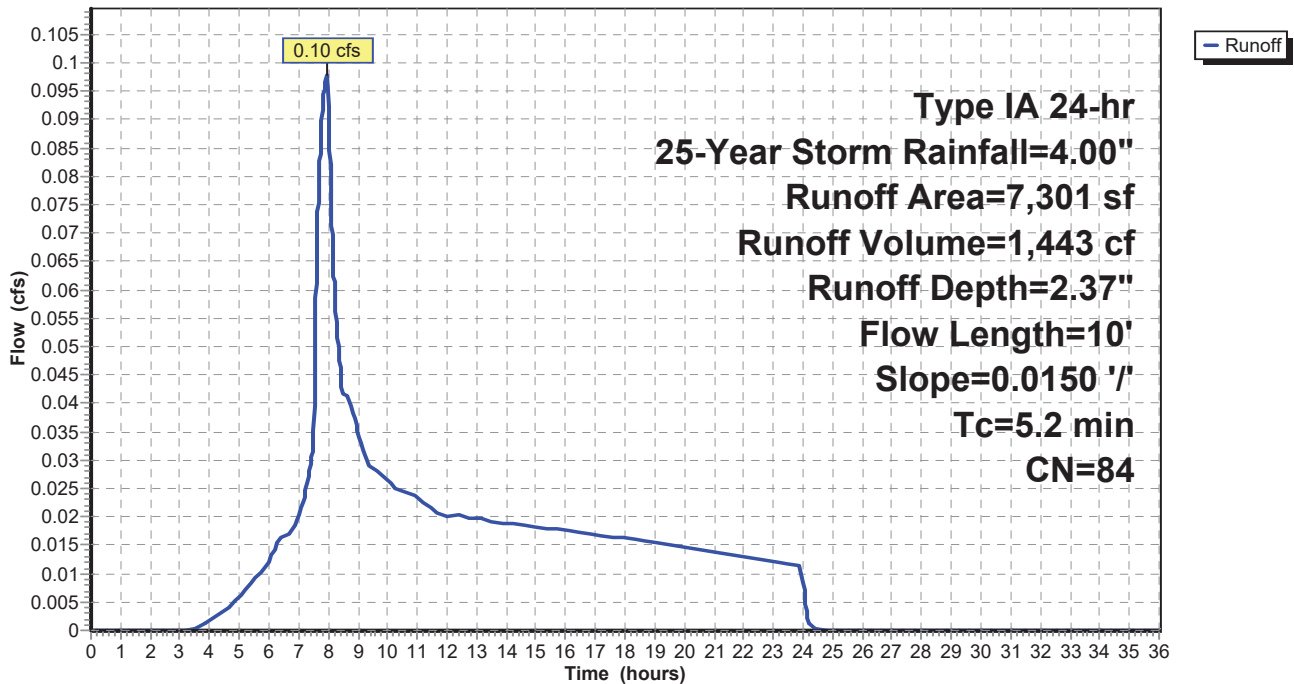
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Type IA 24-hr 25-Year Storm Rainfall=4.00"

Area (sf)	CN	Description
3,066	98	Impervious Sidewalk (Basins 4,5,6)
4,235	74	>75% Grass cover, Good, HSG C
7,301	84	Weighted Average
4,235		58.01% Pervious Area
3,066		41.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0150	0.67		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
5.0					Direct Entry, Direct
5.2	10	Total			

**Subcatchment LS,4,5,6: South Patio and Landscape**

Hydrograph



**Summary for Pond 36": Subsurface Detention (West)**

Inflow Area = 21,587 sf, 75.72% Impervious, Inflow Depth = 3.12" for 25-Year Storm event  
 Inflow = 0.38 cfs @ 7.99 hrs, Volume= 5,608 cf  
 Outflow = 0.27 cfs @ 8.22 hrs, Volume= 5,608 cf, Atten= 30%, Lag= 14.1 min  
 Primary = 0.27 cfs @ 8.22 hrs, Volume= 5,608 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 2.81' @ 8.22 hrs Surf.Area= 226 sf Storage= 794 cf

Plug-Flow detention time= 77.4 min calculated for 5,607 cf (100% of inflow)  
 Center-of-Mass det. time= 77.4 min ( 799.0 - 721.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	848 cf	<b>36.0" Round Pipe Storage x 2</b> L= 60.0' S= 0.0050 '"/>

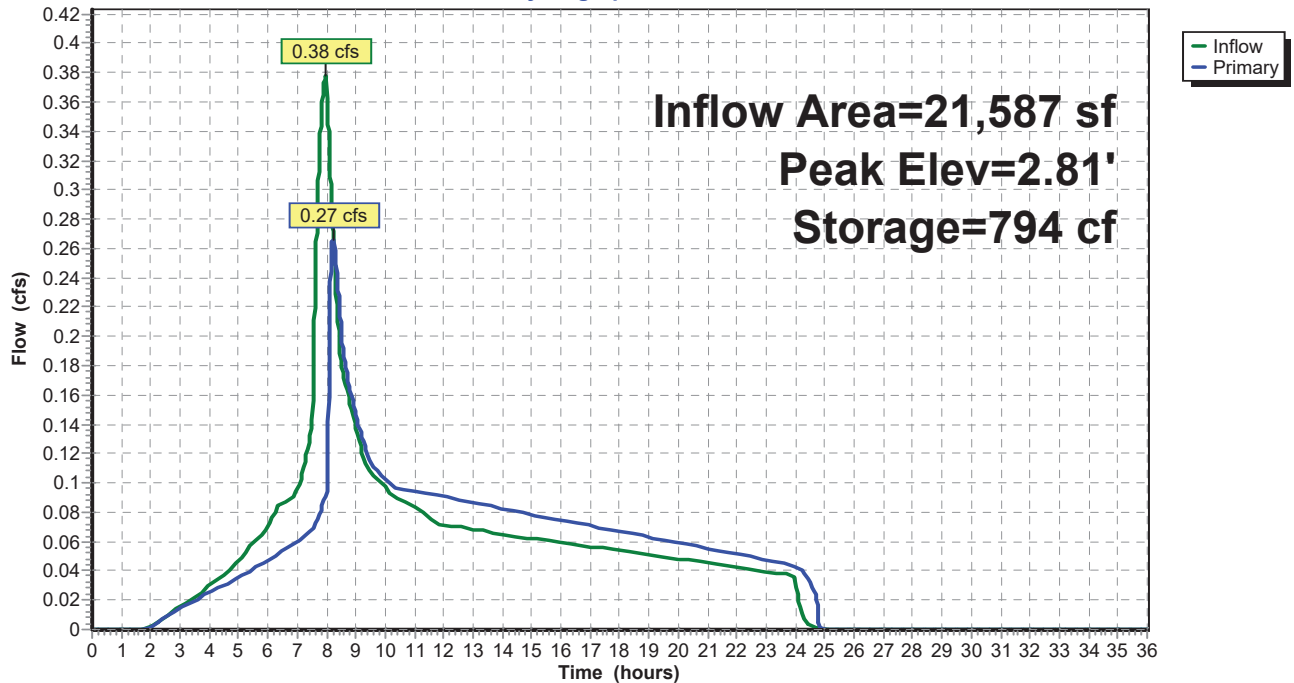
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	2.50'	<b>4.0" Vert. Upper Orifice</b> C= 0.620
#3	Primary	3.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.27 cfs @ 8.22 hrs HW=2.81' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.10 cfs @ 8.25 fps)
- 2=Upper Orifice (Orifice Controls 0.17 cfs @ 1.96 fps)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 36": Subsurface Detention (West)**

Hydrograph



**Summary for Pond 48": Subsurface Detention (East)**

Inflow Area = 55,172 sf, 94.62% Impervious, Inflow Depth = 3.65" for 25-Year Storm event  
 Inflow = 1.12 cfs @ 7.95 hrs, Volume= 16,788 cf  
 Outflow = 0.43 cfs @ 8.80 hrs, Volume= 15,872 cf, Atten= 62%, Lag= 50.7 min  
 Primary = 0.43 cfs @ 8.80 hrs, Volume= 15,872 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 4.00' @ 8.80 hrs Surf.Area= 725 sf Storage= 5,215 cf

Plug-Flow detention time= 396.8 min calculated for 15,872 cf (95% of inflow)  
 Center-of-Mass det. time= 356.4 min ( 1,031.4 - 675.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,341 cf	<b>48.0" Round CMP_Round 48" x 5</b> L= 85.0' S= 0.0050 1'

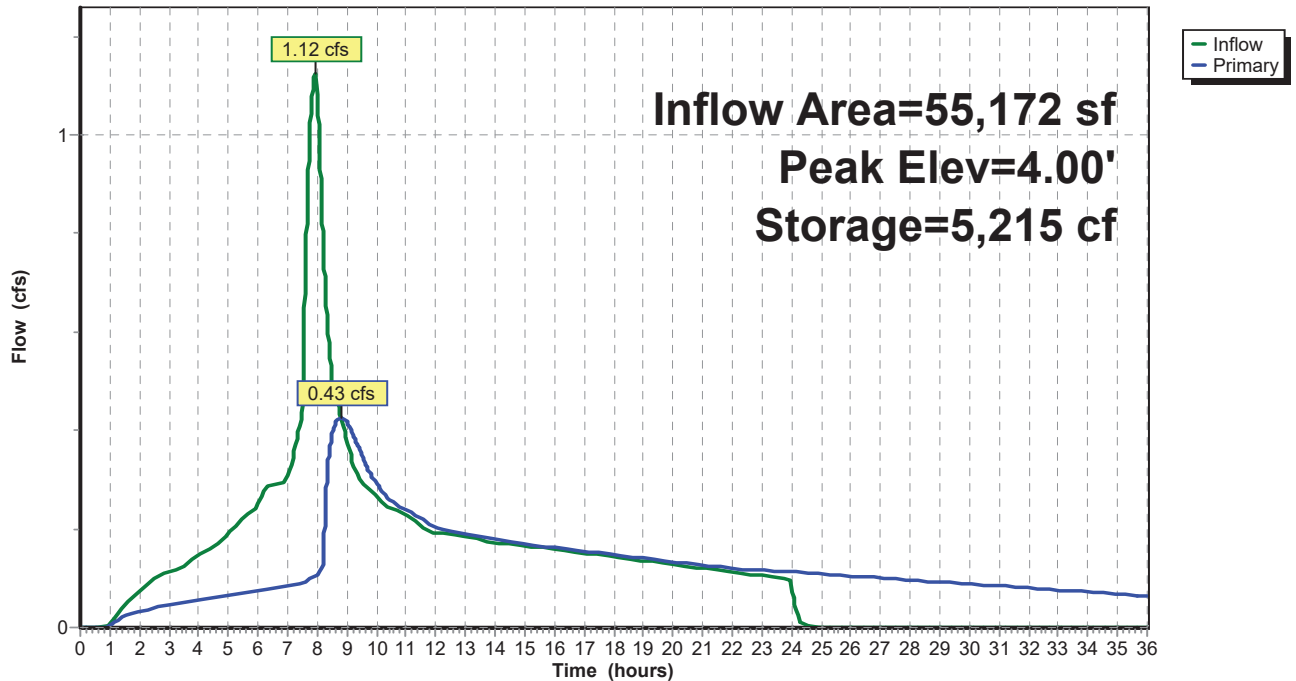
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	3.50'	<b>4.5" Vert. Upper Orifice</b> C= 0.620
#3	Primary	4.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.43 cfs @ 8.80 hrs HW=4.00' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.12 cfs @ 9.87 fps)
- 2=Upper Orifice (Orifice Controls 0.31 cfs @ 2.76 fps)
- 3=100-yr Overflow ( Controls 0.00 cfs)

**Pond 48": Subsurface Detention (East)**

Hydrograph

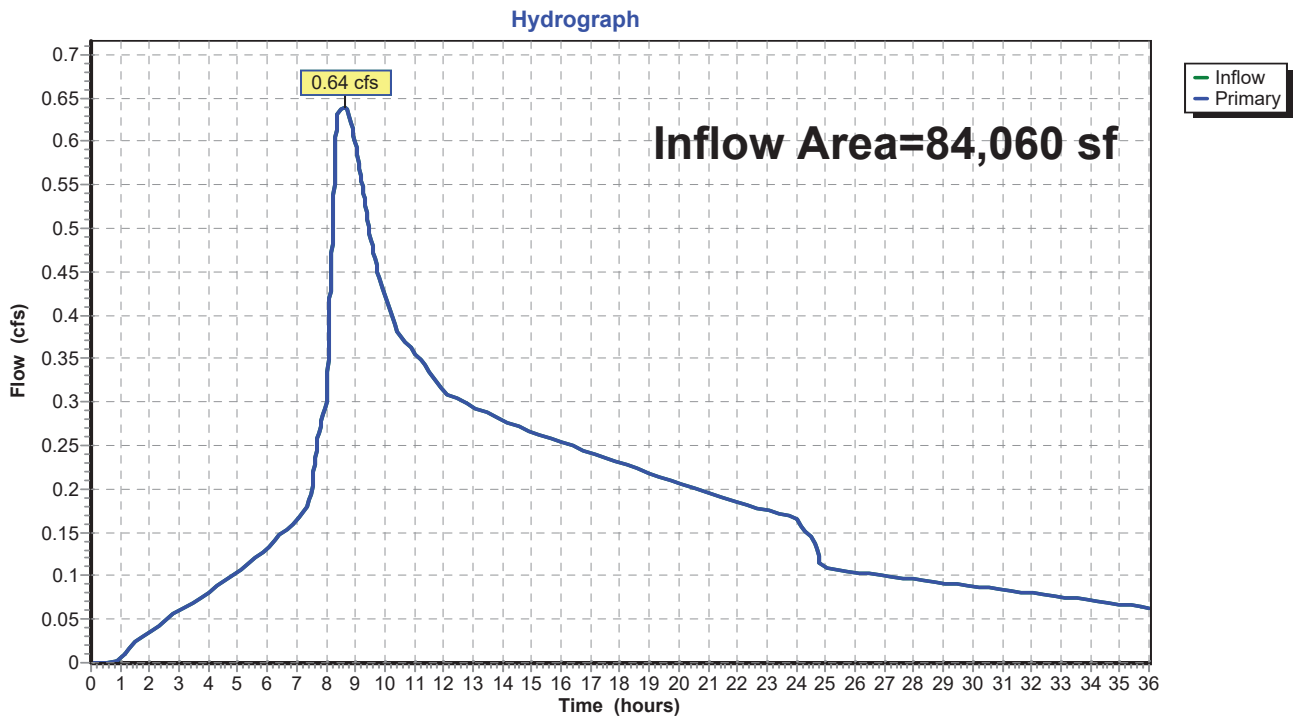


### Summary for Link Post: Post-Developed Flow Summary

Inflow Area = 84,060 sf, 85.20% Impervious, Inflow Depth > 3.27" for 25-Year Storm event  
Inflow = 0.64 cfs @ 8.62 hrs, Volume= 22,923 cf  
Primary = 0.64 cfs @ 8.62 hrs, Volume= 22,923 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Post: Post-Developed Flow Summary



**8145 Post-Developed**

Type IA 24-hr 100-Year Storm Rainfall=4.70"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1,3, LS: Site Impervious** Runoff Area=55,172 sf 94.62% Impervious Runoff Depth=4.35"  
Flow Length=20' Slope=0.0100 '/' Tc=9.1 min CN=97 Runoff=1.33 cfs 19,992 cf

**Subcatchment 2,7,LS: Site Impervious** Runoff Area=21,587 sf 75.72% Impervious Runoff Depth=3.80"  
Flow Length=20' Slope=0.0050 '/' Tc=10.4 min CN=92 Runoff=0.46 cfs 6,830 cf

**Subcatchment LS,4,5,6: South Patio and** Runoff Area=7,301 sf 41.99% Impervious Runoff Depth=3.00"  
Flow Length=10' Slope=0.0150 '/' Tc=5.2 min CN=84 Runoff=0.13 cfs 1,824 cf

**Pond 36": Subsurface Detention (West)** Peak Elev=3.04' Storage=836 cf Inflow=0.46 cfs 6,830 cf  
Outflow=0.46 cfs 6,830 cf

**Pond 48": Subsurface Detention (East)** Peak Elev=4.16' Storage=5,303 cf Inflow=1.33 cfs 19,992 cf  
Outflow=1.17 cfs 19,023 cf

**Link Post: Post-Developed Flow Summary** Inflow=1.70 cfs 27,676 cf  
Primary=1.70 cfs 27,676 cf

**Total Runoff Area = 84,060 sf Runoff Volume = 28,645 cf Average Runoff Depth = 4.09"**  
**14.80% Pervious = 12,444 sf 85.20% Impervious = 71,616 sf**



**8145 Post-Developed**

Type IA 24-hr 100-Year Storm Rainfall=4.70"

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**Summary for Subcatchment 1,3, LS: Site Impervious and Landscape**

Runoff = 1.33 cfs @ 7.95 hrs, Volume= 19,992 cf, Depth= 4.35"

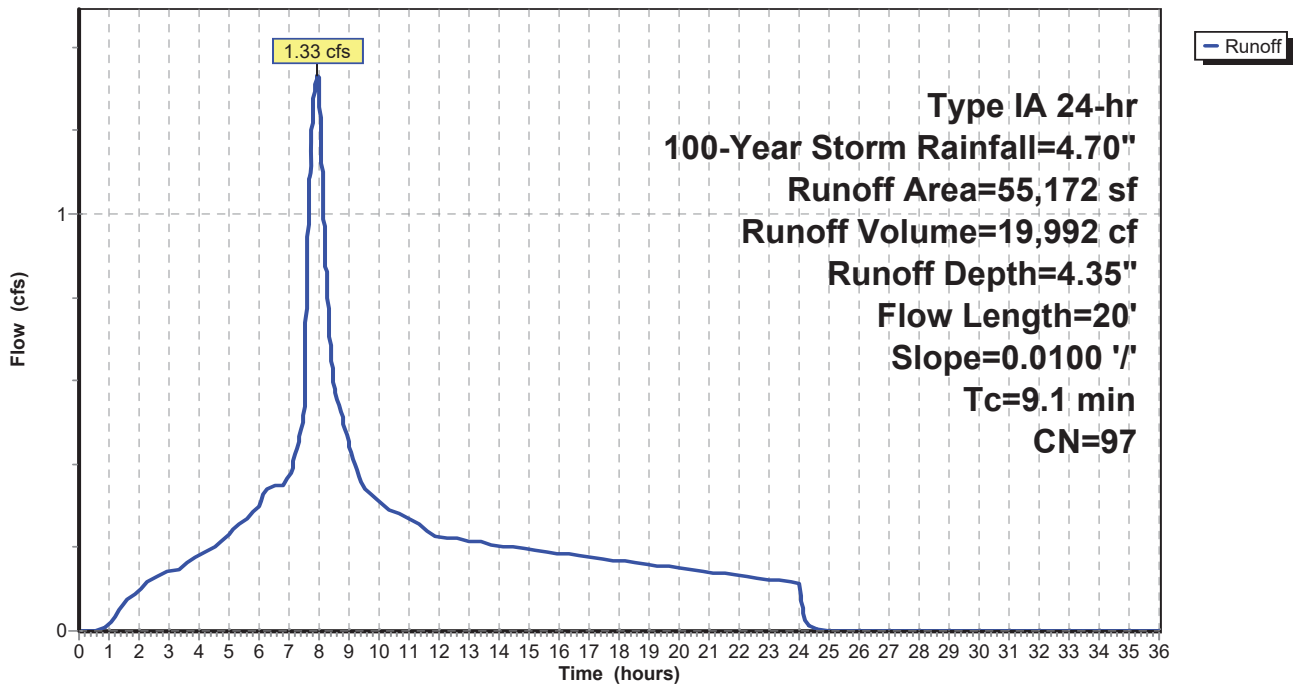
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 100-Year Storm Rainfall=4.70"

	Area (sf)	CN	Description
*	6,531	98	Paved parking, HSG C (Basin 3)
*	45,673	98	Roofs, HSG C (Basin 1)
	2,968	74	>75% Grass cover, Good, HSG C
	55,172	97	Weighted Average
	2,968		5.38% Pervious Area
	52,204		94.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
4.1	20	0.0100	0.08		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
9.1	20	Total			

**Subcatchment 1,3, LS: Site Impervious and Landscape**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 100-Year Storm Rainfall=4.70"

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**Summary for Subcatchment 2,7,LS: Site Impervious**

Runoff = 0.46 cfs @ 7.98 hrs, Volume= 6,830 cf, Depth= 3.80"

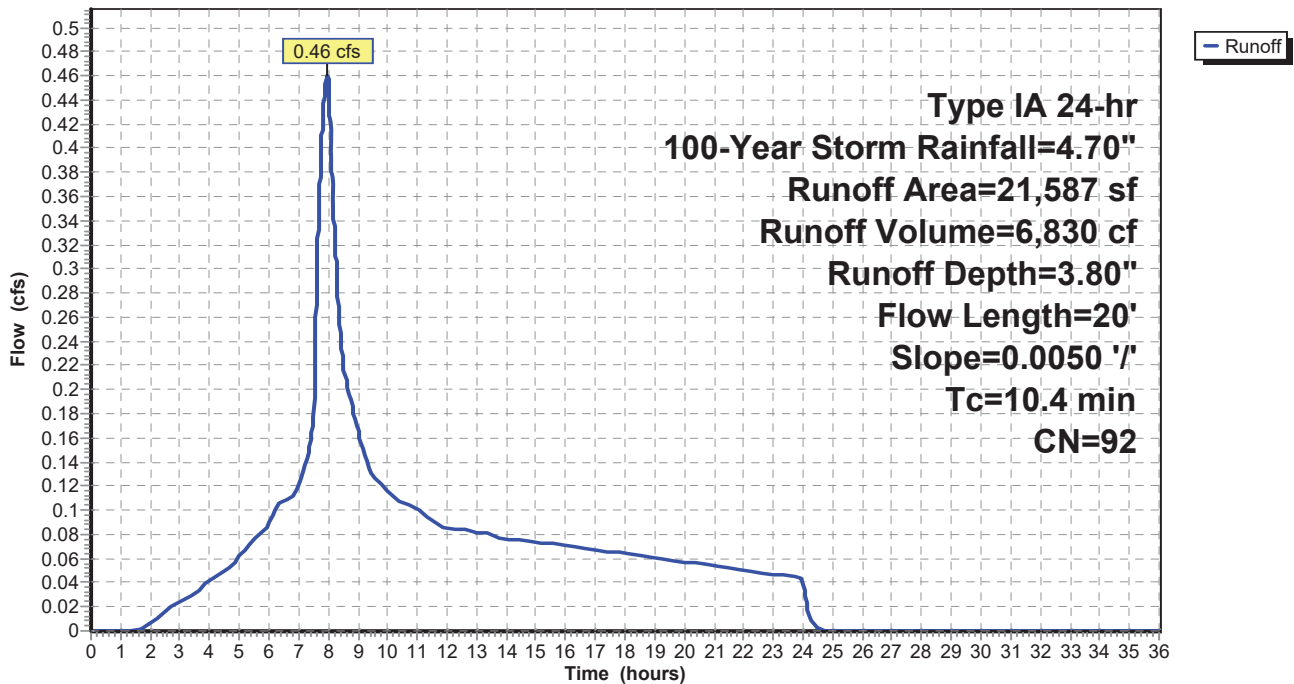
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 100-Year Storm Rainfall=4.70"

	Area (sf)	CN	Description
*	15,621	98	Paved parking/Hardscape, HSG C (Basin 2)
*	725	98	Paved parking/Hardscape, HSG C (Basin 7)
	5,241	74	>75% Grass cover, Good, HSG C
	21,587	92	Weighted Average
	5,241		24.28% Pervious Area
	16,346		75.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>
5.4	20	0.0050	0.06		<b>Sheet Flow, Sheet Flow</b>
					Grass: Short n= 0.150 P2= 2.40"
10.4	20	Total			

**Subcatchment 2,7,LS: Site Impervious**

Hydrograph



**8145 Post-Developed**

Type IA 24-hr 100-Year Storm Rainfall=4.70"

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**Summary for Subcatchment LS,4,5,6: South Patio and Landscape**

Runoff = 0.13 cfs @ 7.94 hrs, Volume= 1,824 cf, Depth= 3.00"

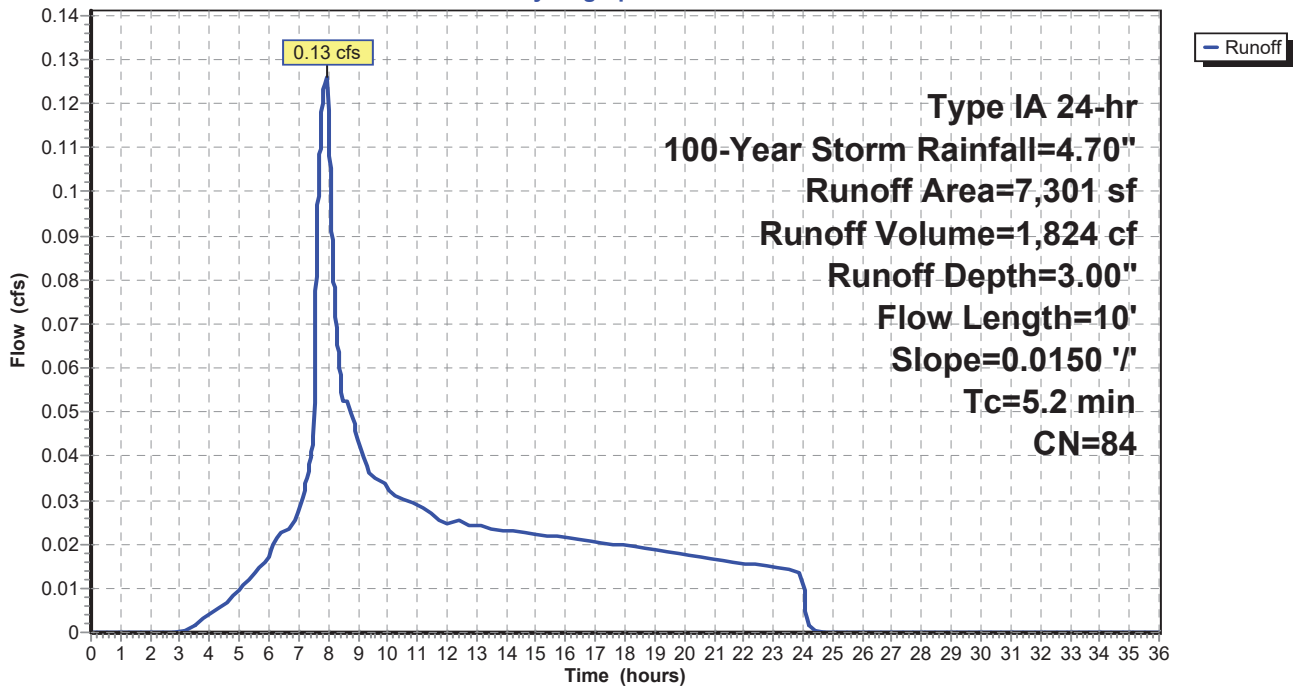
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 100-Year Storm Rainfall=4.70"

Area (sf)	CN	Description
3,066	98	Impervious Sidewalk (Basins 4,5,6)
4,235	74	>75% Grass cover, Good, HSG C
7,301	84	Weighted Average
4,235		58.01% Pervious Area
3,066		41.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0150	0.67		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.40"
5.0					<b>Direct Entry, Direct</b>
5.2	10	Total			

**Subcatchment LS,4,5,6: South Patio and Landscape**

Hydrograph



**Summary for Pond 36": Subsurface Detention (West)**

Inflow Area = 21,587 sf, 75.72% Impervious, Inflow Depth = 3.80" for 100-Year Storm event  
 Inflow = 0.46 cfs @ 7.98 hrs, Volume= 6,830 cf  
 Outflow = 0.46 cfs @ 8.01 hrs, Volume= 6,830 cf, Atten= 1%, Lag= 1.7 min  
 Primary = 0.46 cfs @ 8.01 hrs, Volume= 6,830 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 3.04' @ 8.01 hrs Surf.Area= 119 sf Storage= 836 cf

Plug-Flow detention time= 80.8 min calculated for 6,828 cf (100% of inflow)  
 Center-of-Mass det. time= 80.8 min ( 793.5 - 712.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	848 cf	<b>36.0" Round Pipe Storage x 2</b> L= 60.0' S= 0.0050 '"/>

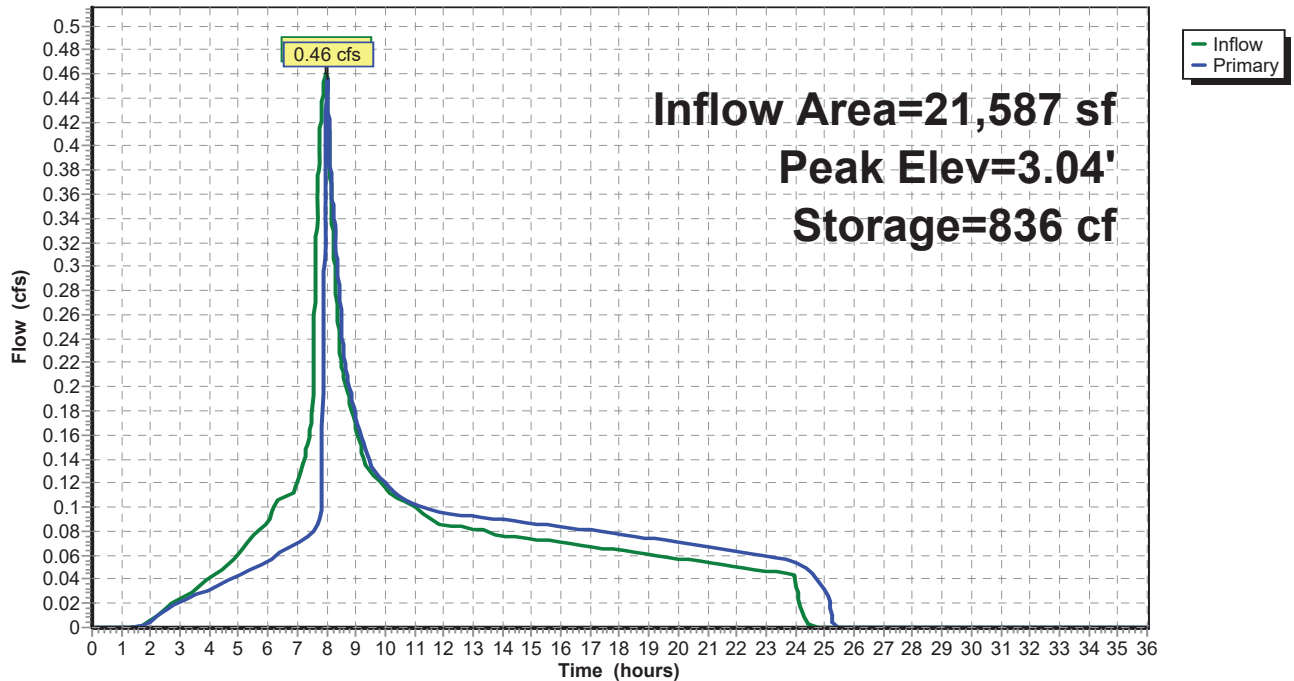
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	2.50'	<b>4.0" Vert. Upper Orifice</b> C= 0.620
#3	Primary	3.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=0.45 cfs @ 8.01 hrs HW=3.04' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.11 cfs @ 8.59 fps)
- 2=Upper Orifice (Orifice Controls 0.27 cfs @ 3.04 fps)
- 3=100-yr Overflow (Weir Controls 0.08 cfs @ 0.65 fps)

**Pond 36": Subsurface Detention (West)**

Hydrograph



**Summary for Pond 48": Subsurface Detention (East)**

Inflow Area = 55,172 sf, 94.62% Impervious, Inflow Depth = 4.35" for 100-Year Storm event  
 Inflow = 1.33 cfs @ 7.95 hrs, Volume= 19,992 cf  
 Outflow = 1.17 cfs @ 8.07 hrs, Volume= 19,023 cf, Atten= 12%, Lag= 7.2 min  
 Primary = 1.17 cfs @ 8.07 hrs, Volume= 19,023 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs  
 Peak Elev= 4.16' @ 8.07 hrs Surf.Area= 354 sf Storage= 5,303 cf

Plug-Flow detention time= 342.6 min calculated for 19,018 cf (95% of inflow)  
 Center-of-Mass det. time= 306.5 min ( 976.7 - 670.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,341 cf	<b>48.0" Round CMP_Round 48" x 5</b> L= 85.0' S= 0.0050 1'

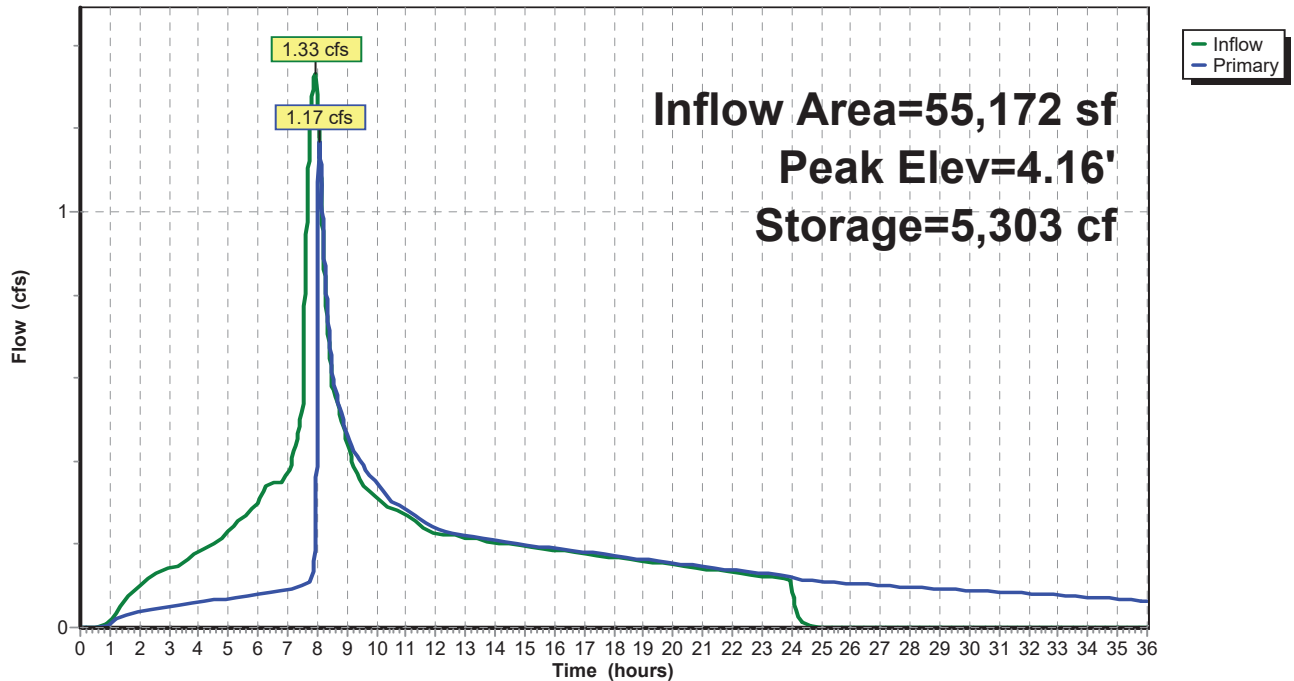
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>1.5" Vert. Lower Orifice</b> C= 0.620
#2	Primary	3.50'	<b>4.5" Vert. Upper Orifice</b> C= 0.620
#3	Primary	4.00'	<b>12.0" Horiz. 100-yr Overflow</b> C= 0.620 Limited to weir flow at low heads

**Primary OutFlow** Max=1.17 cfs @ 8.07 hrs HW=4.16' (Free Discharge)

- 1=Lower Orifice (Orifice Controls 0.12 cfs @ 10.07 fps)
- 2=Upper Orifice (Orifice Controls 0.38 cfs @ 3.42 fps)
- 3=100-yr Overflow (Weir Controls 0.66 cfs @ 1.31 fps)

**Pond 48": Subsurface Detention (East)**

Hydrograph



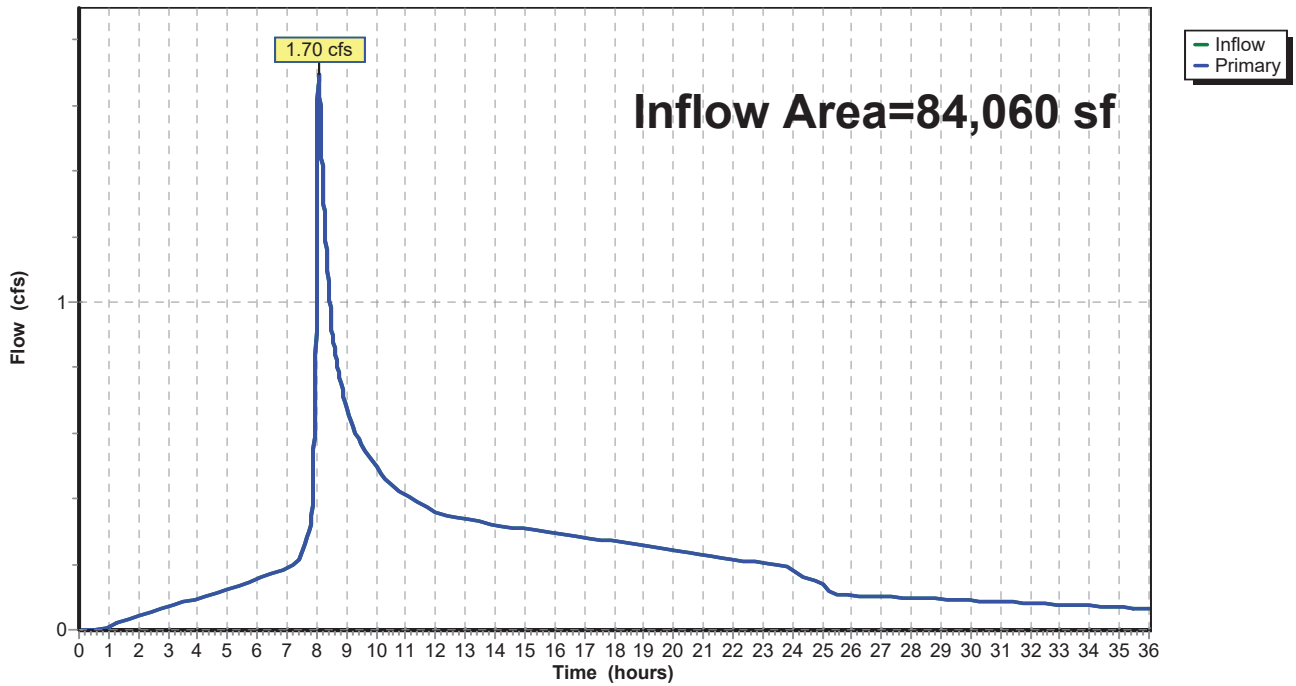
### Summary for Link Post: Post-Developed Flow Summary

Inflow Area = 84,060 sf, 85.20% Impervious, Inflow Depth > 3.95" for 100-Year Storm event  
Inflow = 1.70 cfs @ 8.06 hrs, Volume= 27,676 cf  
Primary = 1.70 cfs @ 8.06 hrs, Volume= 27,676 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link Post: Post-Developed Flow Summary

Hydrograph



## **Appendix C:** **Typical Details and Supporting Information**

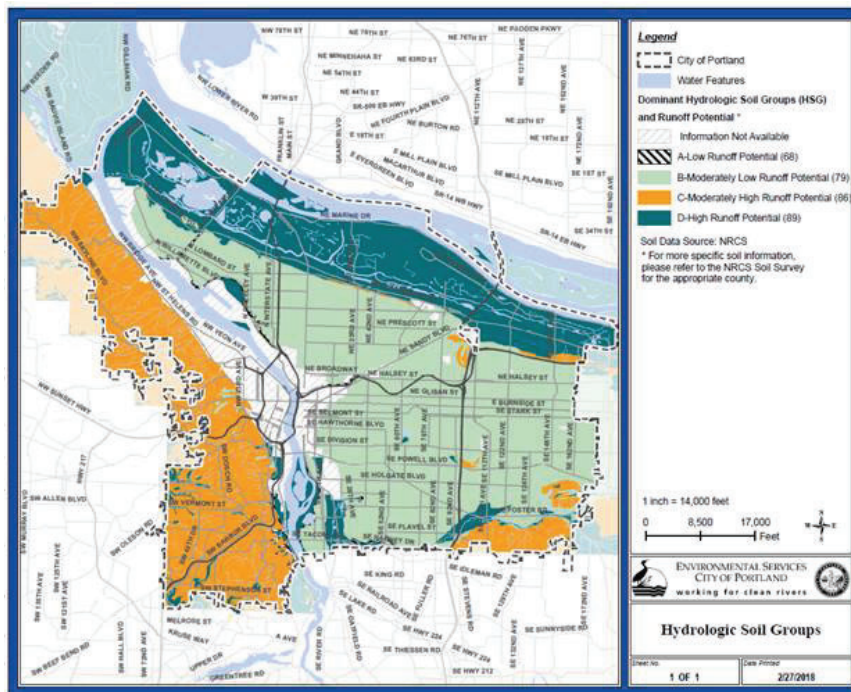
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## Curve Numbers

Use the pre-development curve numbers in Table 2-11 based on the site's soil type. These curve numbers are based on undeveloped, not existing, site conditions. Use post-development curve numbers of 98 for impervious surfaces and 61 for ecoroofs. The design professional may use a different curve number if adequate justification is provided. The [Sewer and Drainage Facilities Design Manual](#) provides post-development curve numbers for other surfaces.

Figure 2-7 shows soil types in the City and is for reference only; it is not for site design. For site design, enter an address into [Portland Maps](#) and check utilities → environment → stormwater management to find the soil type.

**Figure 2-7. Soil Types in the City<sup>1</sup>**



1 For reference only; not for site design

**Table 2-11 Pre-Development Curve Numbers Based on Soil Type**

Soil Type	Curve Number
A	65
B	72
C	79
D	81
Unidentified	81



**Table 2-2a** Runoff curve numbers for urban areas <sup>1/</sup>

Cover description	Average percent impervious area <sup>2/</sup>	Curve numbers for hydrologic soil group			
		A	B	C	D
<b>Fully developed urban areas (vegetation established)</b>					
Open space (lawns, parks, golf courses, cemeteries, etc.) <sup>3/</sup> :					
Poor condition (grass cover < 50%) .....		68	79	86	89
Fair condition (grass cover 50% to 75%) .....		49	69	79	84
Good condition (grass cover > 75%) .....		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way) .....		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way) .....		98	98	98	98
Paved; open ditches (including right-of-way) .....		83	89	92	93
Gravel (including right-of-way) .....		76	85	89	91
Dirt (including right-of-way) .....		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) <sup>4/</sup> .....		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) .....		96	96	96	96
Urban districts:					
Commercial and business .....	85	89	92	94	95
Industrial .....	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses) .....	65	77	85	90	92
1/4 acre .....	38	61	75	83	87
1/3 acre .....	30	57	72	81	86
1/2 acre .....	25	54	70	80	85
1 acre .....	20	51	68	79	84
2 acres .....	12	46	65	77	82
<b>Developing urban areas</b>					
Newly graded areas					
(pervious areas only, no vegetation) <sup>5/</sup> .....		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

<sup>1/</sup> Average runoff condition, and  $I_a = 0.2S$ .<sup>2/</sup> The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.<sup>3/</sup> CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.<sup>4/</sup> Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.<sup>5/</sup> Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.



# CITY OF PORTLAND ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ■ Nick Fish, Commissioner ■ Michael Jordan, Director

February 2019

## Stormwater Management Manual Approved Manufactured Stormwater Treatment Technology

### Contech Stormwater Management StormFilter™ with PhosphoSorb® Filter Media

#### **City of Portland Decision:**

The Contech Stormwater Management StormFilter with PhosphoSorb Filter Media meets Portland's pollution reduction requirements, per the requirements of the 2016 Stormwater Management Manual, and is approved for use in the City of Portland with the following conditions.

#### **Background:**

As part of the application process, Contech Engineered Solutions submitted the Washington State Department of Ecology (DOE) Technology Assessment Protocol (TAPE) Technology Evaluation Report, including all appendices and performance monitoring data, to demonstrate that the StormFilter with PhosphoSorb meets the City of Portland's pollution reduction requirements.

Contech gave a technical presentation to City staff the public on June 27, 2018. The presentation was followed by a technical interview with the City of Portland review committee to discuss water quality performance, maintenance, and overall use in the public right-of-way.

Additional information is available online for this system, including:

- [Contech StormFilter Website Page](#)
- [WA TAPE Approval for TSS and Phosphorus Treatment](#) General Use Designation for Basic (TSS) and Phosphorus Treatment at 1.67 gpm/sq ft of media surface.

**Conditions of Use:**

1. All configuration options for the Contech StormFilter with PhosphoSorb are approved for TSS removal. Selection of a specific configuration is the responsibility of the project designer.
2. Use of a Contech StormFilter with PhosphoSorb does not exempt a project or site from required flow control requirements, operations and maintenance requirements, or other applicable requirements of the SWMM.
3. For use in the public right-of-way, the following conditions must be met:
  - Units must meet City of Portland street design requirements, including but not limited to H-20 vehicle load rating, non-slip surface, and American with Disabilities Act tolerances specific to surface grates or vault lids.
  - The O&M Plan must call for an assessment during the two-year warranty period of project-specific maintenance requirements and frequencies.
4. Contech-certified providers should be utilized for activation, inspection and maintenance of the system, unless otherwise trained and certified by the manufacturer.

**Project Designer Responsibilities:**

1. Ensuring that the Conditions of Use are met.
2. Ensuring that the project meets all applicable requirements of the Portland SWMM, including the Stormwater Infiltration and Discharge Hierarchy.
3. Ensuring that the design and installation of the units are appropriate for the project goals, site conditions, long-term maintenance requirements, and any other site-specific design requirements on private property or for use in the public right-of-way.
4. Sizing units to meet the current Portland SWMM presumptive design approach and pollution reduction requirements. The pollution reduction capacity is flow-based and assumes a treatment flow intensity of 0.19 inches per hour, 5 minute time of concentration, and a 0.90 runoff coefficient using the Rational Method with treatment rates based upon WA GULD approved flow rates, in lieu of the manufacturer’s standard flow rate. The treatment capacities for Contech StormFilter units with PhosphoSorb, based on those assumptions, are provided in Table 1. For sites with different times of concentration, different rainfall intensities may be appropriate. See SWMM Chapter 1.3.4, page 1-40 for additional information.

Cartridge Size/Stack Configuration	Cartridge Design Flow Rate (gpm/ cartridge stack)	Maximum Drainage Area (acres/ cartridge stack)	Maximum Drainage Area (square feet/ cartridge stack)
12	8.35	0.109	4739
18	12.53	0.163	7112
27	18.79	0.245	10665

5. Each site plan must undergo Contech review before the City of Portland can approve the unit(s) for site installation. A letter certifying the project has been designed to the manufacturer’s specification must be submitted to BES prior to the appropriate design milestone. For public improvements, including public works permits, the letter must be submitted to BES prior to 60% plan review. For installation on private property, the letter must be submitted prior to building permit plan approval. The project designer is highly encouraged to work with Contech prior to the appropriate review milestone to maximize placement and performance of the unit(s).
6. If the project designer wishes to vary from these conditions of approval, the project designer must use the Performance Design Approach required by the SWMM.

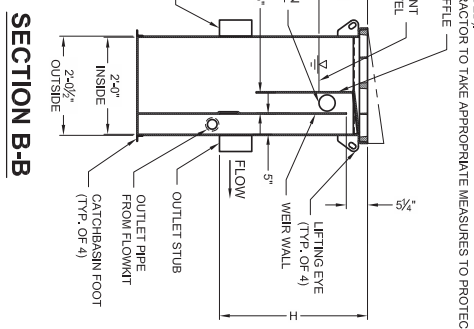
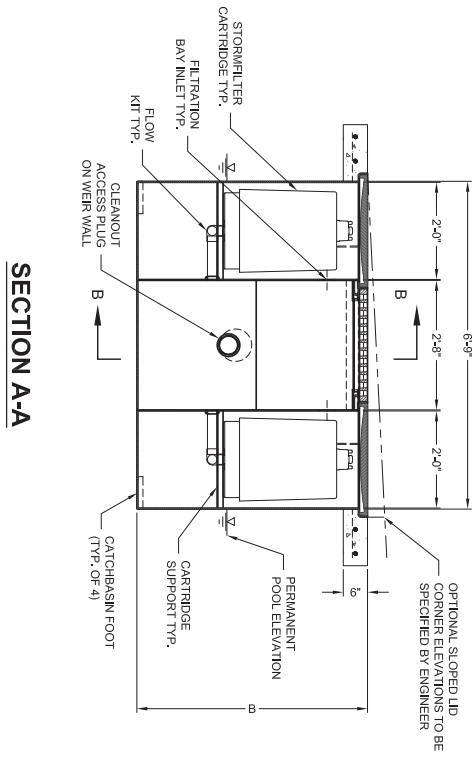
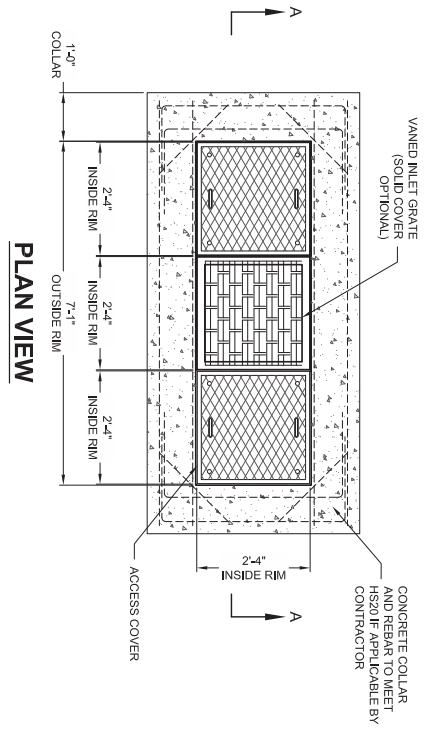
**General Conditions:**

1. BES may at any time suspend or revoke approval if the performance of the technology does not meet performance criteria, if there are changes to the TAPE certification, or the performance criteria change due to local, state, or federal pollution reduction standards.
2. If any changes, updates, or revisions have occurred to the StormFilter with PhosphoSorb, the applicant must obtain WA DOE TAPE GULD certification and re-apply following submission guidelines in effect at the time of application.

**Document Updates:**

Date	Action
August 2018	The device was approved for use in the City of Portland.
February 2019	Removed “Cartridges per Impervious Acre” from Table 1 due to the potential for associated sizing errors.





**STORMFILTER STEEL CATCHBASIN DESIGN NOTES**

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 2 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF TWO CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION	27"	18"	18" DEEP
RECOMMENDED HYDRAULIC DROP (H)	3.05'	2.3'	3.3'
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67 gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	16.29	11.25
PEAK HYDRAULIC CAPACITY	1.0	1.0	1.8
INLET PERMANENT POOL LEVEL (A)	1'-0"	1'-0"	2'-0"
OVERALL STRUCTURE HEIGHT (B)	4'-3"	3'-9"	4'-9"

\* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHORUS® (P-SORB) MEDIA ONLY

**GENERAL NOTES**

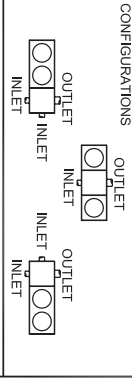
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. WWW.CONTECHES.COM
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- CONTRACTOR TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SECTOR.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD RATING ON STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET A536B LOAD RATING. TO MEET HS20 LOAD RATING, FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 78 SECONDS.
- ANCHORS, FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 78 SECONDS.
- SPREAD FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

**INSTALLATION NOTES**

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

**2-CARTRIDGE DEEP CATCHBASIN STORMFILTER DATA**

STRUCTURE ID	XXXX
WATER QUALITY FLOW RATE (g/s)	XXXX
PEAK FLOW RATE (1.8 G/S)	XXXX
RETURNS PERIOD OF PEAK FLOW (YRS)	XXX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXXX.XX
PIPE DATA:	
INLET STUB	I.E. XXXXX
OUTLET STUB	XX
CONFIGURATIONS	XXXXXX
INLET STUB	XX



NOTES/SPECIAL REQUIREMENTS:

**CONTECH**  
ENGINEERED SOLUTIONS LLC  
www.conteches.com  
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399  
800-525-3899 513-545-7000 513-545-3993 FAX

2 CARTRIDGE CATCHBASIN  
STORMFILTER  
STANDARD DETAIL

**Appendix D:**  
Soil Information from the NRCS Soil Survey of  
Clackamas County, Oregon

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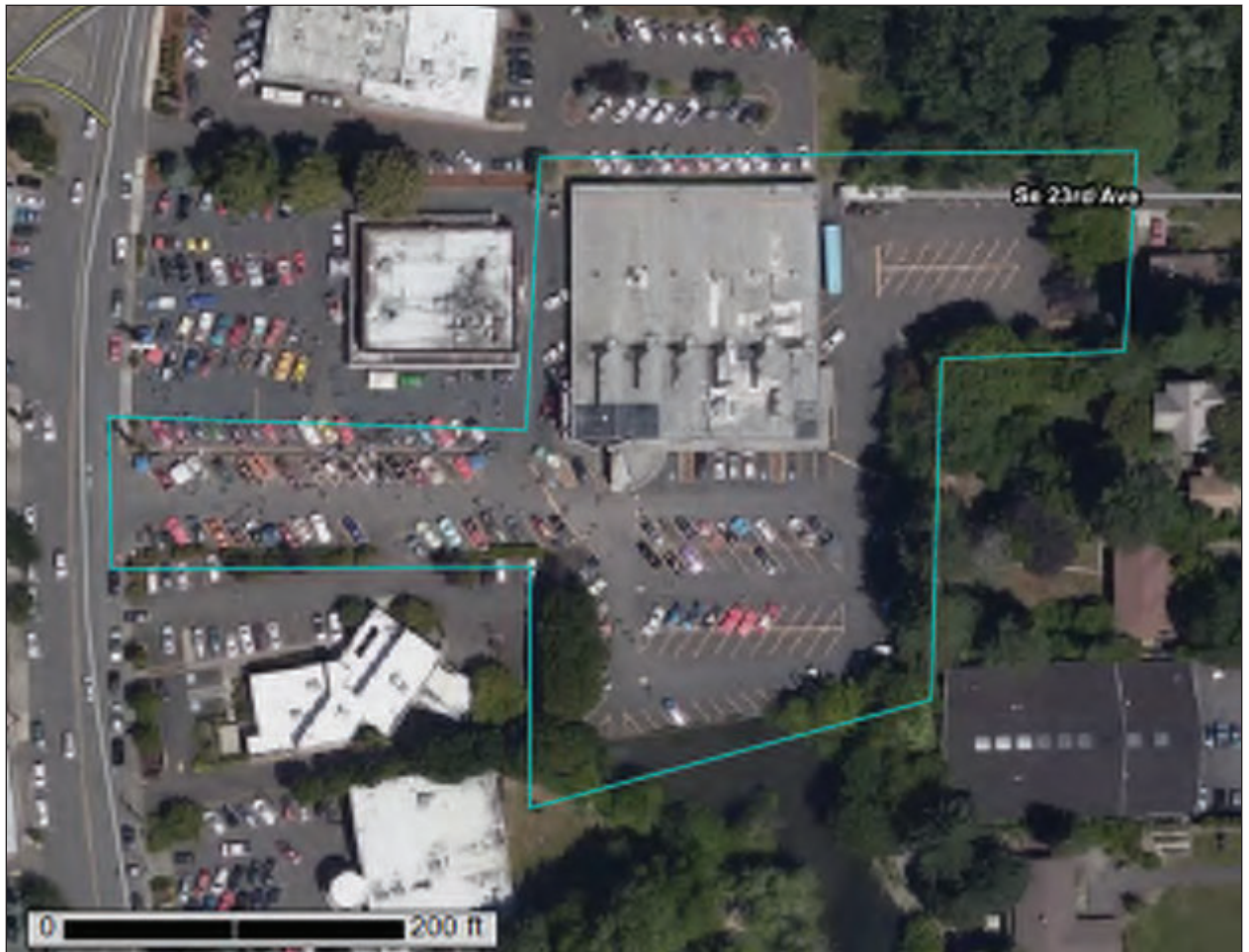
United States  
Department of  
Agriculture

NRCS

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Clackamas County Area, Oregon





# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

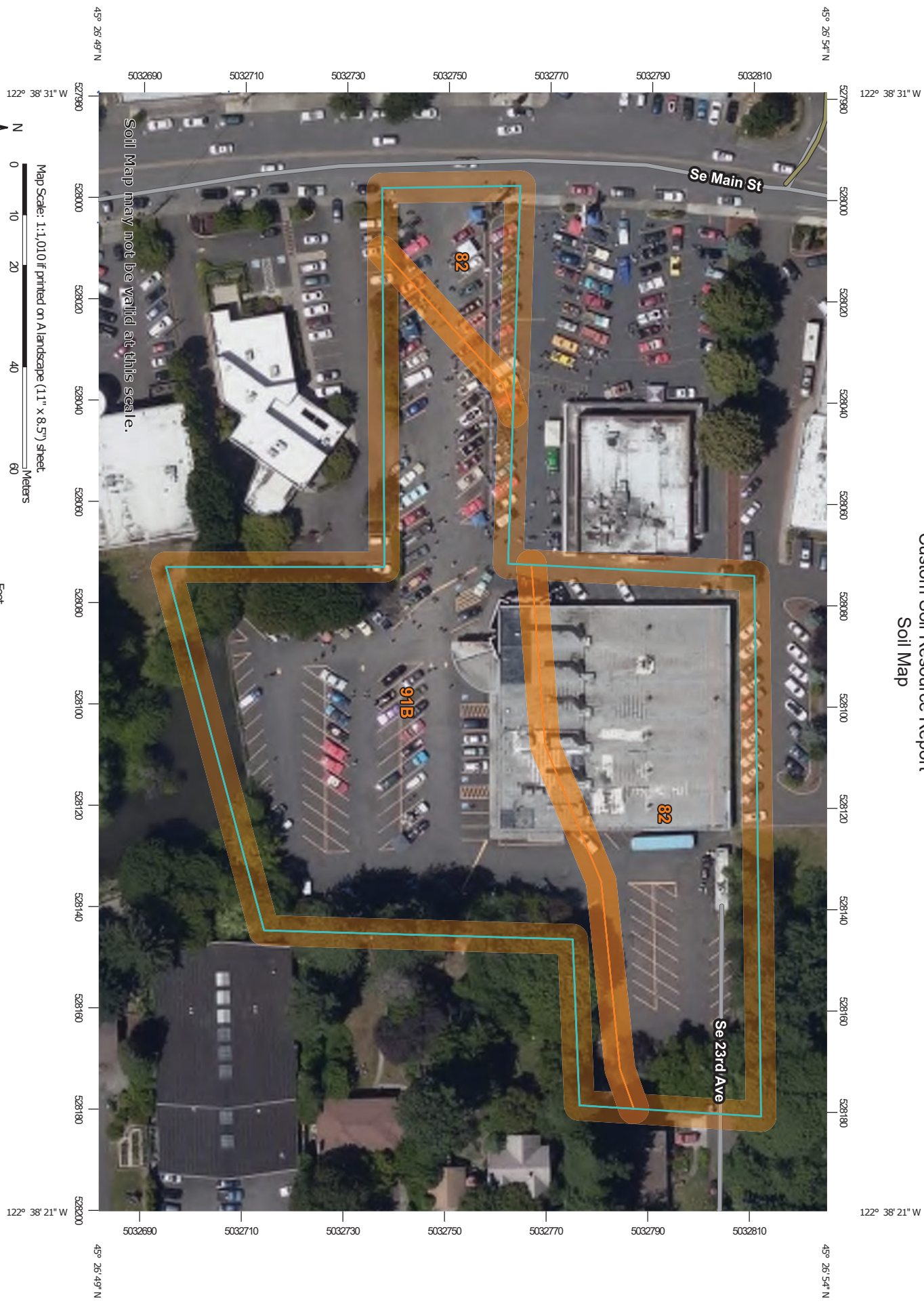
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

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











The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report  
Soil Map





























## MAP LEGEND

	Spoil Area
	Stony Spot
	Very Stony Spot
	Wet Spot
	Other
	Special Line Features
<b>Water Features</b>	
	Streams and Canals
<b>Transportation</b>	
	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads
	Aerial Photography
<b>Background</b>	
	Aerial Photography

	Area of Interest (AOI)
	Area of Interest (AOI)
<b>Soils</b>	
	Soil Map Unit Polygons
	Soil Map Unit Lines
	Soil Map Unit Points
<b>Special Point Features</b>	
	Blowout
	Borrow Pit
	Clay Spot
	Closed Depression
	Gravel Pit
	Gravelly Spot
	Landfill
	Lava Flow
	Marsh or swamp
	Mine or Quarry
	Miscellaneous Water
	Perennial Water
	Rock Outcrop
	Saline Spot
	Sandy Spot
	Severely Eroded Spot
	Sinkhole
	Slide or Slip
	Sodic Spot

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon  
 Survey Area Data: Version 16, Jun '11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
82	Urban land	1.1	41.2%
91B	Woodburn silt loam, 3 to 8 percent slopes	1.6	58.8%
<b>Totals for Area of Interest</b>		<b>2.7</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

## Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Clackamas County Area, Oregon

### 82—Urban land

#### Map Unit Setting

*National map unit symbol:* 227g  
*Elevation:* 50 to 400 feet  
*Mean annual precipitation:* 40 to 60 inches  
*Mean annual air temperature:* 50 to 54 degrees F  
*Frost-free period:* 165 to 210 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Urban land:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Urban Land

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 8  
*Hydric soil rating:* No

### 91B—Woodburn silt loam, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 227z  
*Elevation:* 150 to 400 feet  
*Mean annual precipitation:* 40 to 50 inches  
*Mean annual air temperature:* 52 to 54 degrees F  
*Frost-free period:* 165 to 210 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Woodburn and similar soils:* 90 percent  
*Minor components:* 4 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Woodburn

##### Setting

*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Stratified glaciolacustrine deposits

##### Typical profile

*H1 - 0 to 16 inches:* silt loam  
*H2 - 16 to 38 inches:* silty clay loam  
*H3 - 38 to 60 inches:* silt loam

**Properties and qualities**

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 25 to 32 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water capacity:* High (about 12.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Forage suitability group:* Moderately Well Drained < 15% Slopes (G002XY004OR)  
*Other vegetative classification:* Moderately Well Drained < 15% Slopes (G002XY004OR)  
*Hydric soil rating:* No

**Minor Components**

**Huberly**

*Percent of map unit:* 2 percent  
*Landform:* Swales on terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Poorly Drained (G002XY006OR)  
*Hydric soil rating:* Yes

**Dayton**

*Percent of map unit:* 1 percent  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Poorly Drained (G002XY006OR)  
*Hydric soil rating:* Yes

**Aquolls**

*Percent of map unit:* 1 percent  
*Landform:* Flood plains  
*Hydric soil rating:* Yes

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## Custom Soil Resource Report

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## **Appendix E:** **Geotechnical Engineer and Infiltration Report**

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March 9, 2021

Pahlisch Commercial  
210 SW Wilson Avenue, Suite 100  
Bend, Oregon 97702

Attention: Kathryn Joseph

**Subject: Geotechnical Evaluation  
Kellogg Bowl, Milwaukie  
GCN Project 1526**

This report presents our Preliminary Geotechnical Evaluation of the proposed multi-family housing development located at 10306 SE Main Street in Milwaukie, Oregon. The report summarizes the work accomplished and provides our conclusions and recommendations for site development. It has been prepared in accordance with our proposal dated May 14, 2020.

## **PROJECT INFORMATION**

The project is located on an approximate 1.62-acre property that is currently developed with the Kellogg Bowl and parking lot. The site location relative to surrounding features is shown in Figure 1.

We understand design drawings have not been completed at this point. You provided us with the preliminary access exhibits and site layout prepared by AKS Engineering and Forestry in October 2020 and January 2021.

The project is expected to include a six-story, multi-family residential structure with 178 units. The project will include undercover parking, paved parking, and underground utilities. The project may include a half-height basement vault for auto-stacker equipment. The preliminary site layout is shown in Figure 2.

Site grades, available from MetroMap, show the site to be nearly flat with elevations ranging from about 38 to 40 feet above mean sea level (MSL). The site slopes slightly downward to the north.

## **SCOPE OF WORK**

The purpose of our services was to explore the site to fulfill the requirements of land use planning, to determine the need for additional site explorations, and to provide preliminary design and construction recommendations. The following describes our scope of services outline presented in our initial proposal with additional comments on additional scope items:

- Coordinate and manage the field investigation, including utility locates, authorization for site access, access preparation, exploration waste, and scheduling of contractors and GCN staff.

- Observe drilling of seven soil borings to depths up to 30 feet below the ground surface using mud-rotary and hollow-stem-auger (HSA) methods. The mud rotary borings were drilled on October 27, 2020 and three additional HSA borings were drilled on January 11, 2021.
- Conduct falling head infiltration tests in two borings to evaluate near surface infiltration rate of the on-site soil. The infiltration tests were conducted in general conformance with procedures referenced in the City of Portland's Stormwater Management Manual standards.
- Maintain a log of soil, rock, and groundwater conditions encountered in the borings and return samples to our laboratory for additional evaluation and testing. We classify the soil in general accordance with the Unified Soil classification System (USCS).
- Determine the moisture content of all samples, the content of material finer than the U.S. Standard 200 Sieve, and dry unit weight of selected samples in general accordance with guidelines presented in ASTM D 2216, ASTM D1140, and ASTM D 2937, respectively.
- Provide a written report that summarizes our explorations, geotechnical analysis, and preliminary conclusions.

## **SITE CONDITIONS**

The site is in an area of commercial development situated about 1 block east of SE Main Street at the northern end of downtown Milwaukie. The following paragraphs describe the site geology, surface, and subsurface features.

### **SITE GEOLOGY**

Multiple catastrophic floods inundated the Columbia River channel from Idaho to the Pacific Ocean from a period covering about 21,000 to 12,000 years ago. The floodwaters reached an elevation of about 400 feet above sea level in Portland area. The floodwater carried soil, gravel, and boulders that buried much of the area in multiple layers while scouring other areas to the bedrock surface.

The floods deposited silt, sand and gravel in the site vicinity. Bedrock underlying the area is basalt of the Columbia River Basalt flows that was deposited 15 to 16 million years ago.<sup>1</sup> All of these geologic units were found in the exploratory borings.

### **SURFACE CONDITIONS**

The project site is located on the east side of SE Main Street in downtown Milwaukie. Based on historic aerial photos, the site was used for residential and agricultural purposes through the 1950's. The site was redeveloped in 1962 with the existing single-story retail building, the Kellogg Bowl. Asphalt pavement covers all of the site except for the building footprint.

The existing building and pavement will be demolished during the redevelopment.

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<sup>1</sup> Beeson, M.H. et al, "Geologic Map of the Lake Oswego Quadrangle, Clackamas, Multnomah, and Washington Counties, Oregon", 1:24,000, State of Oregon Department of Geology and Mineral Industries, GMS-59, 1989.

**SUBSURFACE CONDITIONS**

We explored subsurface conditions at the site by observing the drilling of seven soil borings (B-1 through B-7) at the locations shown in Figure 2. Four of the borings (B-1 to B-4) were extended to the depth of dense gravel that underlies the site. Three borings (B-5 to B-7) were primarily intended for infiltration testing.

Soil samples obtained from the borings were returned to our laboratory for additional evaluation and testing. Select samples tested to determine the natural moisture content, fines content, and dry unit weight. Descriptions of field and laboratory procedures and the exploration logs are included in Attachment A.

We encountered asphalt pavement at the ground surface that varied from 2 to 4 inches thick. Base rock beneath the pavement varied from 6 to 18 inches thick.

Beneath the pavement we encountered a near surface layer of medium stiff to stiff silt that was generally 7 to 10 feet thick. The silt was underlain layers of very loose to loose silty sand that was generally about 10 feet thick. The silt was very soft in boring B-2 from about 5 to 10 feet. The silty sand layer was absent in boring B-1. We encountered loose to medium dense gravel fill in boring B-4 that extended to 7 feet bgs.

The silt and sand units were underlain by very dense gravel that varied from 10 to 25 feet below the ground surface. In boring B-3 we encountered decomposed basalt bedrock at 31 feet bgs.

**GROUNDWATER AND INFILTRATION**

The USGS Oregon Water Science Center estimates groundwater levels within the vicinity to vary between 5 and 7 feet<sup>2</sup>. Water levels on site were inferred in October at 15 feet. Water levels in January were inferred at 5 to 11 feet.

A summary of the water infiltration tests are shown in Table 1 below. The infiltration rate is plotted on Figures 3 and 4 where we have provided several rates with varying amounts of head. Both tests were started with water level at the existing ground surface.

**TABLE 1 – INFILTRATION TESTING RESULTS**

BORING	WELL SCREEN DEPTH	GROUNDWATER DEPTH (FEET)	INFILTRATION RATE IN/HR
B-6	7.5-12.5	7.0	37
B-7	4.5-14.5	8.5	48

The borings were finished with casing and monitoring well covers in accordance with State of Oregon Water Resources Division (OWRD) requirements. The wells can be used for monitoring seasonal groundwater levels in the future. Copies of the monitoring well reports, submitted to the, follow the logs of borings in Attachment B.

<sup>2</sup> Daniel T. Snyder, “Estimated Depth to Groundwater in the Portland, Oregon Area”, USGS Scientific Investigations Report 2008-5059, December 31, 2008.

## **SEISMIC SETTING**

The Portland area is subject to seismic events stemming from three possible sources: the Cascadia Subduction Zone (CSZ), intraslab faults within the Juan de Fuca Plate, and crustal faults in the North American Plate.

The site is surrounded in all directions by Quaternary crustal faults that are mapped or inferred. The faults within 10 miles of the site are the Portland Hills fault about 0.5 miles northeast, the Oatfield Fault about 1.7 miles southwest, Bolton fault about 3.3 miles southwest, the Damascus-Tickle Creek fault zone 4.3 miles to the east, the East Bank fault about 4.9 miles north, the Canby-Molalla fault about 6 miles southwest, and the Beaverton Fault 8.2 miles west. The USGS considers the faults to be greater than 10,000 years old and are considered inactive.

The contribution of potential earthquake-induced ground motion from all known sources, including the faults described above, are included in probabilistic ground motion maps developed by the USGS. We will provide seismic design parameters after liquefaction analysis and selection of the foundation system.

## **CONCLUSIONS AND RECOMMENDATIONS**

Based on the results of our field explorations and our engineering analysis, it is our opinion that the site can be developed as proposed.

Explorations conducted on the site confirm that mapped groundwater on the site is very shallow, in the range of 5 to 7 feet below the ground surface in the winter months. The condition will not allow stormwater disposal by infiltration. Stormwater will need to be disposed of in the municipal system.

Near surface soil on the site includes soft and loose layers of variable in depth and thickness. Layers of loose silty sand are likely liquefiable during a design level seismic event and there would likely be manifestation at the ground surface resulting in differential settlement. These conditions will likely require the building be supported on deep foundations that derive support from the underlying dense gravel. The conditions are suitable for rammed aggregate piers or deep soil mixing as alternatives to driven piles or concrete piers.

We recommend two cone penetrometer tests be conducted to provide better understanding of the soft and loose layers and to gain information for detailed evaluation of the liquefaction potential of these units.

Two shallow wells were installed for of infiltration testing and future groundwater level measurement. The wells will need to be abandoned during construction by an Oregon-licensed well driller in accordance with OWRD guidance.

## **LIMITATIONS**

This report was prepared for the exclusive use of Pahlisch Commercial and members of the design team for this specific project. It should be made available to prospective contractors for information on the factual data only, and not as a warranty of subsurface conditions, such as those interpreted from the explorations and discussed in this report.

The recommendations contained in this report are preliminary, and are based on information derived through site reconnaissance, subsurface testing, and knowledge of the site area. Variation of conditions within the area and the presence of unsuitable materials are possible and cannot be determined until exposed during construction. Accordingly, GCN's recommendations can be finalized only through GCN's observation of the project's earthwork construction. GCN accepts no responsibility or liability for any party's reliance on GCN's preliminary recommendations.

Unanticipated soil conditions are commonly encountered and cannot fully be determined by exploratory methods. Such unexpected conditions frequently require that additional expenditures be made to attain properly constructed projects. Therefore, a contingency fund is recommended to accommodate the potential for extra costs.

Within the limitations of the scope of work, schedule, and budget, the analyses, conclusions, and recommendations presented in this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice in this area at the time this report was prepared. We make no warranty, either express or implied.



We appreciate the opportunity to be of continued service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,  
**GEO Consultants Northwest, Inc.**



EXPIRES 05/01/2022

David K. Rankin, CEG  
Principal



EXPIRES 08/30/2022

Randall S. Goode, PE, GE  
Principal Engineer


Figures:            Figure 1 - Site Vicinity  
                         Figure 2 - Site Layout and Explorations  
                         Figure 3 - Infiltration Results B-6  
                         Figure 4 - Infiltration Results B-7

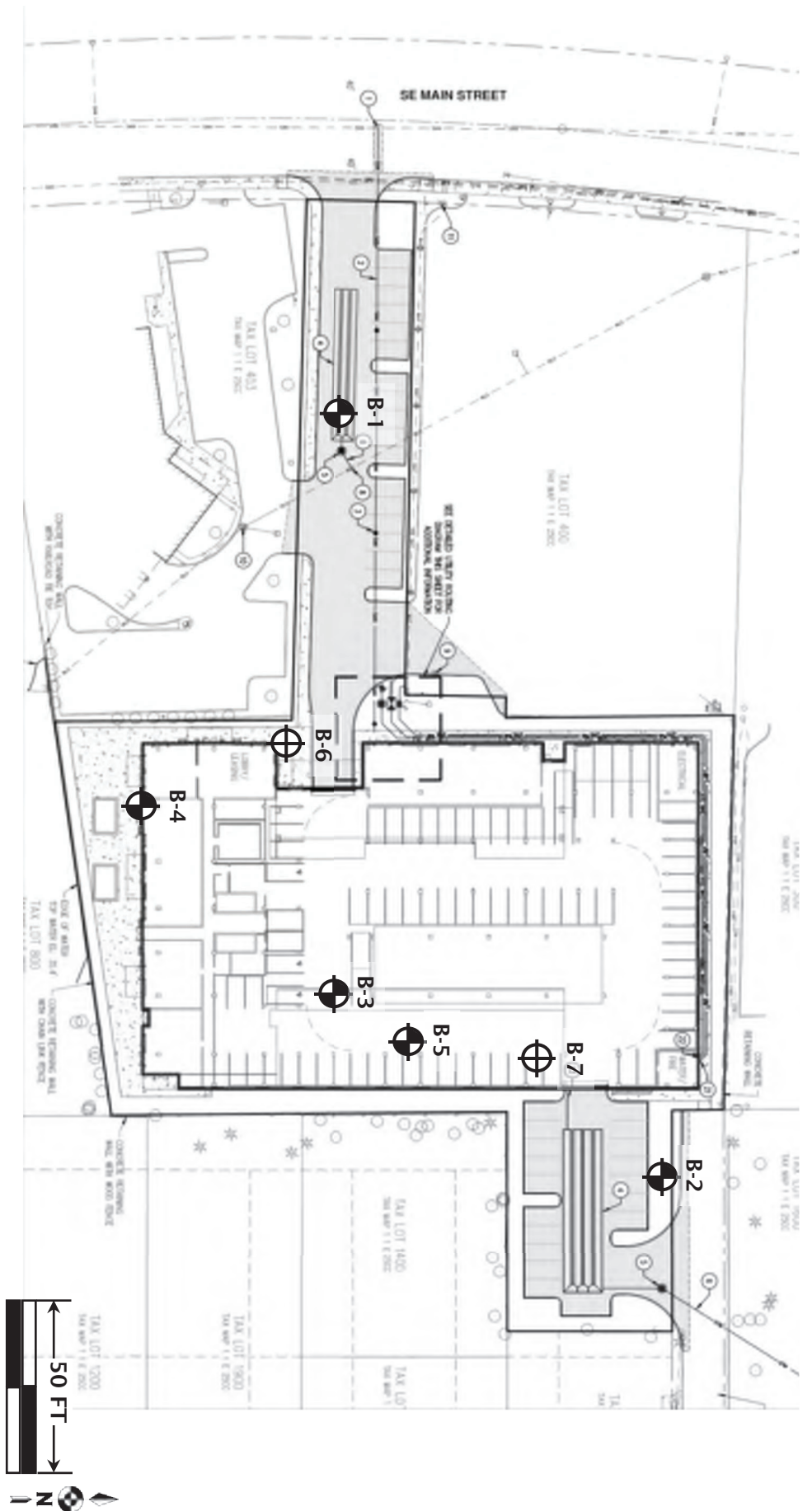
Attachments:     Attachment A - Field Exploration and Laboratory Testing  
                         Attachment B - Monitoring Well Log Reports



IMAGE FROM METROMAPS  
 10306 SE MAIN STREET, MILWAUKIE, OR 97222  
 LAT 45.448 N, LON 122.641 W; T1S, R1E, SEC36



	<p>PROJECT 1526</p>	<p><b>PAHLISCH COMMERCIAL KELLOGG BOWL</b></p>	
<p>2839 SE Milwaukie Portland, OR 97202</p>	<p>FEB 2021 Drawn By: tac</p>	<p><b>SITE VICINITY</b></p>	<p><b>FIGURE 1</b></p>
		<p>5.2 Page 186</p>	



**B-1** BORINGS (B-1 THROUGH B-4)  
 DRILLED OCTOBER 27, 2021;  
 BORINGS B-5 THROUGH B-7  
 DRILLED JANUARY 11, 2021.  
 LOCATIONS APPROXIMATE.

**B-6** INFILTRATION TEST  
 LOCATIONS CONDUCTED  
 JANUARY 11-13, 2021

BASE DRAWING "SITE LAYOUT"  
 PREPARED BY AKS ENGINEERED,  
 JANUARY 2021

**GEO CONSULTANTS**  
**NORTHWEST**

PROJECT  
 1526

**PAHLISCH COMMERCIAL**  
**KELLOGG BOWL**

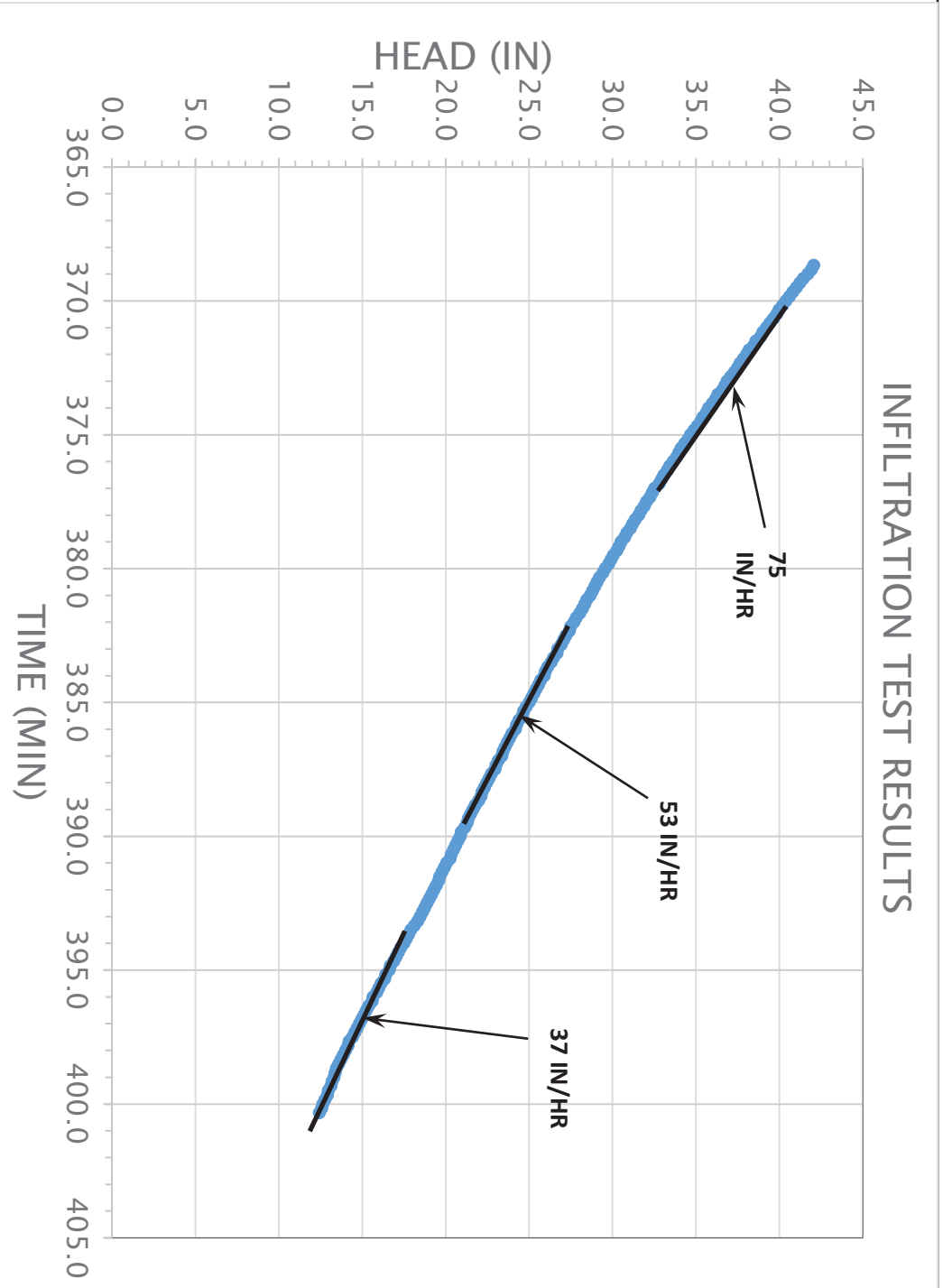
2839 SE Milwaukie Avenue  
 Portland, OR 97202


FEB  
 2021

Drawn  
 By: TAC

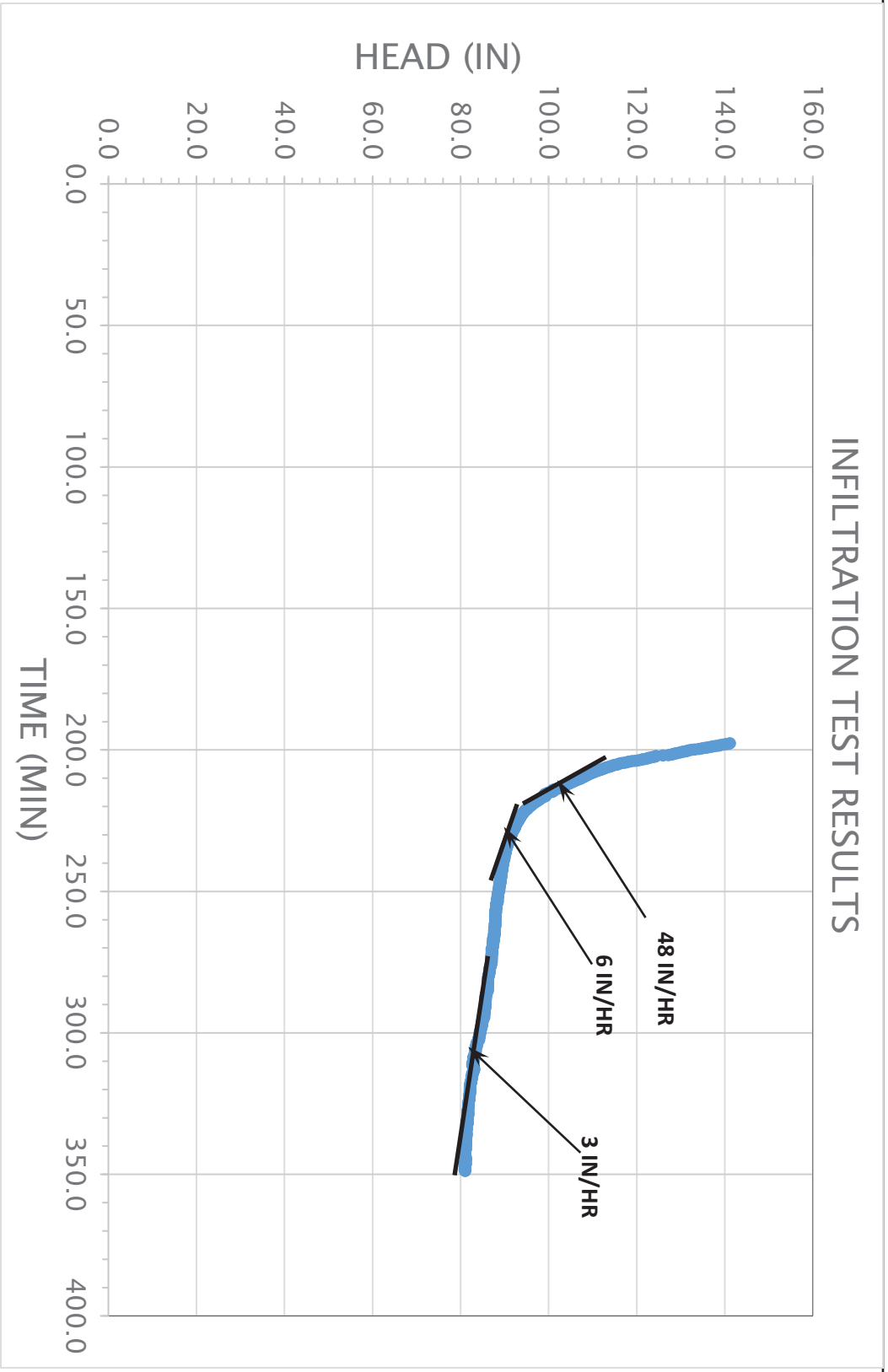
**SITE LAYOUT &  
 EXPLORATIONS**


**FIGURE 2**



		<b>PAHLISCH COMMERCIAL KELLOGG BOWL</b>	
PROJECT 1526		<b>INFILTRATION RESULTS - B-6</b>	
FEB 2021 Drawn By: TAC		<b>FIGURE 3</b>	
2839 SE Milwaukie Avenue Portland, OR 97202			





	PROJECT 1526	<b>PAHLISCH COMMERCIAL KELLOGG BOWL</b>	
2839 SE Milwaukie Avenue Portland, OR 97202	FEB 2021 Drawn By: TAC	<b>INFILTRATION RESULTS - B-7</b>	
		<b>FIGURE 4</b>	

**ATTACHMENT A**

**FIELD EXPLORATION PROCEDURES  
LABORATORY TESTING PROCEDURES  
KEY TO BORING AND TEST PIT LOGS  
BORING LOGS**

## FIELD EXPLORATION PROCEDURES

### GENERAL

We explored subsurface conditions at the site by drilling four soil borings (B-1 through B-4) to depths of 20 to 31 feet below ground surface (bgs) on October 27, 2020. In addition, we drilled an additional three soils borings (B-5 through B-7) on January 11, 2021 and conducted several infiltration tests within B-6 and B-7 at the approximate locations shown in Figure 2.

The borings drilled on October 27, 2020 using mud rotary methods by Western States out of Hubbard, Oregon. On January 11, 2021 soil borings were conducted using hollow-stem auger methods by Western States as well.

### SOIL SAMPLING

A member of GCN's geotechnical staff observed subsurface explorations to record the soil, rock, and groundwater conditions encountered. Samples obtained in the exploration were sealed in airtight plastic bags to retain moisture and returned to our laboratory for additional examination and testing.

### FIELD CLASSIFICATION

Soil samples were initially classified visually in the field. Consistency, color, relative moisture, degree of plasticity, peculiar odors, and other distinguishing characteristics of the soil samples were noted. The terminology used is described in the key and glossary that follow.

### SUMMARY EXPLORATION LOGS

Results from the borings are shown in the summary exploration logs. The left-hand portion of a log provides our interpretation of the soil encountered, sample depths, and groundwater information. The right-hand, graphic portion of a log shows the results of pocket penetrometer and laboratory testing. Soil descriptions and interfaces between soil types shown in summary logs are interpretive, and actual transitions may be gradual.

## LABORATORY TESTING PROCEDURES

Soil samples obtained during field explorations are examined in our laboratory, and representative samples may be selected for further testing. The testing program included visual-manual classification and natural moisture content.

### VISUAL-MANUAL CLASSIFICATION

Soil samples are classified in general accordance with guidelines presented in ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. The physical characteristics of the samples are noted, and the field classifications are modified, where necessary, in accordance with ASTM terminology, though certain terminology that incorporates current local engineering practice may be used. The term which best described the major portion of the sample is used to describe the soil type.

### NATURAL MOISTURE CONTENT

Natural moisture content is determined in general accordance with guidelines presented in ASTM D2216, *Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*. The natural moisture content is the ratio, expressed as a percentage, of the weight of water to the weight of soil particles.

## **FINES CONTENT**

Fines content testing is performed in general accordance with guidelines presented in ASTM D1140, *Standard Test Methods for Determining the Amount of Material Finer than 75- $\mu$  m (No. 200) Sieve in Soils by Washing*. The fines content is the fraction of soil that passes the U.S. Standard Number 200 Sieve. This sieve differentiates fines (silt and clay) from fine sand. Soil material that remains on the 200 sieve is sand. Material that passes the sieve is fines. The test is used to refine soil type.

## **DRY UNIT WEIGHT (IN-PLACE DRY DENSITY)**

Dry unit weight (in-place dry density) testing is performed in general accordance with guidelines presented in ASTM D2937, *Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method*. The dry unit weight is defined as the ratio of the dry weight of the soil sample to the volume of that sample. The dry unit weight typically is expressed in pounds per cubic foot.

# BORING AND TEST PIT LOGS

## DISTINCTION BETWEEN FIELD LOGS AND FINAL LOGS

A field log is prepared for exploration by our field representative. The log contains information concerning soil and groundwater encountered, sampling depths, sampler types used and identification of samples selected for laboratory analysis. The final logs presented in this report represent our interpretation of subsurface conditions based on the contents of the field logs, observations made during explorations, and the results of laboratory testing. Our recommendations are based on the contents of the final logs and the information contained therein, and not on the field logs.

## SOIL CLASSIFICATION SYSTEM

Soil samples are classified in the field in general accordance with the United Soil Classification System (USCS) presented in ASTM D2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)." Final logs reflect field soil classifications and laboratory testing results. A summary of the USCS is provided on page 3. Classifications and sampling intervals are shown in the logs.

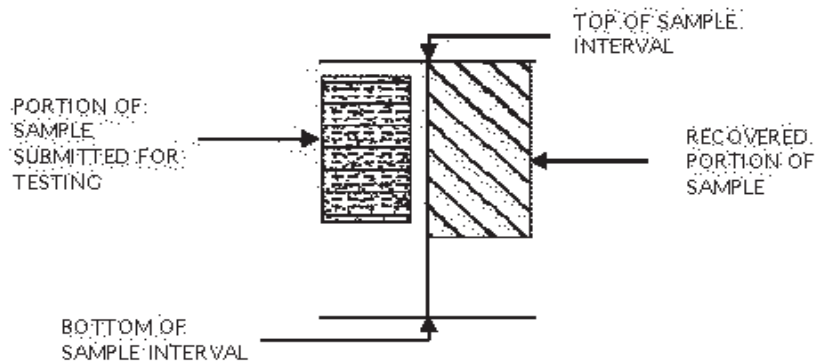
## VARIATION OF SOIL BETWEEN EXPLORATIONS


The final logs and related information depict subsurface conditions only at the specific location and on the date(s) indicated. Those using the information contained herein should be aware that soil conditions at other locations or on other dates may differ.

## TRANSITION BETWEEN SOIL AND ROCK CLASSIFICATIONS

















The lines designating the interface between soil, fill, or rock on the final logs and on the subsurface profiles presented in the report are determined by interpolation and are, therefore, approximate. The transition between the materials may be abrupt or gradual. Only at specific exploration locations should profiles be considered as reasonably accurate and then only to the degree implied by the notes.

### BORING LOG SAMPLES



	2019	<b>KEY TO BORING AND TEST PIT LOGS</b>	
2839 SE Milwaukie Avenue Portland, OR 97202	Drawn By: GCN	<b>GENERAL INFORMATION</b>	<b>1/5</b>

## EXPLORATION LOG SYMBOLS

 <p>Sample Location with No Sample Recovery</p>	 <p>Sample Location Using Thin-Walled Tube Sampler (ASTM D 1567)</p>	 <p>Water Sample Screened Interval</p>	 <p>Water Sample Submitted for Chemical Testing</p>
 <p>Sample Location Using Direct Push Sampler (ASTM D 6282)</p>	 <p>Rock Core Interval</p>	 <p>Water Sample Tested in the Field</p>	 <p>Groundwater Level Encountered While Drilling</p>
 <p>Sample Location Using Ring-Lined Barrel Sampler (ASTM D 3550)</p>	 <p>Grab Sample Location</p>	 <p>Static Groundwater Level</p>	 <p>Perched Groundwater</p>
 <p>Sample Location Using Split-Barrel Sampler (ASTM D 1596)</p>	 <p>Soil Sample Submitted for Chemical Testing</p>	 <p>Groundwater Level at Time of Sampling</p>	
 <p>Soil Sample Submitted for Physical Property Testing</p>			

## SOIL CHARACTER

Granular Soil		Cohesive Soil		
Density	Standard Penetration Test *	Consistency	Standard Penetration Test*	Unconfined Compressive Strength (tsf)
Very Loose	0 - 4	Very Soft	Less Than 2	Less Than 0.25
Loose	4 - 10	Soft	2 - 4	0.25 - 0.5
Medium Dense	10 - 30	Medium Stiff	4 - 8	0.50 - 1.0
Dense	30 - 50	Stiff	8 - 16	1.0 - 2.0
Very Dense	Greater Than 50	Very Stiff	16 - 32	2.0 - 4.0
Blows Required to Drive a Split-Barrel Sampler 12 inches		Hard	Greater Than 32	Greater Than 4.0

## DEFINITIONS AND ABBREVIATIONS

AT	ATTERBERG LIMITS TEST	ND	NON DETECT	PPB	PARTS PER BILLION
BGS	BELOW GROUND SURFACE	NEG	NEGATIVE RESULT	PPM	PARTS PER MILLION
CO	CONSOLIDATION TEST	NS	NO VISIBLE SHEEN	PSF	POUNDS PER SQUARE FOOT
DS	DIRECT SHEAR TEST	OC	ORGANIC CONTENT	RS	SOIL RESISTIVITY TEST
DW	DRY UNIT WEIGHT	P	PUSHED SAMPLE	S4	SUDAN IV SOIL TEST
GS	MECHANICAL GRAIN SIZE TEST	P200	P200 FINES CONTENT TEST	SG	SPECIFIC GRAVITY TEST
HS	HEAVY SHEEN	PCF	POUNDS PER CUBIC FOOT	SPT	STD. PENETRATION TEST
HYD	HYDROMETER TEST	PH	SOIL pH	SS	SLIGHT SHEEN
MC	MOISTURE CONTENT	PID	PHOTOIONIZATION DETECTOR	TO	TOREVANE
MG/KG	MILLIGRAMS PER KILOGRAM	POS	POSITIVE RESULT	TSF	TONS PER SQUARE FOOT
MS	MODERATE SHEEN	PP	POCKET PENETROMETER	UV	ULTRAVIOLET LIGHT TEST

GRAIN SIZE DEFINITIONS			MINOR FRACTIONS IN FINE GRAINED SOIL		GROUNDWATER SEEPAGE	
SAND	FINE	No. 200 to No. 40	No Mention (CLAY, SILT)	< 15 percent	Slow	< 1 gpm
	MEDIUM	No. 40 to No. 10	With Sand, With Gravel	15 to 30 percent	Moderate	1-3 gpm
	COARSE	No. 10 to No. 4	Sandy, Gravelly	30 to 49 percent	Rapid	> 3 gpm
GRAVEL	FINE	No. 4 to 3/4-inch	FIELD MOISTURE OBSERVATION		CAVING	
	COARSE	3/4- to 3-inch	Dry	Absence of moisture, dusty, dry to touch	Minor	
COBBLE		3-inches to 12-inches	Moist	Damp but no visible water.	Moderate	
BOULDER		> 12-inches	Wet	Saturated, below groundwater	Severe	

**GEO CONSULTANTS NORTHWEST**

2019

## KEY TO BORING AND TEST PIT LOGS

2839 SE Milwaukie Avenue  
Portland, OR 97202

Drawn  
By:  
GCN

## SYMBOLS AND ABBREVIATIONS

2/5

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		<b>GM</b>	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
			SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		<b>SM</b>	SILTY SANDS, SAND - SILT MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		<b>ML</b>	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
				<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
				<b>OL</b>	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
					<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY
					<b>OH</b>	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				<b>PT</b>	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

**GEO** CONSULTANTS  
NORTHWEST

2019

**KEY TO BORING AND TEST PIT LOGS**

2839 SE Milwaukie Avenue  
Portland, OR 97202

Drawn  
By:  
GCN

**SOIL CLASSIFICATION**

3/5

## ROCK CLASSIFICATION GUIDELINES

HARDNESS	(RH-0)	DESCRIPTION
Very soft	(RH-0)	For plastic material only
Soft	(RH-1)	Carved or gouged with a knife
Moderate	(RH-2)	Scratched with a knife
Hard	(RH-3)	Difficult to scratch with a knife
Very hard	(RH-4)	Rock scratches metal; rock cannot be scratched with a knife
STRENGTH	DESCRIPTION	
Plastic	Easily deformable with finger pressure	
Friable	Crumbles by rubbing with fingers	
Weak	Crumbles only under light hammer blows	
Moderately Strong	Few heavy hammer blows before breaking	
Strong	Withstands few heavy hammer blows and yields large fragments	
Very Strong	Withstands many heavy hammer blows, yields dust and small fragments	
WEATHERING	DESCRIPTION	
Severe	Rock decomposed; thorough discoloration; all fractures extensively coated with clay, oxides, or carbonates.	
Moderate	Intense localized discoloration of rock; fracture surfaces coated with weathering minerals.	
Little	Slight and intermittent discoloration of rock; few stains on fracture surfaces.	
Fresh	Rock unaffected by weathering	
FRACTURING	FRACTURE SPACING	
Crushed	Less than 5/8 inch to contains clay	
Highly Fractured	5/8 inch to 2 inches	
Closely Fractured	2 inches to 6 Inches	
Moderately fractured	6 inches to 1 foot	
Little Fractured	1 foot to 4 feet	
Massive	Greater than 4 feet	
JOINT SPACING	DESCRIPTION	
Papery	Less than 1/8 inch	
Shaley or Platey	1/8 inch to 5/8 inch	
Very Close	5/8 inch to 3 inches	
Close	3 inches to 2 feet	
Blocky	2 to 4 feet	
Massive	Greater than 4 feet	

**GEO** CONSULTANTS  
NORTHWEST

2019

### KEY TO BORING AND TEST PIT LOGS

2839 SE Milwaukie Avenue  
Portland, OR 97202

Drawn  
By:  
GCN


### ROCK CLASSIFICATION

4/5





## GLOSSARY

- Alluvial** – Made up of or found in the materials that are left by the water of rivers, streams, floods, etc.
- Bearing pressure** – The total stress transferred from the structure to the foundation, then to the soil below the foundation.
- Bulk density (Soil density)** – The total mass of water and soil particles contained in a unit volume of soil: lb/ft<sup>3</sup>.
- Coefficient of active earth pressure** – The ratio of the minimum horizontal effective stress of a soil to the vertical effective stress at a single point in a soil mass retained by a retaining wall as the wall moves away from the soil.
- Cohesive soil** – Clay type soil with angles of internal friction close to zero. Cohesion is the force that holds together molecules or like-particles within a substance.
- Colluvium** – A loose accumulation of soil and rock fragments deposited through the action of gravity, such as erosion and soil creep.
- Differential settlement** – The vertical displacement due to settlement of one point in a foundation with respect to another point of the foundation.
- Engineered fill** – Soil used as fill, such as retaining wall backfill, foundation support, dams, slopes, etc., that are to be placed in accordance with engineered specifications. These specifications may delineate soil grain-size, plasticity, moisture, compaction, angularity, and many other index properties depending on the application.
- Excess pore pressure** – That increment of pore water pressures greater than hydro-static values, produced by consolidation stresses in compressible materials or by shear strain; excess pore pressure is dissipated during consolidation.
- Factor of safety** – The ratio of a limiting value of a quantity to the design value of that quantity.
- Fines** – Material by weight passing the U.S. Standard No. 200 Sieve by washed analysis.
- Fluvial** – Produced by the action of rivers or streams.
- Homogenous soil** – A mass of soil where the soil is of one characteristic having the same engineering and index properties.
- In situ** – Undisturbed, existing field conditions.
- Lacustrine** – Of a lake, e.g., the depositional environment of a lake.
- Liquefaction** – The sudden, large decrease of shear strength of cohesionless soil caused by collapse of the soil structure, produced by small shear strains associated with sudden but temporary increase of pore water pressure. Usually a problem in submerged, poorly graded sands within the upper 50 feet of subgrade in earthquake-prone environments.
- Maximum dry density** – A soil property obtained in the laboratory from a Proctor test. Density of soil at 100% compaction.
- Overbank deposit** – Sediment that has been deposited on the floodplain of a river or stream by flood waters that have broken through or overtopped the banks.
- Permeability** – A measure of continuous voids in a soil. The property which allows the flow of water through a soil. See also coefficient of permeability.
- Porosity (Pore space)** – The ratio of the volume of voids to the total volume: unitless or expressed as a percentage.
- Residual soil** – Soil that has been formed in place by rock decay.
- Shear strength** – The maximum shear stress which a soil can sustain under a given set of conditions. For clay, shear strength = cohesion. For sand, shear strength = the product of effective stress and the tangent of the angle of internal friction.
- Surcharge** – An additional force applied at the exposed upper surface of a restrained soil.
- Tuff** – An igneous rock (from molten material) that forms from the debris ejected by an explosive volcanic eruption.
- Unit weight** – The ratio of the total weight of soil to the total volume of a unit of soil: lb/ft<sup>3</sup>.

	<p style="text-align: center;">2019</p>	<p style="text-align: center;">KEY TO BORING AND TEST PIT LOGS</p>	
<p>2839 SE Milwaukie Avenue Portland, OR 97202</p>	<p style="text-align: center;">Drawn By: GCN</p>	<p style="text-align: center;">GLOSSARY</p>	<p style="text-align: center;">5/5</p>

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
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0		ACC GW	ASPHALT - 4 inches thick						
		ML	BASE COURSE (3/4-MINUS) - 6 inches thick						
		ML	Stiff, brown SILT with trace fine sand; moist.	1	3-4-7	33			
5		ML	Stiff, brown mottled gray SILT with trace subangular gravel and fine to medium sand; moist.	2	1-3-2	27			
				3	2-3-7	36			
10			Very dense, black-dark gray, subangular GRAVEL with cobbles, fine to coarse sand and silt; moist to wet.	4	6-42-50/ 5"	27			
15		GW		5	50/5"	24			
20			End at 20 feet in very dense gravel. Could not determine groundwater levels due to drilling methods.	6	50/3"	20			
25									
30									
35									
40									

<b>BORING METHOD:</b> Mud Rotary	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b>	
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Tima Carlson	<b>DRILLING DATES:</b> 10/27/20 10/27/20	

Pahlisch - Kellogg Bowl	GEO Consultants Northwest 2839 SE Milwaukie Avenue Portland OR 97202 Tel 503-616-9425 Fax 1-866-293-9037	LOG OF BORING B-1 Page 1 of 1
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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
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0		ACG GW	ASPHALT - 2 inches thick						
			BASE COURSE (3/4-MINUS) - 10 inches thick						
		ML	Medium stiff, brown mottled gray SILT with trace sand; moist.	1	2-3-5	36			
				2	1-2-3	45			
				3	SH	33			
			Grades stiff at 10 feet.	4	3-4-7	32			DW = 102
		SM	Medium dense, reddish-brown SAND with some silt and trace fine gravel; moist.	5	4-4-8	28			
			Becomes loose at 15 feet.	6	3-5-4	32			
				7	1-1-0	49			
		ML	Very soft, brown-gray SILT with trace fine sand; wet.	8	0-0-0	48			
				9	1-0-0	101			
		GW	Medium dense, black-dark gray, subangular GRAVEL with cobbles, coarse sand and trace silt; wet.	10	14-12-15	10			
		RK	Very dense, light brown-red, clayey GRAVEL (DECOMPOSED WEATHERED BASALT); moist.	11	22-50/5"	33			
			End at 31 feet in hard bedrock.						
			Groundwater inferred at 15 feet bgs. Note - drilling methods were mud rotary.						
40									

<b>BORING METHOD:</b> Mud Rotary	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b>	
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Tima Carlson	<b>DRILLING DATES:</b> 10/27/20 10/27/20	

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1528	GEO CONSULTANTS NORTHWEST	

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
----------------	-------------	-------------	------------------	--------	---------------------------	-------------------------	-------------	---------------	--------------------------------

0		ACC GW	ASPHALT - 4 inches thick						
			BASE COURSE (3/4-MINUS) - 10 inches thick						
		ML	Medium stiff, brown mottled gray SILT with trace fine sand; moist.	1	7-6-4				
			Becomes very soft at 7-1/2 feet.	2	1-2-3	54			
				3	1-2-1	50			
				4	SH	16			DW = 90 pcf
		SM	Very loose, brown mottled gray SAND with silt; wet.	5	1-2-2	69			
			Becomes dark gray at 15 feet.	6	2-0-1	51			
		SW	Very dense, black-dark gray, medium to coarse SAND with gravel, cobbles and trace silt; wet.	7	50/6"	18			
		GW	Very dense, black-dark gray, subangular GRAVEL with cobbles, medium to coarse sand and and trace silt; wet.	8	23-32-48	13			
			End at 26-1/2 feet in very dense gravel. Groundwater inferred at 15 feet bgs. Note - drilling methods were mud rotary.						

<b>BORING METHOD:</b> Mud Rotary	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b>	
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Tima Carlson	<b>DRILLING DATES:</b> 10/27/20 10/27/20	

Pahlisch - Kellogg Bowl	GEO Consultants Northwest 2839 SE Milwaukie Avenue Portland OR 97202 Tel 503-616-9425 Fax 1-866-293-9037	LOG OF BORING B-3 Page 1 of 1
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**GEO** CONSULTANTS  
NORTHWEST

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
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0	AGG GW		ASPHALT - 4 inches thick						
			BASE COURSE (3/4-MINUS) - 18 inches thick						
	Fill		Dense, gray-black, subangular GRAVEL FILL with trace silt and coarse sand; moist.	1	13-16-13	16			
5				2	1-2-3	90			
	ML		Medium stiff, brown mottled gray SILT with trace fine sand; moist.	3	3-3-4	42			
10				4	1-2-3	42			
	SM		Very loose, brown, fine to medium SAND with silt; wet.	5	2-1-1	54			
15				6	SH	68			DW = 74 pcf
	SW-SM		Medium dense, black-dark gray, fine to medium SAND with trace silt; wet.	7	2-0-10	31			
20				8	50/3"	11			
	GW			9	50/2"				
30				10	50/1"				
			End at 30 feet in hard gravel. Groundwater inferred at 15 feet bgs. Note - drilling methods were mud rotary.						
35									
40									

<b>BORING METHOD:</b> Mud Rotary	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b>	
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Tima Carlson	<b>DRILLING DATES:</b> 10/28/20 10/28/20	

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**GEO** CONSULTANTS  
NORTHWEST

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
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0		ACG GW	ASPHALT - 3 1/2 - inches thick BASE COURSE (3/4-MINUS) - 4 1/2- inches thick						
0 - 15		ML	Light brown mottled orange SILT with trace fine sand; moist.	1		46			
15 - 16.5		SM	Brown, fine SAND with silt; wet.	2		41			
16.5 - 40			End at 16 1/2 - feet in very loose sand.  Groundwater encountered at 5 feet during site exploration.	3		40			

<b>BORING METHOD:</b> Hollow Stem Auger	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b>	
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Paul Rabay	<b>DRILLING DATES:</b> 1/11/21 1/11/21	

Pahlisch - Kellogg Bowl  1528	GEO Consultants Northwest 2839 SE Milwaukie Avenue Portland OR 97202 Tel 503-616-9425 Fax 1-866-293-9037	LOG OF BORING B-5  Page 1 of 1
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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	WELL CONSTRUCTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
----------------	-------------	-------------	------------------	-------------------	--------	------------------------	----------------------	-------------	---------------	-----------------------------

0			ASPHALT - 3 1/2 - inches thick BASE COURSE (3/4-MINUS) - 4 1/2- inches thick							
0-4.5		ML	Light brown mottled orange SILT with trace fine sand; moist.		1		43			
4.5-12.5					2		55			FC = 83 %
12.5-16		SM	Brown, fine, silty SAND; wet.		3		56			
16-17			Gray, subrounded GRAVEL; wet.							
17-40			End at 17 feet in dense gravel. Groundwater inferred at 7 feet (?) during site exploration.							
			<u>Well Description</u> 0-4.5 Bentonite 4.5-7.5 Sand 7.5-12.5 Screen 12.5-16 Bentonite							

<b>BORING METHOD:</b> Hollow Stem Auger	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b> 112	<b>REMARKS:</b>
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Paul Rabay	<b>DRILLING DATES:</b> 1/11/21 1/11/21	

Pahlisch - Kellogg Bowl	GEO Consultants Northwest 2839 SE Milwaukie Avenue Portland OR 97202 Tel 503-616-9425 Fax 1-866-293-9037	LOG OF BORING B-6 Page 1 of 1
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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	WELL CONSTRUCTION	SAMPLE	BLOW COUNT SPT N VALUE	MOISTURE CONTENT (%)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
----------------	-------------	-------------	------------------	-------------------	--------	------------------------	----------------------	-------------	---------------	-----------------------------

0			ASPHALT - 3 1/2 - inches thick BASE COURSE (3/4-MINUS) - 4 1/2- inches thick							
5		ML	Light brown mottled orange SILT with trace fine sand; moist.		1		41			
10		SM	Gray-brown, fine, silty SAND; moist..		2		29			FC = 18%
15		ML	Gray SILT with fine sand; wet.		3		54			FC = 96%
20			End at 21 1/2 - feet.		4		38			
25			Groundwater inferred at 8.5 feet (?) during site exploration.							
30			<u>Well Description</u> 0-4.5 Bentonite 4.5-14.5 Sand 4.5-14.5 Screen 14.5-21 Bentonite							
35										
40										

<b>BORING METHOD:</b> Hollow Stem Auger	<b>ELEVATION REFERENCE:</b>	<b>START CARD/TAG ID:</b>
<b>BOREHOLE DIAMETER:</b> 4 7/8"	<b>GROUND SURFACE ELEVATION:</b> 112	<b>REMARKS:</b>
<b>DRILL RIG:</b> CME-75	<b>CASING ELEVATION:</b>	
<b>CONTRACTOR:</b> Western States	<b>LOCATION:</b> See Figure 2	
<b>LOGGED BY:</b> Paul Rabay	<b>DRILLING DATES:</b> 1/11/21 1/11/21	

Pahlisch - Kellogg Bowl	GEO Consultants Northwest 2839 SE Milwaukie Avenue Portland OR 97202 Tel 503-616-9425 Fax 1-866-293-9037	LOG OF BORING B-7 Page 1 of 1
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**ATTACHMENT B**  
**MONITORING WELL LOG REPORT**

STATE OF OREGON  
MONITORING WELL REPORT

(as required by ORS 537.765 &amp; OAR 690-240-0395)

2/17/2021

WELL ID, LABEL# L 139123

START CARD # 1050442

**(1) LAND OWNER** Owner Well I.D. B1
 First Name \_\_\_\_\_ Last Name \_\_\_\_\_  
 Company GEO CONSULTANTS NORTHWEST, INC. - OWNERS REP  
 Address 1021 SE 33RD AVE.  
 City PORTLAND State OR Zip 97202

**(2) TYPE OF WORK**  New  Deepening  Conversion  
 Alteration (repair/recondition)  Abandonment
**(3) DRILL METHOD**
 Rotary Air  Rotary Mud  Cable  Hollow Stem Auger  Cable Mud  
 Reverse Rotary  Other
**(4) CONSTRUCTION**Piezometer Well Depth of Completed Well 15.00 ft. Special Standard 
**MONUMENT/VAULT** Below Ground  
 From 0 To 1

**BORE HOLE**  
 Diameter 8 From 0 To 15

**CASING**  
 Dia. 2 From  0 To 5  
 Gauge S80 Wld Thrd  
 Material  Steel  Plastic  
**LINER**  
 Dia. \_\_\_\_\_ From  \_\_\_\_\_ To \_\_\_\_\_  
 Gauge \_\_\_\_\_ Wld Thrd  
 Material  Steel  Plastic  
**SEAL**  
 From 0 To 1  
 Material Concrete  
 Amount 2 Sacks Grout weight \_\_\_\_\_

**SCREEN**  
 Casing/Liner Casing Material PVC  
 Diameter 2 From 5 To 15  
 Slot Size 0.010

**FILTER**  
 From 4 To 15 Material SILICA SAND Size of pack 10/20
**(5) WELL TESTS**
 Pump  Bailer  Air  Flowing Artesian  
 Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)  

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Temperature 54 °F Lab analysis  Yes By \_\_\_\_\_

Supervising Geologist/Engineer \_\_\_\_\_

 Water quality concerns?  Yes (describe below) TDS amount 197 ppm  

From	To	Description	Amount	Units

**(6) LOCATION OF WELL (legal description)**
 County CLACKAMAS Twp 1.00 S N/S Range 1.00 E E/W WM  
 Sec 25 SW 1/4 of the SW 1/4 Tax Lot 401  
 Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_  
 Lat \_\_\_\_\_ or 45.4476778 45.447644 DMS or DD  
 Long \_\_\_\_\_ or -122.6402361 -122.640814 DMS or DD  
 Street address of well  Nearest address

10306 SE MAIN ST, MILWAUKIE

**(7) STATIC WATER LEVEL**

Date	SWL(psi)	+ SWL(ft)
Existing Well / Predeepening		
Completed Well		

Flowing Artesian?  Dry Hole? **WATER BEARING ZONES**

Depth water was first found

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)

**(8) WELL LOG**

Ground Elevation \_\_\_\_\_

Material	From	To
Asphalt	0	0.3
Clay, Silt, Sand	0.3	15

Date Started 1/11/2021 Completed 1/11/2021

**(unbonded) Monitor Well Constructor Certification**

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number \_\_\_\_\_ Date \_\_\_\_\_

Password: (if filing electronically) \_\_\_\_\_

Signed \_\_\_\_\_

**(bonded) Monitor Well Constructor Certification**

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10690 Date 2/17/2021

Password: (if filing electronically) \_\_\_\_\_

Signed SHARON STIGALL (E-filed)

Contact Info (optional) \_\_\_\_\_

2/17/2021

START CARD # 1050442

**(4) CONSTRUCTION**

**BORE HOLE**

Dia	From	To

**FILTER PACK**

From	To	Material	Size

**SEAL**

Material			sacks/ grout	
	From	To	Amt	lbs
Bentonite Chips	1	4	1	S

**CASING/LINER**

Casing	Liner	Dia	+	From	To	Gauge	Stl	Pstsc	Wld	Thrd

**SCREENS**

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn size/ slot width	Slot length	# of slots	Tele/ pipe size

**(5) WELL TESTS**

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

**Water Quality Concerns**

From	To	Description	Amount	Units

**(7) STATIC WATER LEVEL**

**Water Bearing Zones**

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)

**(8) WELL LOG**

Material	From	To

**Comments/Remarks**

2/17/2021

Map of Hole

Corrected Lat ~ Long for B1  
45.447644  
-122.640814

Correct Location  
for B1



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

2/17/2021

WELL I.D. LABEL# L 139119

START CARD # 1050443

(1) LAND OWNER Owner Well I.D. B2

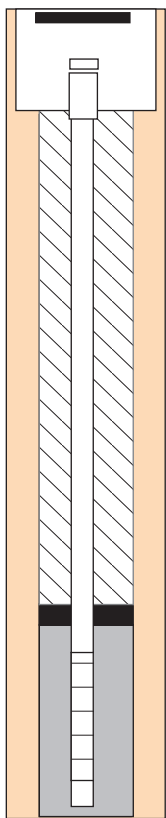
First Name Last Name
Company GEO CONSULTANTS NORTHWEST, INC. - OWNERS REP
Address 1021 SE 33RD AVE.
City PORTLAND State OR Zip 97202

(2) TYPE OF WORK [X] New [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD
[ ] Rotary Air [ ] Rotary Mud [ ] Cable [X] Hollow Stem Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) CONSTRUCTION Piezometer Well [X]

Depth of Completed Well 20.00 ft. Special Standard [ ]



MONUMENT/VAULT Below Ground
From 0 To 1

BORE HOLE
Diameter 8 From 0 To 20

CASING
Dia. 2 From 0 To 5
Gauge S80 Wld Thrd
Material [ ] Steel [X] Plastic [ ] [X]

LINER
Dia. From To
Gauge Wld Thrd
Material [ ] Steel [ ] Plastic [ ] [ ]

SEAL
From 0 To 1
Material Concrete
Amount 2 Sacks Grout weight

SCREEN
Casing/Liner Casing Material PVC
Diameter 2 From 5 To 15
Slot Size 0.010

FILTER
From 4 To 15 Material SILICA SAND Size of pack 10/20

(5) WELL TESTS

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Includes radio buttons for Pump, Bailer, Air, Flowing Artesian.

Temperature 54 °F Lab analysis [ ] Yes By

Supervising Geologist/Engineer

Water quality concerns? [ ] Yes (describe below) TDS amount 197 ppm

Table with columns: From, To, Description, Amount, Units.

(6) LOCATION OF WELL (legal description)

County CLACKAMAS Twp 1.00 S N/S Range 1.00 E E/W WM
Sec 25 SW 1/4 of the SW 1/4 Tax Lot 401
Tax Map Number Lot
Lat or 45.44792778 DMS or DD
Long or -122.64030000 DMS or DD
[ ] Street address of well [X] Nearest address

10306 SE MAIN ST, MILWAUKIE

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft). Includes rows for Existing Well / Predeepening and Completed Well.

Flowing Artesian? [ ] Dry Hole? [ ]
WATER BEARING ZONES Depth water was first found

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft).

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation.

Date Started 1/11/2021 Completed 1/11/2021

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number Date
Password : (if filing electronically)
Signed

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10690 Date 2/17/2021
Password : (if filing electronically)
Signed SHARON STIGALL (E-filed)
Contact Info (optional)



MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

CLAC 76284

2/17/2021

### Map of Hole





851 SW 6th AVENUE, SUITE 600  
PORTLAND, OR 97204  
P 503.228.5230 F 503.273.8169

May 14, 2021

Project #: 25641

Steve Adams, City Engineer  
City of Milwaukie  
6101 SE Johnson Creek Blvd  
Milwaukie, OR 97206

***RE: Henley Place Transportation Impact Study***

Dear Steve:

Pahlisch Commercial is proposing to redevelop the Kellogg Bowl site at 10306 SE Main Street. Today the site is occupied by a bowling alley with motor vehicle access to SE Main Street. Upon redevelopment, the site will be occupied by up to 178 multifamily units with vehicular parking supply provided both within the building as well as in a surface parking lot. Motor vehicle access will continue to be exclusively via SE Main Street (no vehicular impact to SE 23<sup>rd</sup> Avenue).

A portion of the northeast corner of the site is zoned R-5 and would require a rezone to accommodate multi-family housing. The R-5 portion of the site is used as a surface parking area today and will continue to do so with the redevelopment. Accordingly, the Applicant proposes to impose a "trip cap" on the rezone portion of the property to avoid the potential for any transportation impacts. This trip cap would limit any future use/redevelopment of the parking area to that which would generate an equivalent number of trips permitted under the existing R-5 zoning. The trip cap is allowable as mitigation to address Oregon's Transportation Planning Rule (TPR) and ensures that impacts are associated with the rezone and/or potential future redevelopment.

This report summarizes the results of the Transportation Impact Study (TIS) prepared to support the redevelopment and proposed rezone. The TIS has been prepared per Milwaukie Title 19.704 requirements and scoping direction provided by DKS Associates (on behalf of the City), the Oregon Department of Transportation (ODOT) and Clackamas County.

As documented herein, the following transportation-related considerations are recommended as part of site development:

- A trip cap equivalent to 18 daily, one weekday AM and two weekday PM peak hour trips should be placed on the 0.2-acre portion of the site that is currently zoned R-5. This trip cap is needed to assure any future development traffic on this site complies with Oregon's Transportation Planning Rule (TPR). If this portion of the site is redeveloped in the future, the need for the trip cap should be re-evaluated relative to TPR requirements.



- Site landscaping, above-ground utilities, and site signage should be located and maintained such that they provide minimum required sight lines within the site as well as at the site driveway on SE Main Street per City requirements.

The details of the study methodology, findings, and recommendations are summarized herein.

## INTRODUCTION

Pahlisch Commercial is proposing to replace the existing bowling alley with a six-story apartment building with a leasing office and live/work units or ground-floor commercial. The 178 apartment units will also be served by structured parking within the building as well as the surface parking directly to the east and to the west. This surface parking to the east is property currently zoned R-5 (low density residential). The remainder of the site has a Downtown Mixed Use (DMU) zoning designation that enables the proposed residential building. As part of the redevelopment, the R-5 zoned lands will be rezoned to DMU and a trip cap associated with future redevelopment of the parking lot is proposed. Access to the residences will be provided via the shared access onto SE Main Street that is used today by Kellogg Bowl, Pietro's Pizza, and a veterinary clinic.

Figure 1 illustrates the site vicinity whereas Figure 2 provides the proposed site plan. As currently contemplated, occupancy of the apartments is expected to occur by 2022.

## STUDY METHODOLOGY

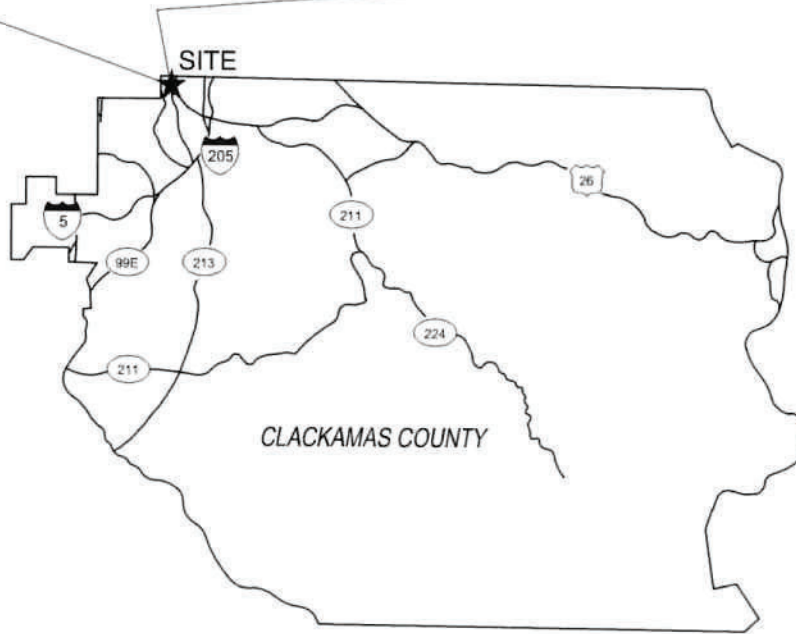
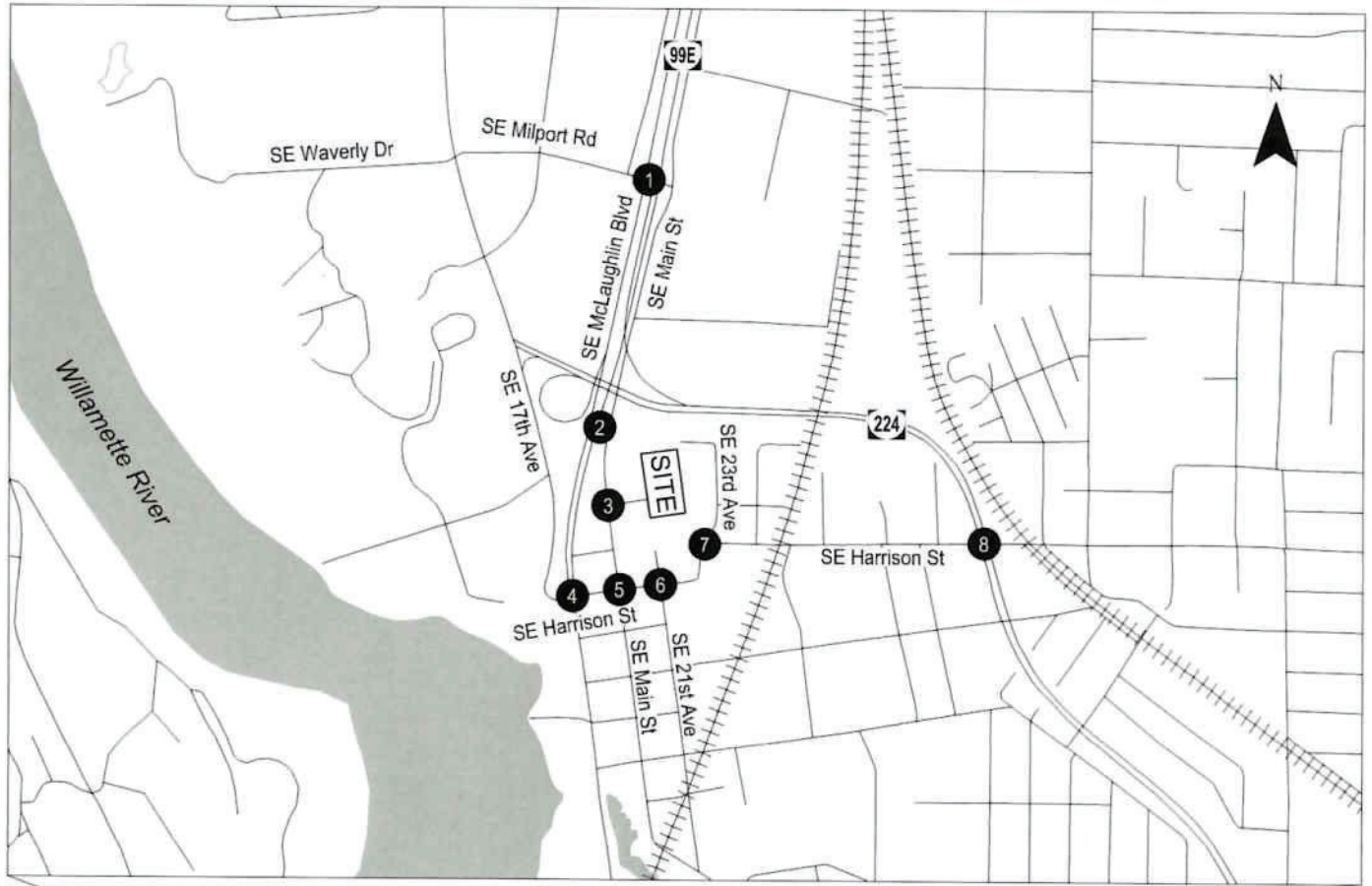
The study intersections were determined based on a review the City's Title 19.704 requirements and policies iterated in the City's Transportation System Plan (TSP) as well as scoping direction provided by DKS Associates (on behalf of the City), ODOT and Clackamas County staff.

### Analysis Scenarios

Weekday AM and PM peak hour traffic conditions were assessed for the following analysis scenarios:

- Year 2021 proxy existing conditions
- Year 2022 background conditions (with no site development)
- Year 2022 total conditions (assuming the site redevelops with the proposed apartments)

As part of the proposed rezone to DMU, the applicant is proposing a trip cap on future development of the R-5 zoned land so the study also addresses compliance of this trip cap with the TPR requirements.

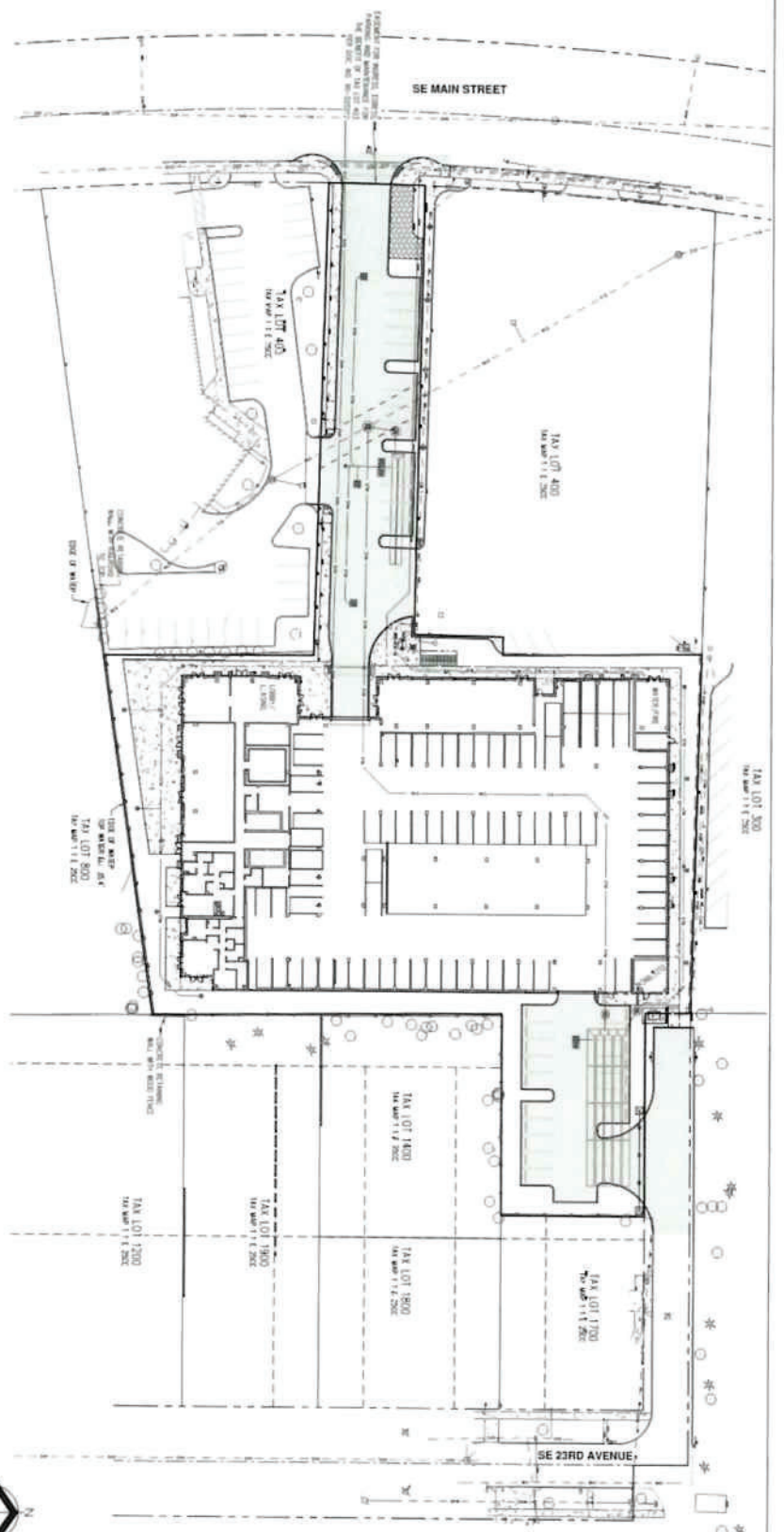


## - Study Intersections

Site Vicinity Map  
Milwaukie, Oregon

Figure  
1

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**PRELIMINARY DIMENSIONED SITE PLAN**  
**HENLEY PLACE**  
**PAHLISCH COMMERCIAL**  
**MILWAUKIE OREGON**

AKS ENGINEERING & FORESTRY, LLC  
 12000 SW 25TH ST, SUITE 100  
 BEAVERTON, OR 97005  
 503.638.8118  
 WWW.AKS-OR.COM

ENGINEERING SURVEYING NATURAL RESOURCES  
 FORESTRY PLANNING LANDSCAPE ARCHITECTURE

DATE: 05/12/2021  
 DRAWN BY: JAC  
 CHECKED BY: JAC  
 PROJECT NO: 2021-001

PROJECT NO: 2021-001

DATE: 05/12/2021

DRAWN BY: JAC

CHECKED BY: JAC

PROJECT NO: 2021-001

Proposed Site Plan  
 Milwaukie, Oregon  
 Figure 2

P-10

## Study Intersections

The study intersections are listed below and are identified by a number corresponding with the analysis figures in this report:

1. Milport Road/McLoughlin Boulevard (OR 99E);
2. SE Main Street/McLoughlin Boulevard (OR 99E);
3. Site Access/SE Main Street;
4. SE Harrison Street/McLoughlin Boulevard (OR 99E);
5. SE Main Street/SE Harrison Street;
6. SE 21<sup>st</sup> Avenue/SE Harrison Street;
7. SE 23<sup>rd</sup> Avenue/SE Harrison Street; and,
8. SE Harrison Street/OR 224.

Level-of-service analyses described in this report were performed at the intersections in accordance with the procedures stated in the *Highway Capacity Manual, 6<sup>th</sup> Edition* methodology as well as ODOT's *Analysis Procedures Manual (APM)*.

## Operating Standards

Per Chapter 8 (Street Network Element<sup>1</sup>) of the City's TSP and the Oregon Highway Plan (OHP), the following performance metrics apply:

- City intersections shall operate at level of service (LOS) D or better. This applies to study intersections not located along OR 99E or OR 224.
- All ODOT intersections (i.e., those along OR 99E and OR 224) are subject to a mobility target equivalent to a volume-to-capacity (V/C) ratio of less than 0.99.

## REPORT FORMAT

This report addresses the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity;
- Planned developments and transportation improvements in the study area;
- Forecast year 2022 background traffic conditions during the weekday AM and PM peak hours;
- Weekday AM and PM peak hour site trip generation and distribution estimates;

---

<sup>1</sup> [ch 8 street network element 10-20-18.pdf \(milwaukieoregon.gov\)](#)

- Forecast year 2022 total traffic conditions with site redevelopment during the weekday AM and PM peak hours;
- Vehicle queuing at the study area intersections;
- Facilities for people walking, riding bikes and taking transit;
- Analysis of a proposed trip cap for future redevelopment of the R-5 zoned portion of the site and compliance with the TPR; and,
- Conclusions and recommendations.

## EXISTING CONDITIONS

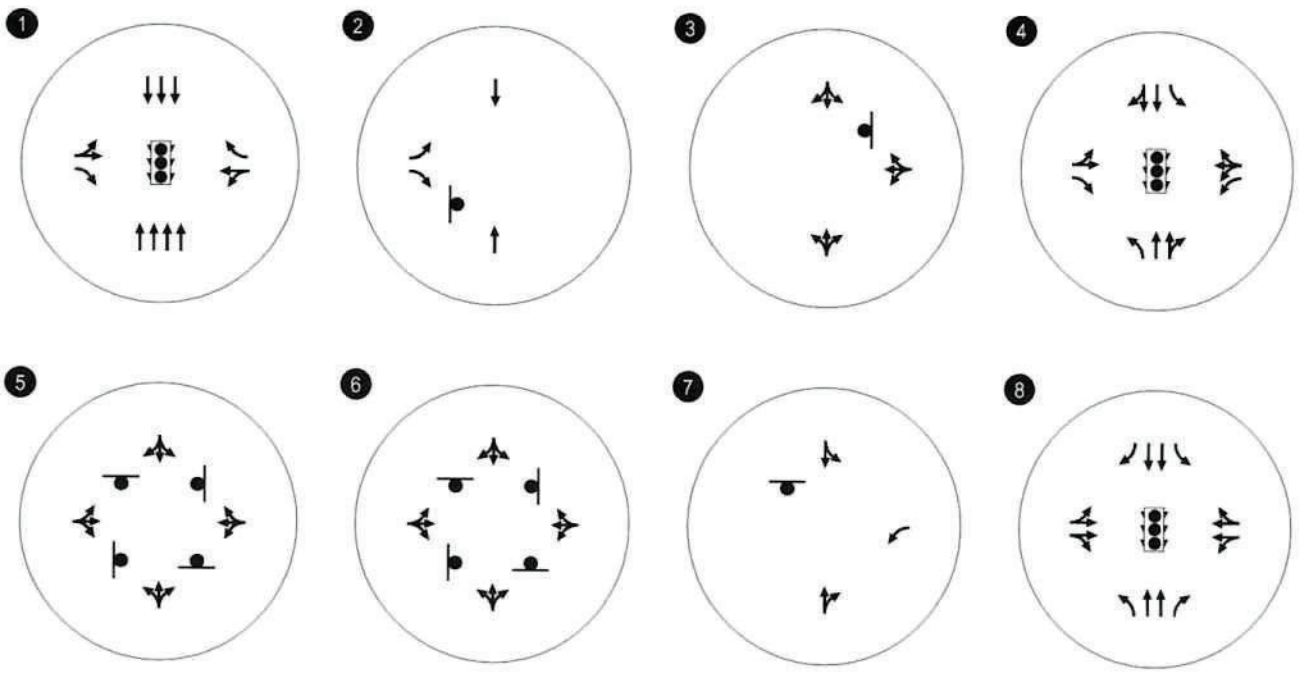
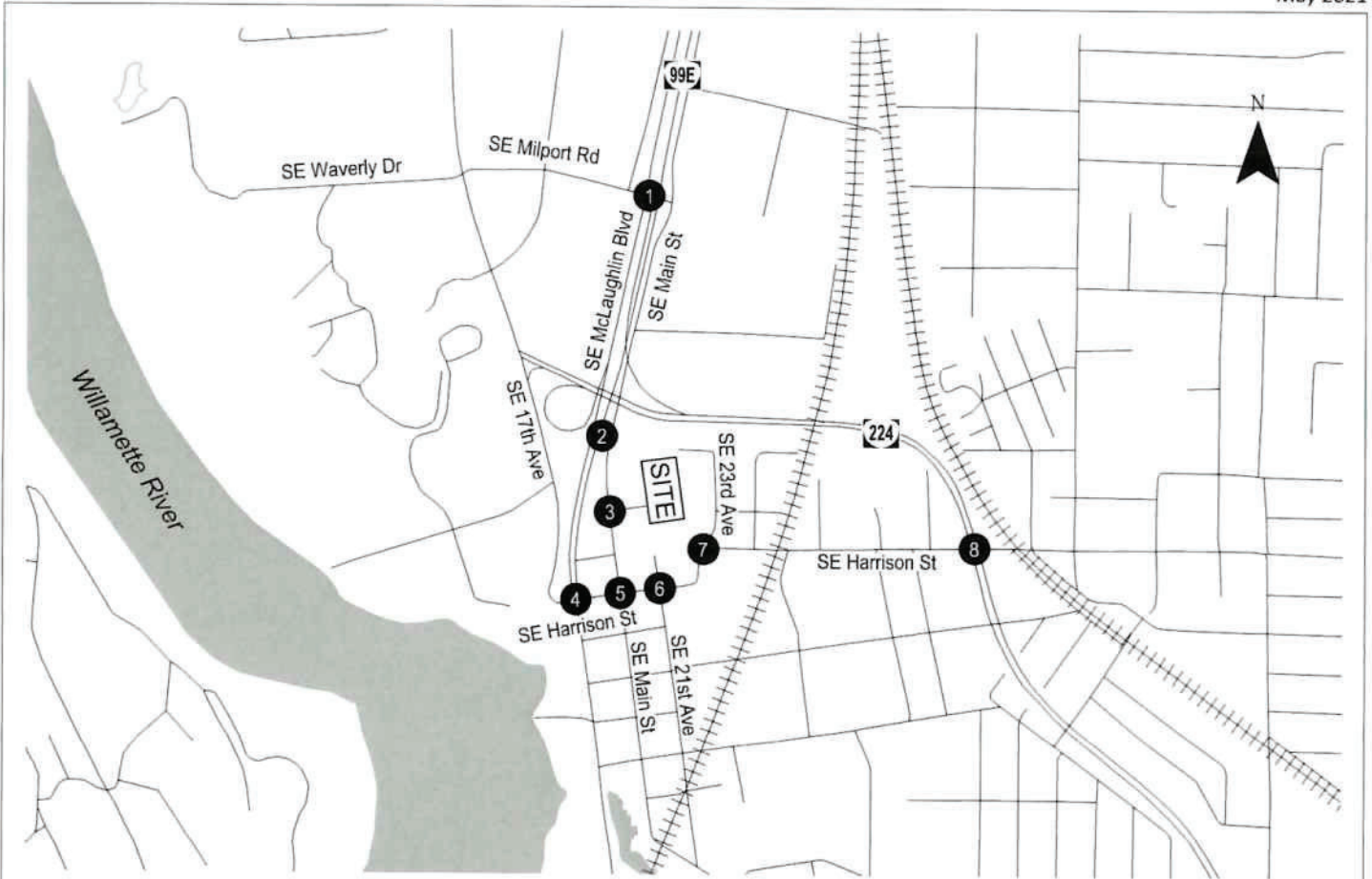
The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of streets and multimodal facilities within the study area. The purpose of this section is to set the stage for a basis of comparison to future conditions.

### Site Conditions and Adjacent Land Uses

Today, the site is surrounded by various commercial uses to the west and north, single and multi-family residential lands to the east, and Scott Park to the south. The portion of the site housing the existing Kellogg Bowl building (and future residential building, Tax Lot 401) and the vehicular access drive portion of the site (Tax Lot 402) are zoned Downtown Mixed Use (DMU) whereas the surface parking immediately east of the building is zoned R-5 (low density residential). The site shares access onto SE Main Street with Pietro's Pizza and a veterinary clinic.

### Transportation Facilities

Table 1 provides a summary of the existing streets near the site. Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections.



- #** - STUDY INTERSECTIONS
- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations  
and Traffic Control Devices  
Milwaukie, Oregon

Figure  
3

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**Table 1. Existing Transportation Facilities**

Street	Classification <sup>1</sup>	Jurisdiction	Cross-Section	Posted Speed	Sidewalks Present?	Bike Lanes Present?	On-Street Parking Allowed?
SE Main Street	Collector	City	2 lanes	20 mph <sup>2</sup>	Yes	Shared lane designated south of SE Harrison Street	Yes
SE Harrison Street	Arterial; Preferred Minor Freight Route	City	2 lanes	25 mph	Yes	Shared lane designated east of SE 21 <sup>st</sup> Avenue <sup>3</sup>	On south side from SE Main Street to approximately SE 23 <sup>rd</sup> Avenue
McLoughlin Boulevard (OR 99E)	Arterial south of OR 224; Regional Route to the North; Major Regional Freight Route	ODOT	4 – 6 lanes	30 mph <sup>4</sup>	Partial <sup>5</sup> ; Trolley Trail parallels OR 99E from SE Harrison Street south	Yes	No
SE 21 <sup>st</sup> Avenue	Arterial	City	2 lanes	NP (25 mph)	Yes	No	Yes
SE 23 <sup>rd</sup> Avenue	Local Street	City	2 lane	NP (25 mph)	Yes	No	Yes
OR 224	Regional Route; Major Regional Freight Route	ODOT	4 lanes	40 mph <sup>6</sup>	Yes <sup>7</sup>	No	No
Milport Road	Local Street	City	2 lanes	NP (25 mph)	No	No	No

<sup>1</sup> Source: Milwaukie TSP, Adopted in 2017, and Amended in 2018

<sup>2</sup> Speed posted at 20 miles per hour (mph) south of OR 224 overcrossing, 35 mph to the north

<sup>3</sup> Striped bicycle lane provided eastbound and westbound between SE 24<sup>th</sup> Avenue and SE 26<sup>th</sup> Avenue

<sup>4</sup> Posted speed transitions to 45 mph between Study Intersection #2, and the OR 224 overcrossing

<sup>5</sup> Sidewalk provided on east side of highway between south side of Main Street and SE Washington Street to the south

<sup>6</sup> Posted speed transitions to 50 mph north of SE Harrison Street

<sup>7</sup> Sidewalks provided between SE Harrison Street and SE Oak Street to the south

NP = not posted; assumed to be 25 mph per local street designation

### **Facilities for People Walking**

As shown in Table 1, there are sidewalks along all of the study streets, except the two highways and Milport Road. These sidewalks can connect the future apartment residents to the commercial uses in the downtown, Scott Park, the Portland Waldorf School, transit stops along SE Harrison Street and SE Main Street, and other residential areas.

These sidewalks also provide a connection to the Trolley Trail that extends from downtown Milwaukie south to Gladstone along the west side of McLoughlin Boulevard and north to Portland along the west side of SE 17<sup>th</sup> Avenue. The City's TSP identifies a long-term desire to improve pedestrian crossings along SE McLoughlin Boulevard, especially in the downtown but this is shown as a low priority and unfunded in the TSP.

### **Facilities for People Riding Bikes**

As shown in Table 1, people riding bikes share the travel lane with motorists on the study area streets with the exception of McLoughlin Boulevard, where bike lanes are provided south of SE Harrison Street.

The City's TSP identifies a medium-term priority for adding designated bike lanes along SE Harrison Street from McLoughlin Boulevard to SE 21<sup>st</sup> Avenue.

### ***Transit Facilities***

The site is well served by TriMet with the following bus routes having stops within ¼ mile walking distances of the site:

- Line 33 (McLoughlin/King Road) – this frequent service route operates between Clackamas Community College and Clackamas Town Center via downtown Milwaukie. The nearest stop is provided near the SE 24<sup>th</sup> Avenue/SE Harrison Street intersection.
- Line 34 (Linwood/River Rd) – this route operates between the Oregon City Transit Center and Clackamas Town Center via downtown Milwaukie. The nearest stops are provided on SE Main Street just north of the site as well as near the SE Main Street/SE Scott Street intersection.
- Line 75 (Cesar Chavez/Lombard) – this frequent service route connects Milwaukie to SE Portland, the Hollywood District, North/NE Portland and St. Johns. The nearest stop is provided near the SE 24<sup>th</sup> Avenue/SE Harrison Street intersection.
- Line 152 (Milwaukie) – this route provides weekday service between Clackamas Town Center and Milwaukie. The nearest stop is provided near the SE 24<sup>th</sup> Avenue/SE Harrison Street intersection.

The City's TSP identifies the potential for future bus rapid transit (BRT) along OR 224, SE Harrison Street and SE McLoughlin Boulevard as a longer-term priority that is not funded. However, TriMet's Futures Report for Southeast does not identify BRT along these corridors, rather just the need for increased service frequency.

The City's TSP also identifies the need in the medium-term for a bus shelter at the SE 24<sup>th</sup> Avenue/SE Harrison Street transit stop.



## Traffic Safety

ODOT provided reported study intersection crash data for the five-year period of 2014 through 2018. This data is summarized in Table 2 relative to crash type, severity, general conditions, and location to identify potential crash patterns.

**Table 2. Intersection Crash History (January 1, 2014 through December 31, 2018)**

Location	Collision Type						Severity			Total Crashes
	Rear-end	Turning	Angle	SS-O <sup>1</sup>	Fixed Object	Backing	PDO <sup>2</sup>	Injury	Fatal	
OR 99E/SE Milport Road	15	14	7	2	0	1	19	19	1	39
SE Main Street/SE Milport Road	0	1	0	0	0	0	1	0	0	1
OR 99E/SE Harrison Street	11	7	4	0	0	1	9	14	0	23
SE Main Street/SE Harrison Street	0	3	2	0	0	0	2	3	0	5
SE 21 <sup>st</sup> Avenue/SE Harrison Street	0	3	1	0	0	0	3	1	0	4
SE 23 <sup>rd</sup> Avenue/SE Harrison Street	0	0	0	0	1	0	0	1	0	1
OR 224/SE Harrison Street	11	8	9	1	0	0	11	17	1	29

<sup>1</sup>Sideswipe – Overtaking

<sup>2</sup>PDO – Property damage only

Two of the reported crashes involved fatal injuries, as summarized below.

- A fatal rear-end crash was reported involving a passenger car and a truck tractor (with trailer or mobile home in tow) at the OR 99E (SE McLoughlin Boulevard)/SE Milport Road intersection in 2015. The crash occurred at 3:00 AM on a dry roadway surface under clear conditions.
- A fatal angle crash was reported involving a passenger car and motorcycle at the OR 224 (Milwaukie Expressway)/SE Harrison Street intersection in 2015. The crash occurred at 3:00 PM on a dry roadway surface under clear conditions and was attributed to the passenger vehicle driver disregarding the traffic signal.

There were no reported crashes involving bicycles or pedestrians.

Due in part to the reported fatal crashes, both the OR 99E (SE McLoughlin Boulevard)/SE Milport Road intersection and the OR 224 (Milwaukie Expressway)/SE Harrison Street intersection appear on the ODOT Region 1 2018 Safety Priority Index System (SPIS) list. The OR 224/SE Harrison Street intersection and the OR 99E (SE McLoughlin Blvd)/SE Harrison Street intersection both appear on the Top 10% SPIS list. ODOT uses the SPIS list to prioritize projects for the ODOT All Roads Transportation Safety Program and may identify future changes at either or both intersections. Neither of the reported fatal crashes involve factors that would be impacted by trips associated with the proposed site development.

In addition, intersection crash rates were calculated and compared to statewide crash rate performance thresholds. For this analysis, the critical crash rate was calculated and compared to the 90<sup>th</sup> percentile crash rates summarized in ODOT's *Analysis Procedures Manual* (APM) for urban

intersections by traffic control and 3- versus 4-legged configurations (as appropriate). This is shown in Table 3.

**Table 3. Intersection Crash Rate Assessment**

Location	Total Reported Crashes	90 <sup>th</sup> Percentile Crash Rate <sup>1</sup>	Observed Crash Rate at Intersection	Observed Crash Rate > 90 <sup>th</sup> Percentile Crash Rate?
OR 99E/SE Milport Road	39	0.860	0.425	No
OR 99E/SE Harrison Street	23	0.860	0.323	No
SE Main Street/SE Harrison Street	5	0.408	0.374	No
SE 21 <sup>st</sup> Avenue/SE Harrison Street	4	0.408	0.357	No
SE 23 <sup>rd</sup> Avenue/SE Harrison Street	1	0.293	0.099	No
OR 224/SE Harrison Street	29	0.860	0.357	No

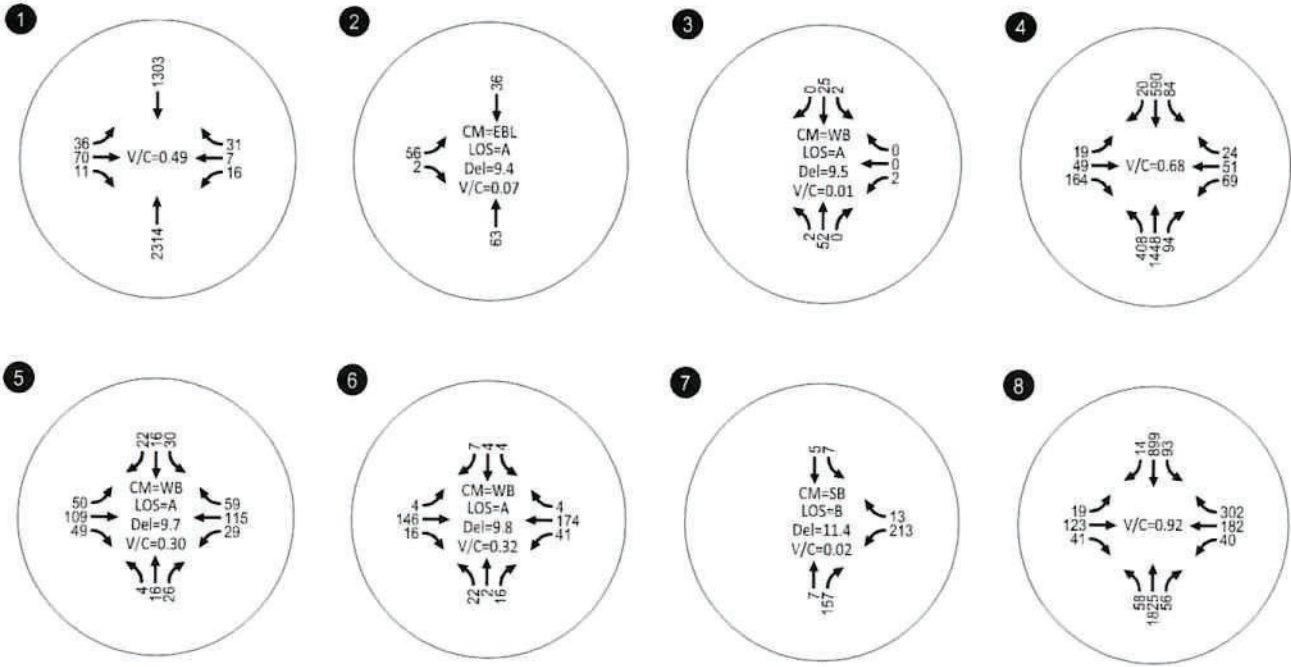
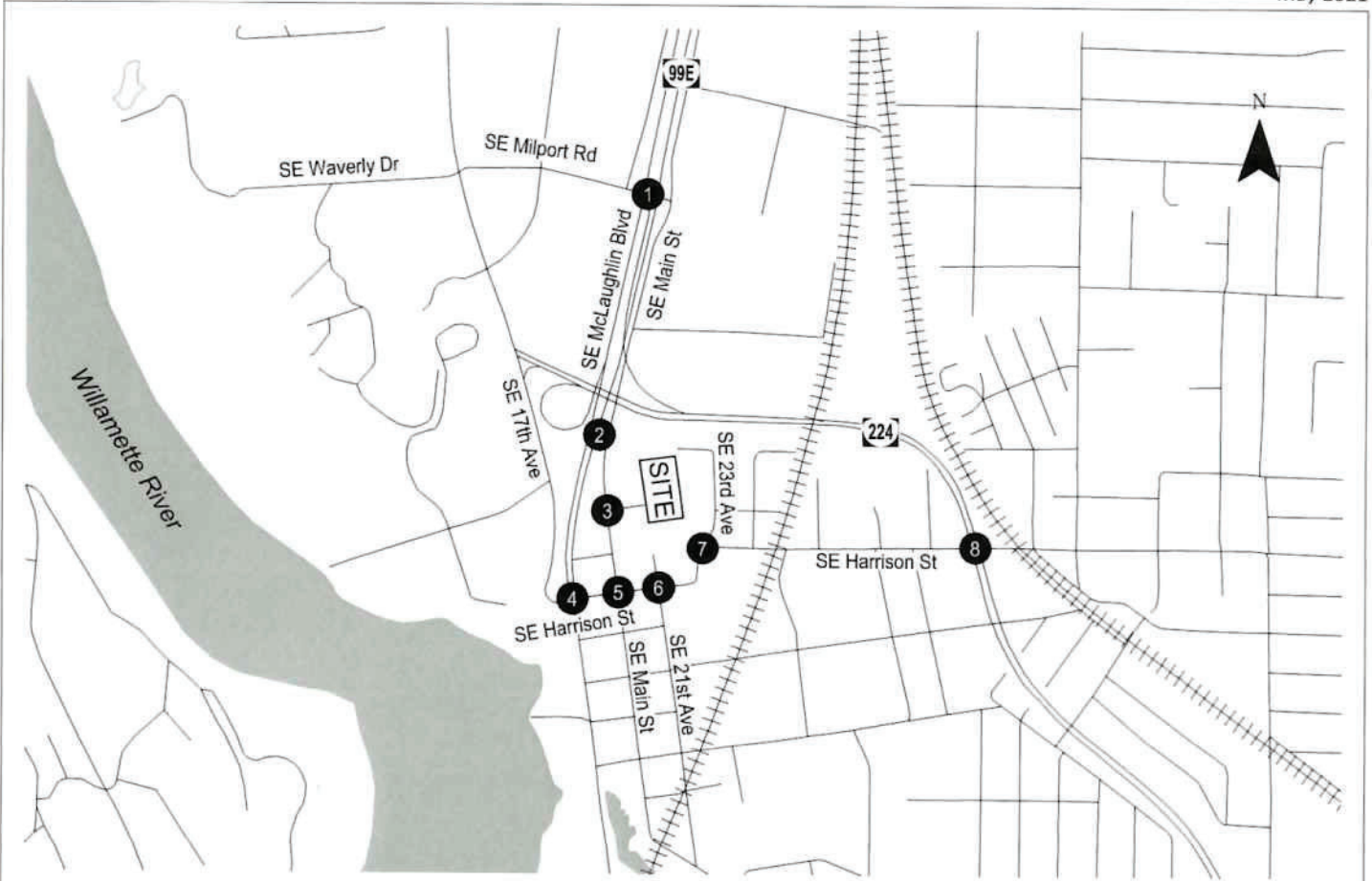
<sup>1</sup>ODOT APM Exhibit 4-1 for urban intersections.

As shown, all study intersections have crash rates below their 90<sup>th</sup> percentile crash rates. Based on the crash data review, no specific safety-based mitigation needs are recommended as part of the proposed apartment development. *Appendix A* contains the crash data summary as well as crash diagrams prepared for the three ODOT study intersections that may assist ODOT in their on-going monitoring activities.

### Traffic Volumes and Peak Hour Operations

With the effect of the ongoing COVID-19 pandemic on “typical” travel patterns, the intersection operational analyses described herein are based on the development of existing proxy counts at the study locations. These proxy volumes were developed based on turning movement volumes previously recorded at the study intersections in various years (where available) and were supplemented by traffic counts collected in 2021 while COVID was still affecting travel patterns. Weekday morning (7:00 – 9:00 AM) and evening (4:00 - 6:00 PM) hours traffic counts were collected at all study intersections in January 2021 to help estimate “proxy” volumes for the existing conditions analyses. *Appendix B* contains the traffic count sheets and details of the 2021 proxy volume derivation.

The weekday AM and PM peak hour traffic volumes and the associated intersection operations are shown in Figures 4 and 5. As shown, the study intersections all are estimated to operate within the applicable agency standards/targets under existing conditions. *Appendix C* includes the existing conditions level-of-service worksheets.

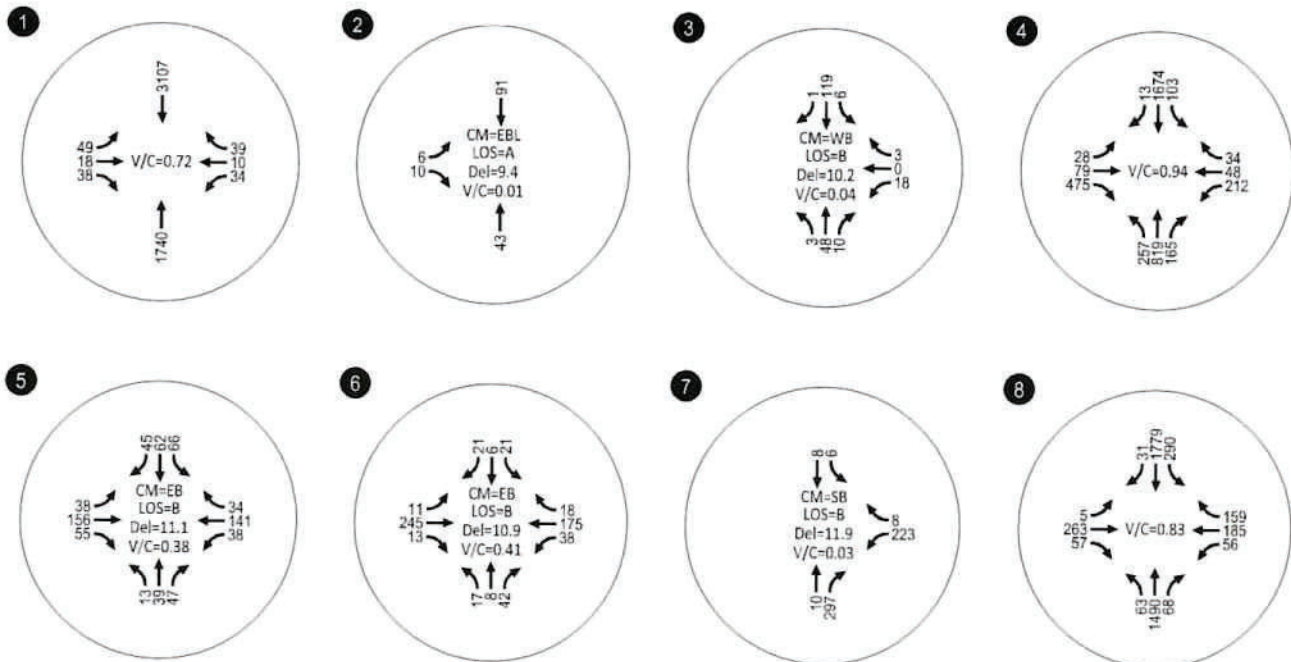
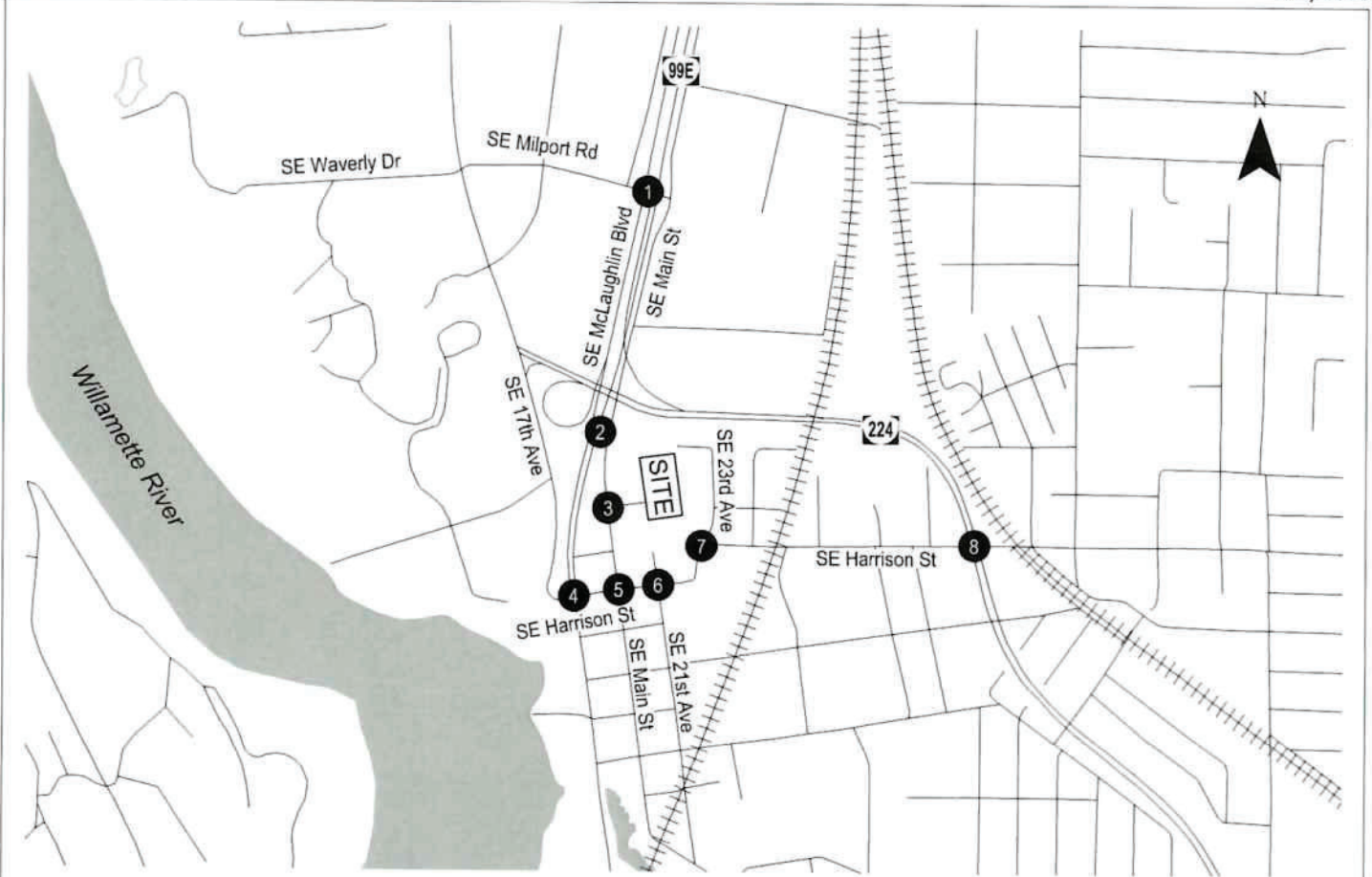


CM = CRITICAL MOVEMENT (TWSC/AWSC)  
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC/AWSC)  
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC/AWSC)  
 V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED) / CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (TWSC/AWSC)  
 TWSC = TWO-WAY STOP CONTROL  
 AWSC = ALL-WAY STOP CONTROL

Existing Traffic Conditions  
 Weekday AM Peak Hour  
 Milwaukie, Oregon

Figure  
 4

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CM = CRITICAL MOVEMENT (TWSC/AWSC)  
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC/AWSC)  
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 AWSC = ALL-WAY STOP CONTROL

Existing Traffic Conditions  
 Weekday PM Peak Hour  
 Milwaukie, Oregon

Figure 5

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## 2022 BACKGROUND TRAFFIC CONDITIONS

The year 2022 background traffic analysis identifies how the study intersections will operate prior to the redevelopment of the site as apartments. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region. Because the existing conditions proxy volumes are largely predicated on January 2021 counts, which were completed after the closure of Kellogg Bowl, the 2022 background traffic conditions do not assume re-occupancy of the former site use<sup>2</sup>.

### Planned Developments & Transportation Improvements

City staff confirmed the following previously approved developments to include in the traffic forecasts for the year 2022:

- Hillside Master Plan development to be located north of the SE 32<sup>nd</sup> Avenue/SE Harrison Street intersection; and,
- Waverley Woods Apartments to be located on SE Waverley Court.

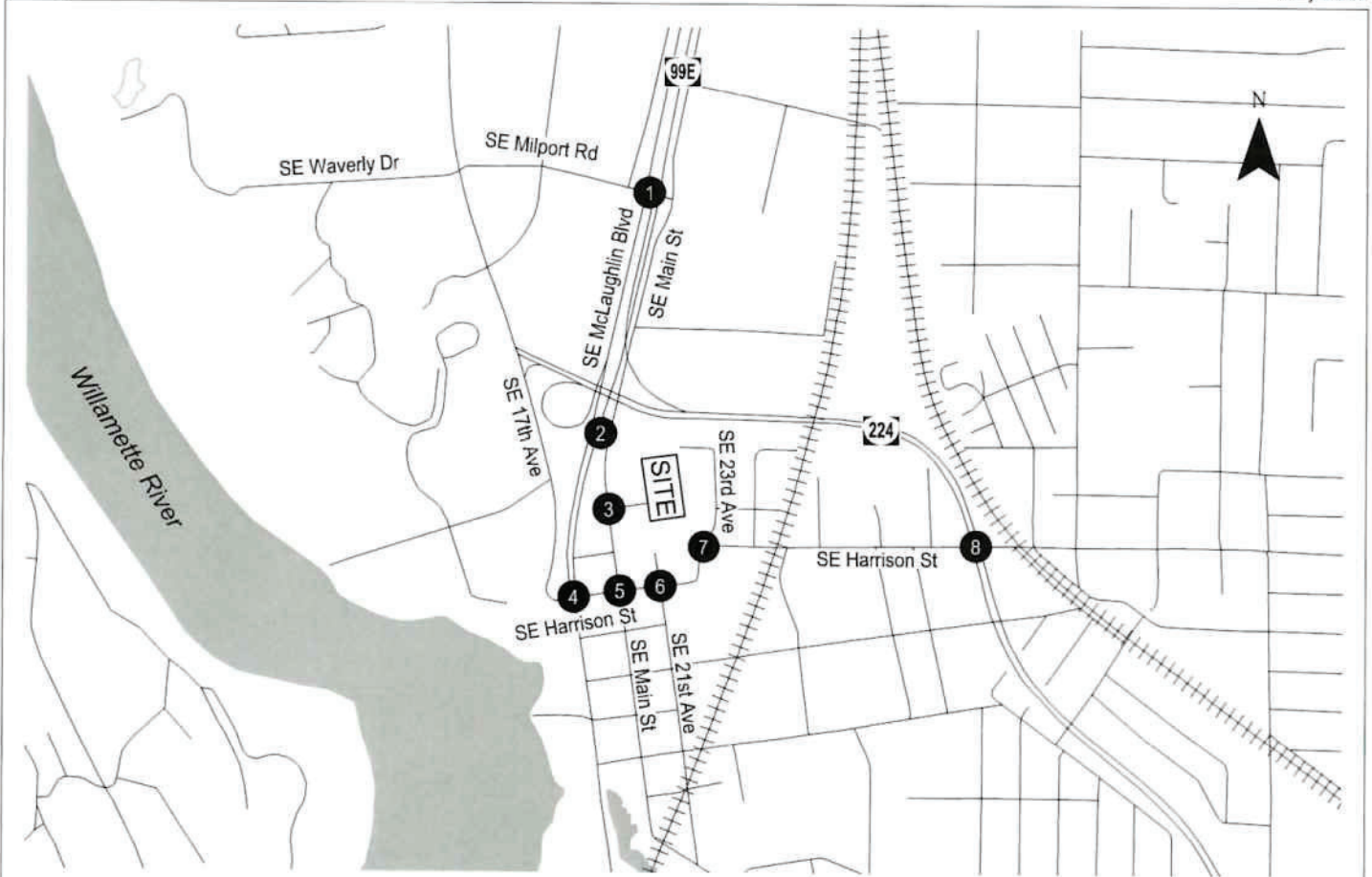
No additional in-process developments were identified by ODOT or Clackamas County staff for inclusion in the analyses. In addition to the "in-process" development traffic, a two percent growth rate was applied to the year 2021 "proxy" volumes to account for continued growth in regional traffic. The trips associated with the in-process traffic are provided in *Appendix D*.

None of the agencies identified funded changes to the study intersections and/or streets within the next two years that will materially affect traffic volumes.

Figures 6 and 7 show the projected 2022 turning movements and associated intersection analyses during the AM and PM peak hours. As shown, all of the study intersections are projected to continue to meet the applicable operating parameters during both peak hours. *Appendix E includes the 2022 background traffic operations worksheets.*

---

<sup>2</sup> Weekday AM and PM peak hour traffic volumes at the SE Harrison Street/McLoughlin Boulevard (OR 99E) and SE Harrison Street/OR 224 intersections were completed when Kellogg Bowl was in operation. Accordingly, assuming no existing site trips at these locations offers a conservative assessment of future traffic conditions.

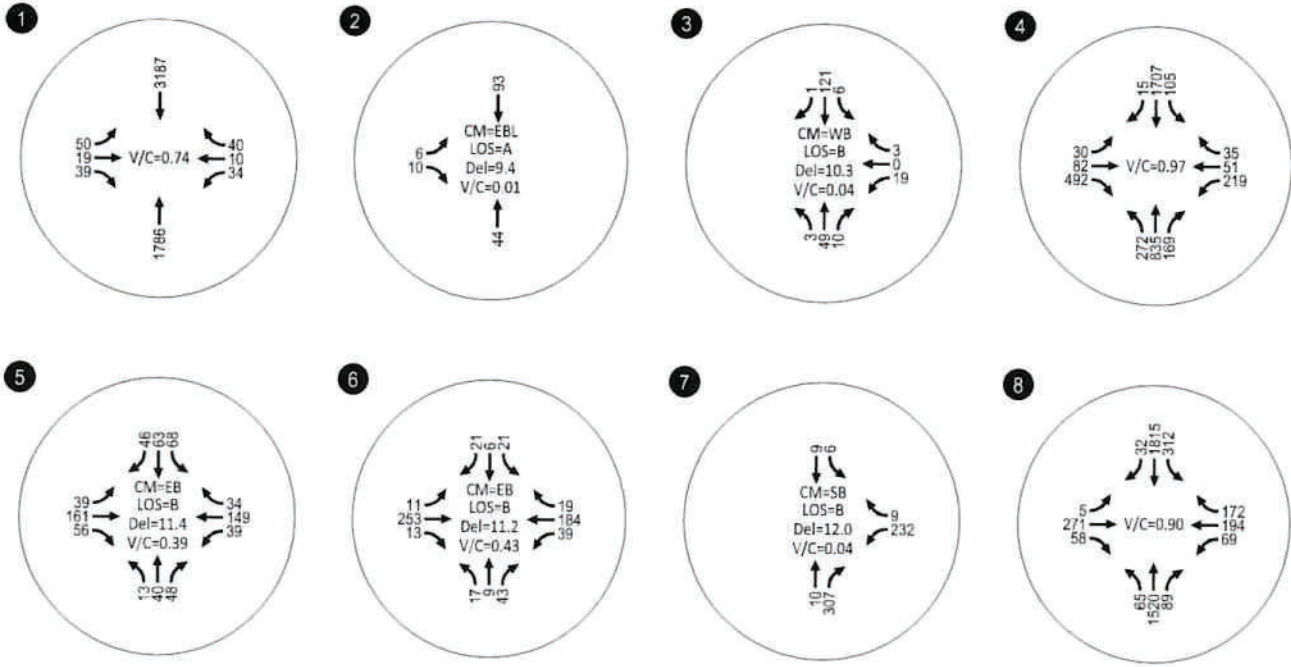
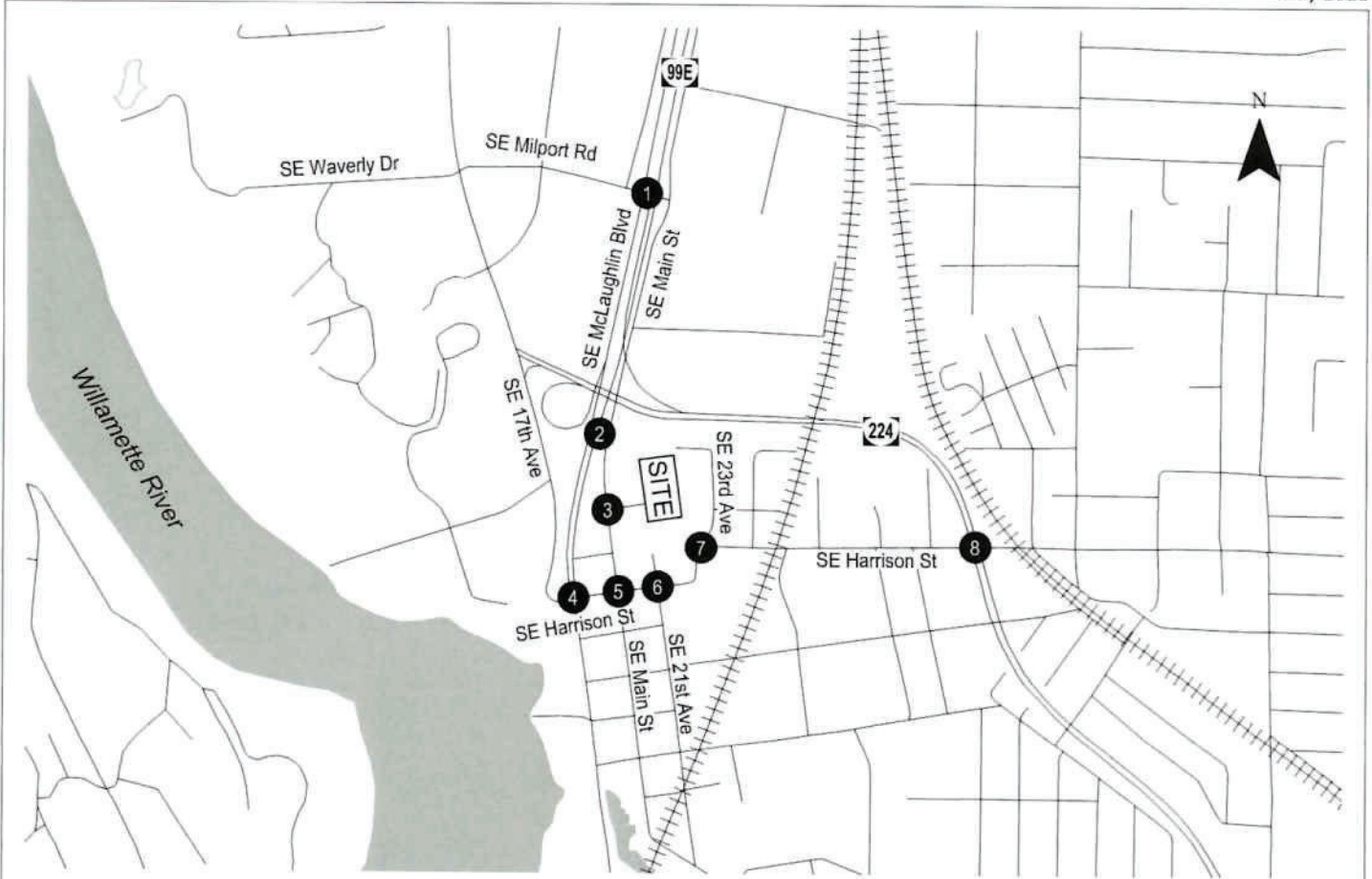


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 TWSC = TWO-WAY STOP CONTROL  
 AWSC = ALL-WAY STOP CONTROL

2022 Background Traffic Conditions  
 Weekday AM Peak Hour  
 Milwaukie, Oregon

Figure 6

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CM = CRITICAL MOVEMENT (TWSC/AWSC)  
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC/AWSC)  
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC/AWSC)  
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 TWSC = TWO-WAY STOP CONTROL  
 AWSC = ALL-WAY STOP CONTROL

2022 Background Traffic Conditions  
 Weekday PM Peak Hour  
 Milwaukie, Oregon

Figure  
 7

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## PROPOSED DEVELOPMENT

As shown in Figure 2, Pahlisch Commercial is proposing to remove the existing bowling alley and replace it with a six-story building housing up to 178 apartments and associated structured parking. The apartment residents will also be served by surface parking on both the westside and eastside of the building. Vehicular access to the apartments will be provided via the shared access onto SE Main Street that is used today by Kellogg Bowl, Pietro's Pizza, and a veterinary clinic. No vehicular connection to SE 23<sup>rd</sup> Avenue is proposed. The former Kellogg Bowl building located on the site will be removed as part of the redevelopment.

### Trip Generation Estimate

The estimated vehicular trips for the existing Kellogg Bowl and the proposed apartments were calculated based on rates contained in the *Trip Generation Manual* (10<sup>th</sup> Edition, as published by the Institute of Transportation Engineers). Note that the potential live/work units were assessed using market rate housing trip rates due to the lack of live/work trip data. The increase in site trips associated with the redevelopment is reflected in Table 4.

**Table 4. Estimated Site Trip Generation**

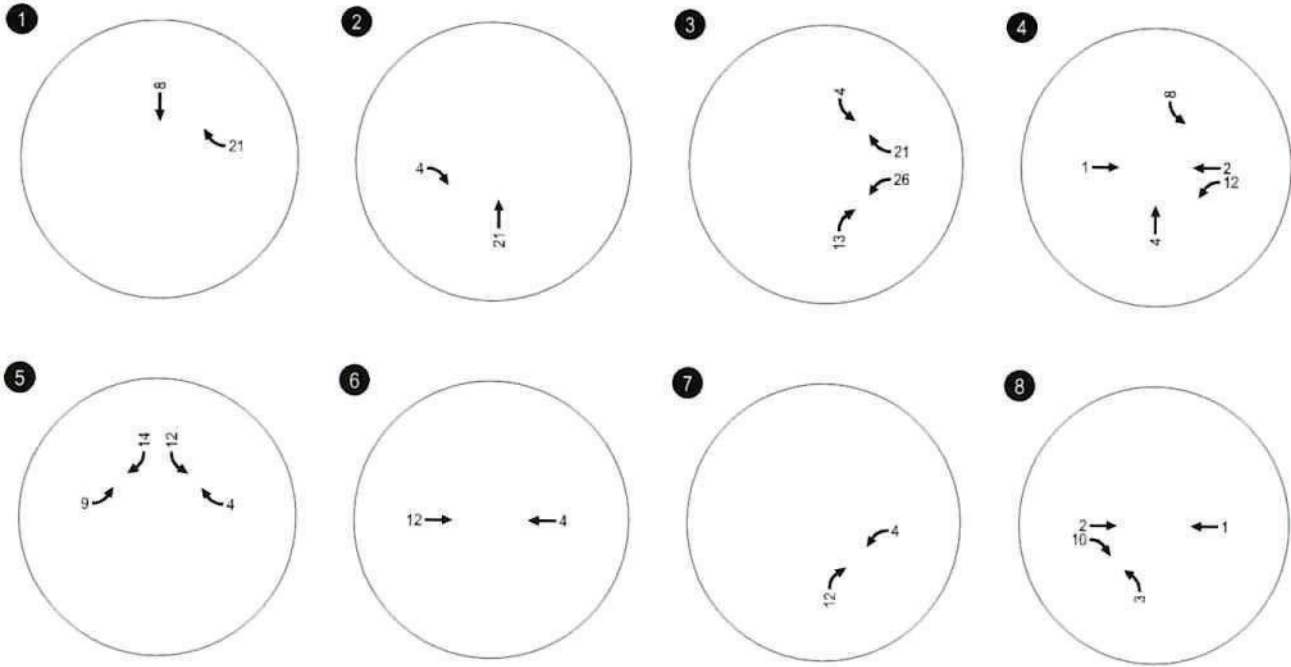
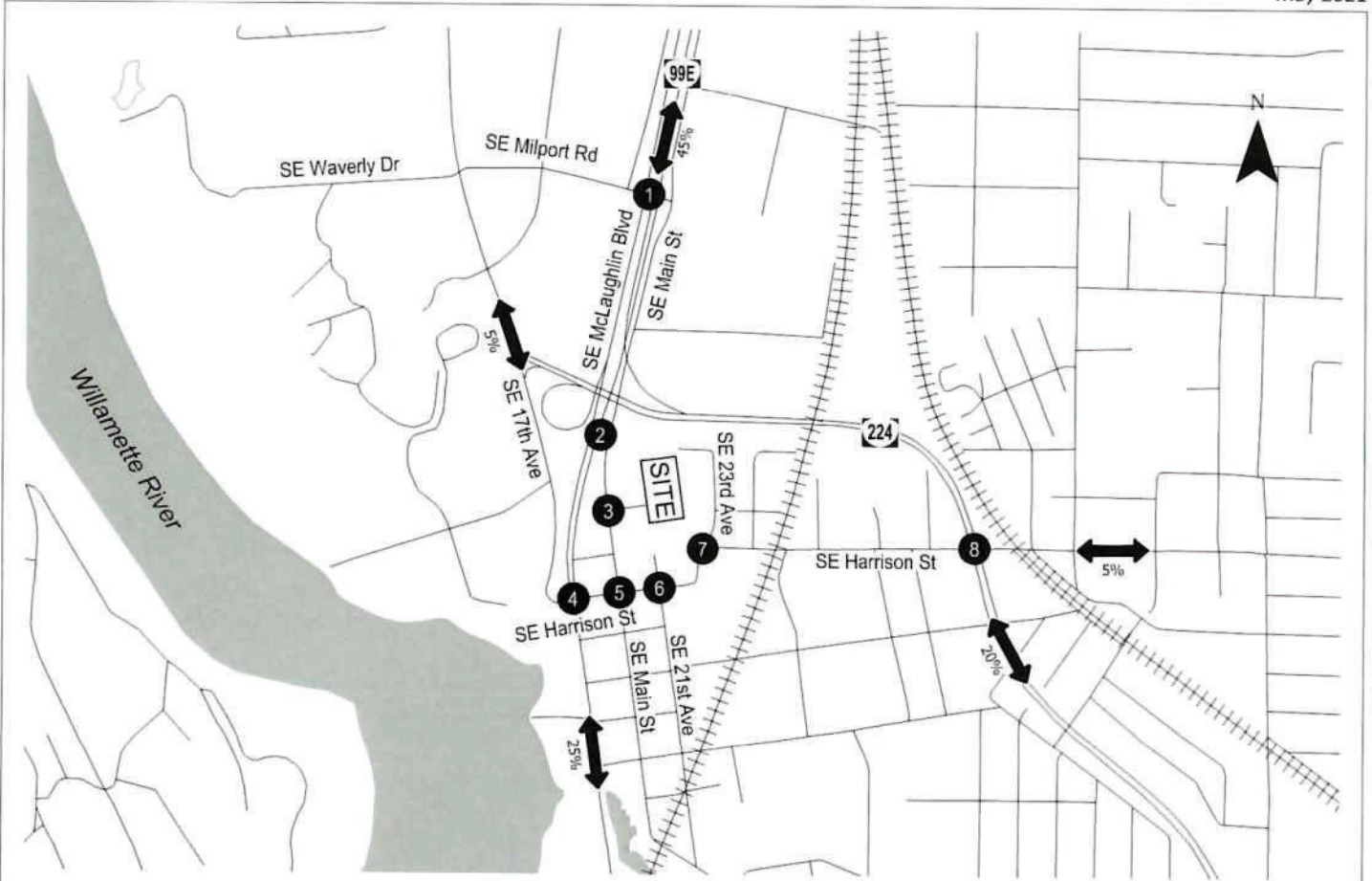
Land Use	ITE Code	Size	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total Trips	In	Out	Total Trips	In	Out
Existing Kellogg Bowl									
Bowling Alley	437	21,307 sq ft	N/A*	17	16	1	25	16	9
Proposed Redevelopment									
Mid-Rise Residential	221	178 units	968	64	17	47	78	48	30
Increase in Site Trips			N/A	+47	+1	+46	+53	+32	+21

As noted previously, Kellogg Bowl was not in operation in January 2021 when many of the study intersections were counted. As such, this study assesses the impact of the proposed apartments assuming all 64 weekday AM peak hour trips and 78 weekday PM peak hour trips are new to the study intersections (conservatively overstating site redevelopment impacts at the SE Harrison Street/McLoughlin Boulevard (OR 99E) and SE Harrison Street/OR 224 intersections given these two locations were counted when Kellogg Bowl was in operation).

### Trip Distribution and Assignment

The distribution of the site-generated vehicular trips was estimated based on a review of previously conducted traffic impact studies, guidance provided by DKS Associates on behalf of City staff, and the location of nearby and regional employment and commercial areas. Figures 8 and 9 illustrate the estimated trip distribution pattern and assignment of the site trips (as reflected in Table 4) during the weekday AM and PM peak hours.

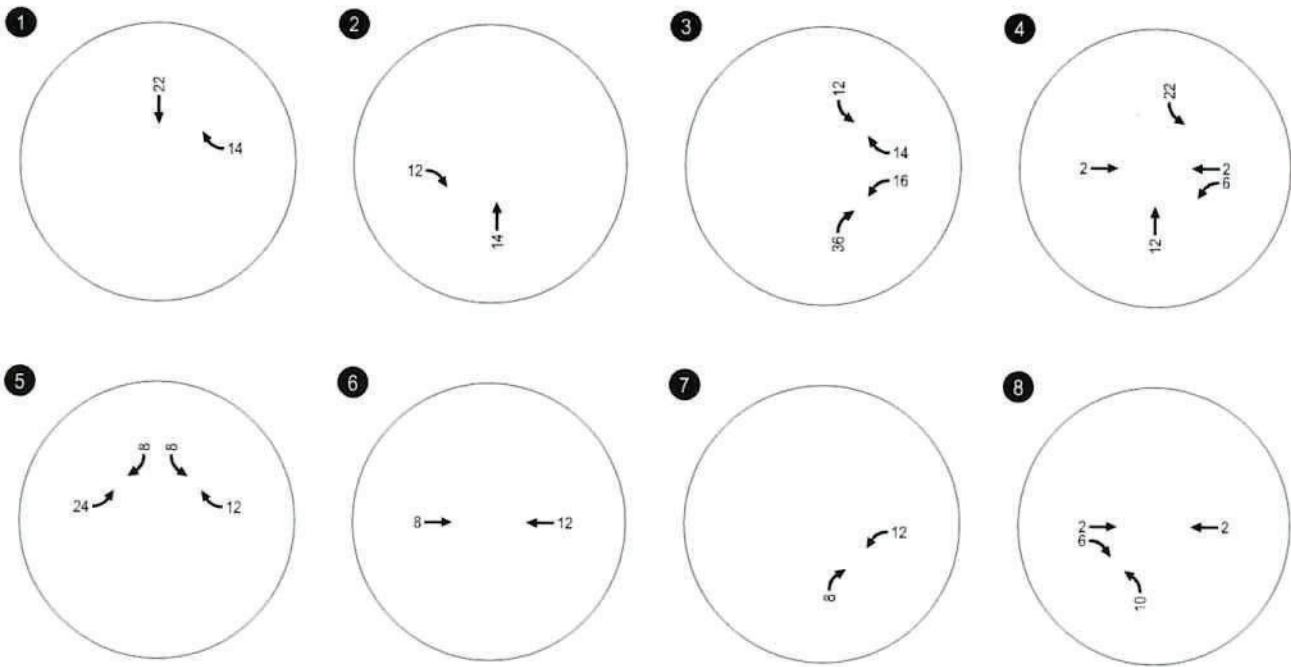
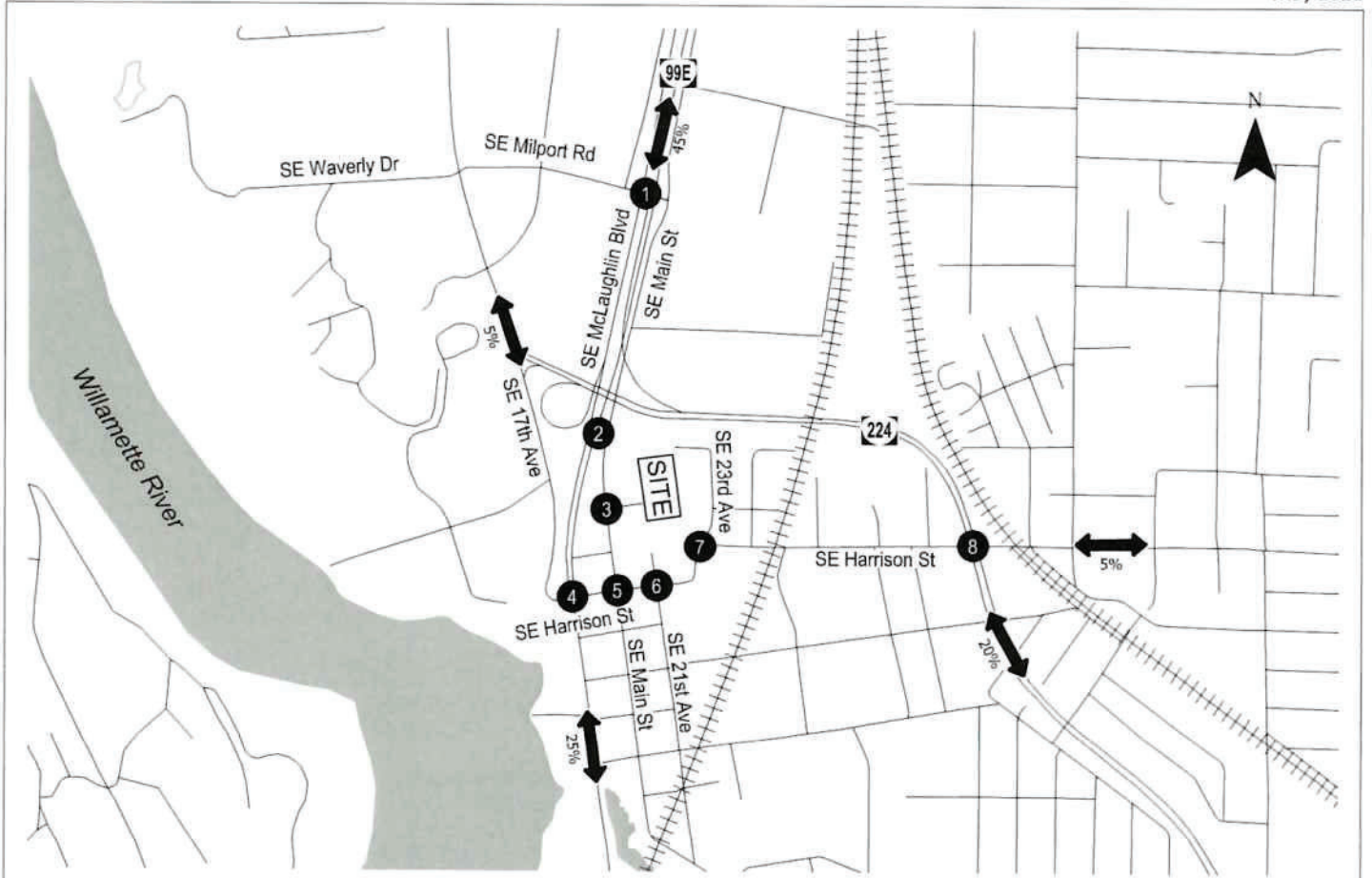




Estimated Trip Distribution Pattern and Site-Generated Trip Assignment, Weekday AM Peak Hour  
Milwaukie, Oregon

Figure 8

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Estimated Trip Distribution Pattern and Site Generated Trip Assignment, Weekday PM Peak Hour  
Milwaukie, Oregon

Figure 9

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## 2022 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study intersections will operate with the traffic associated with occupancy of the proposed apartments. The increase in site-generated trips shown in Figures 8 and 9 were added to the 2022 background traffic volumes reflected in Figures 6 and 7 to arrive at the 2022 total traffic volumes shown in Figures 10 and 11. Figures 10 and 11 also identify the intersection operations under total traffic conditions.

As shown, all study intersections continue to meet the applicable operating standards/targets under both weekday AM and PM peak hour conditions. *Appendix "F" contains the year 2022 total traffic analysis worksheets.*

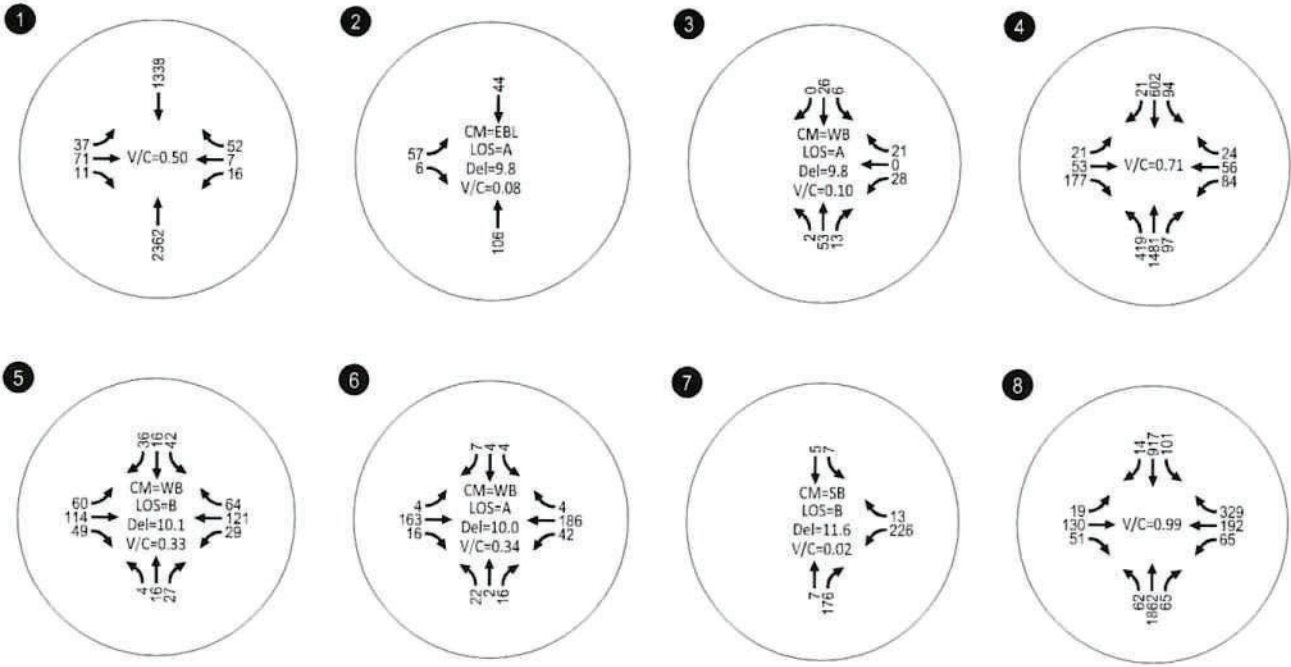
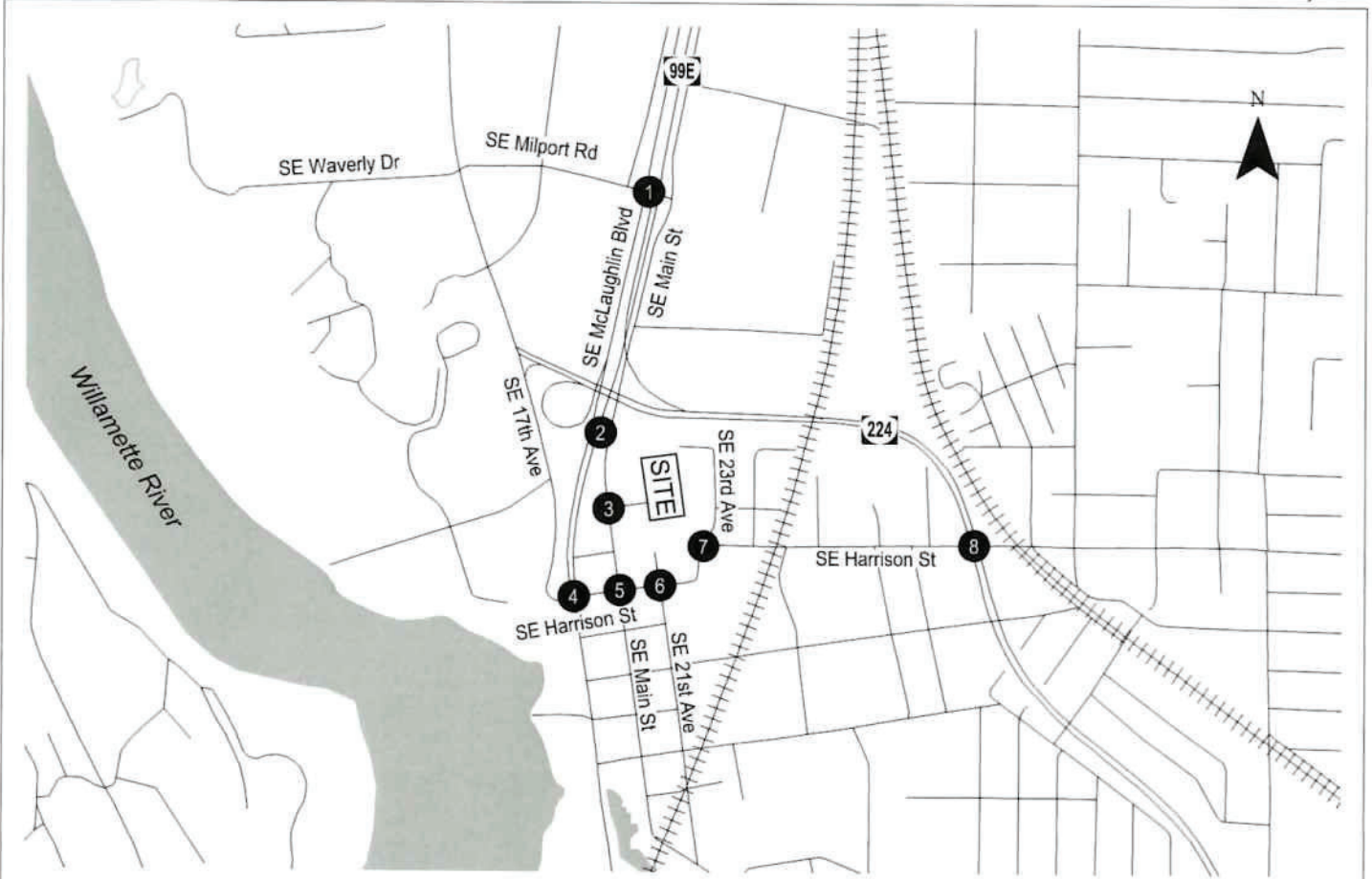
## INTERSECTION QUEUING CONSIDERATIONS

For reference purposes, *Appendix G* summarizes results of projected 95<sup>th</sup> percentile queuing for the existing, background and total traffic scenarios. As shown, queues can be readily accommodated at most intersections. Two of the ODOT study intersections are projected to have one or movements operating near or above capacity and can be expected to experience long queues as described below. Site trip impacts related to queuing are minimal at each. Further, no credit for existing site trips associated with Kellogg Bowl were assumed at either intersection, though the base traffic counts used in this analysis were completed while the former use was generating trips through both locations.

### OR 99E/SE Harrison Street (Intersection 4)

Three movements are projected to exceed the available storage at this intersection regardless of the proposed apartment development.

- The 95<sup>th</sup> percentile northbound left-turn lane queue on OR 99E at SE Harrison Street is projected to exceed the available storage length on OR 99E during both the weekday AM and PM peak hours under future conditions (this queue is also projected to exceed the available storage under proxy 2021 existing AM peak hour conditions and to be at capacity during the existing PM peak hour). The northbound left-turn queue length is not projected to change between background and total traffic conditions and the proposed apartments are not expected to add any vehicles to the turn movement.
- The 95<sup>th</sup> percentile eastbound right-turn queue on SE Harrison Street approaching OR 99E is projected to extend into the eastbound through/left lane under existing 2021 proxy weekday PM peak hour conditions as well as future background and total traffic conditions. The right-turn queue length is not projected to change between background and total traffic conditions and the proposed apartments are not expected to add any vehicles to the turn movement.

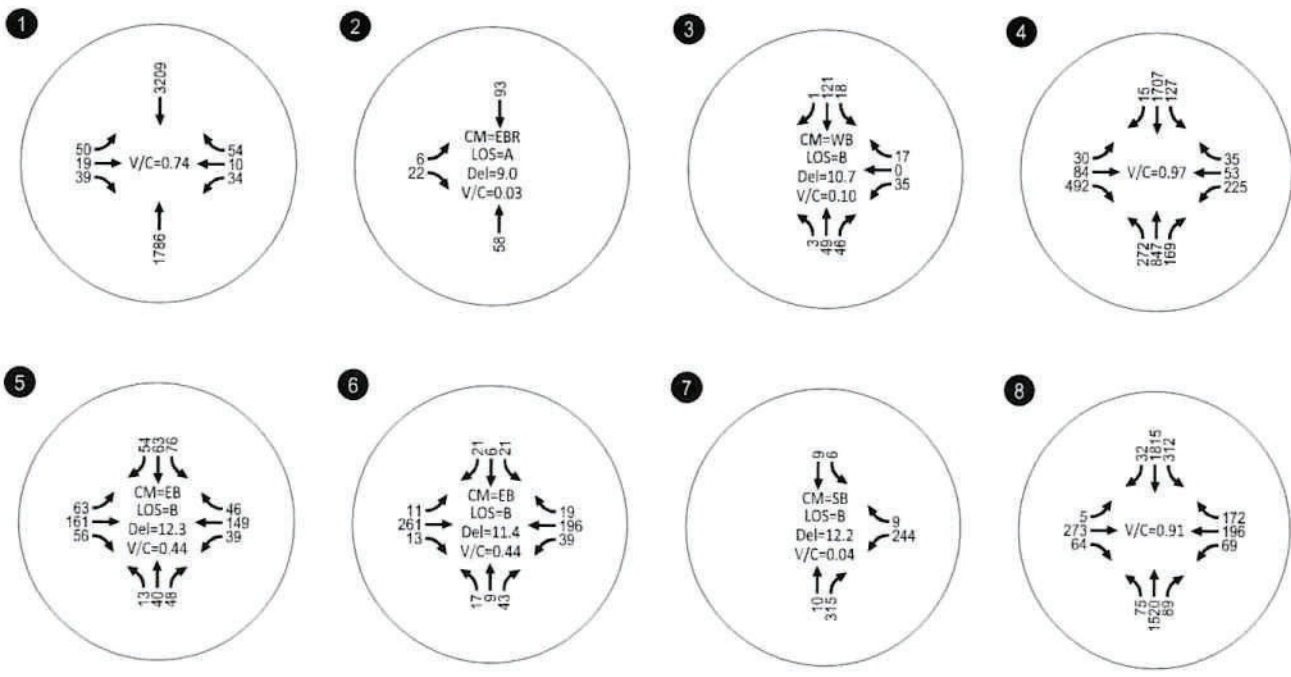
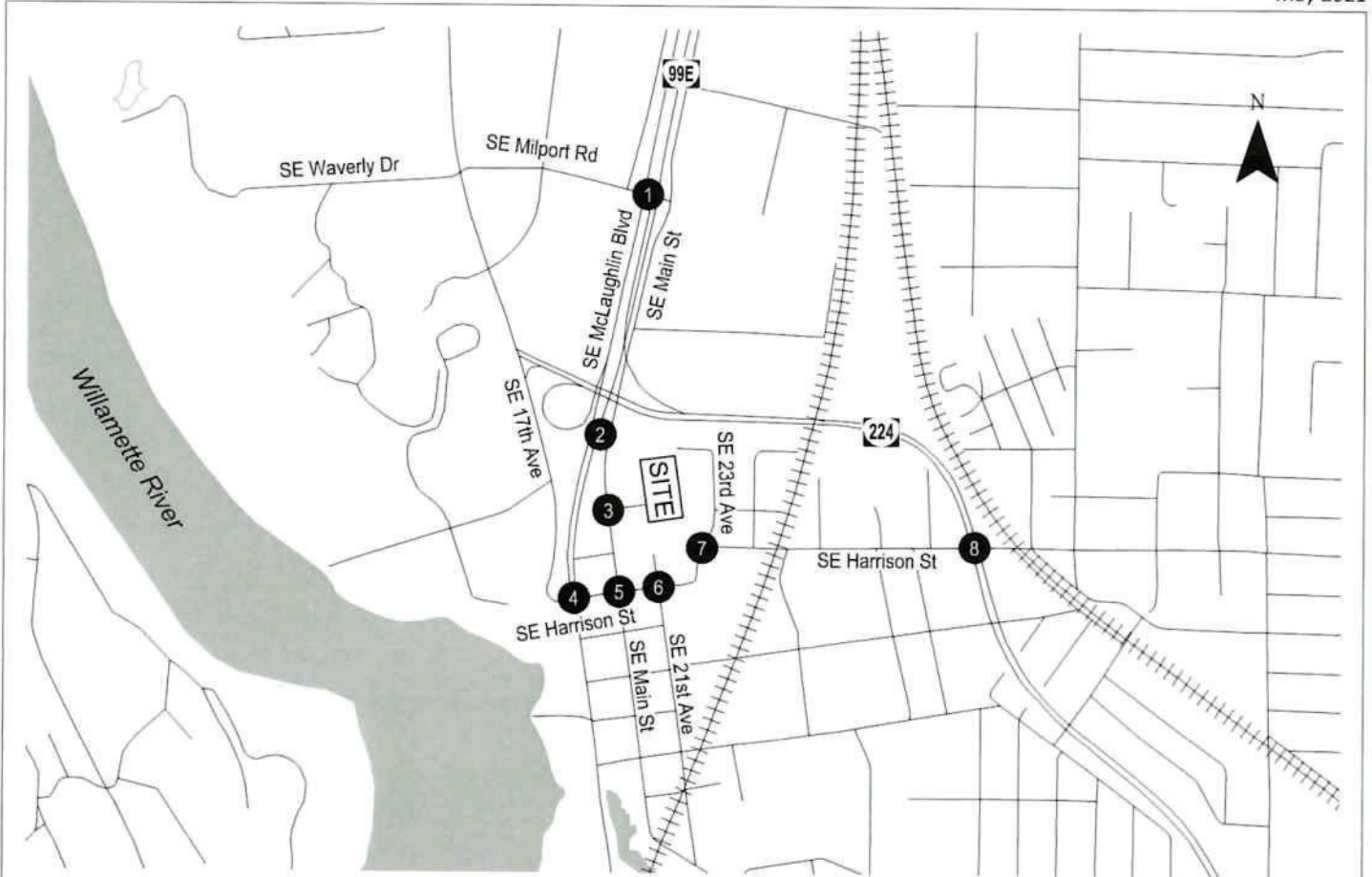


CM = CRITICAL MOVEMENT (TWSC/AWSC)  
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC/AWSC)  
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC/AWSC)  
 V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED) / CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (TWSC/AWSC)  
 TWSC = TWO-WAY STOP CONTROL  
 AWSC = ALL-WAY STOP CONTROL

2022 Total Traffic Conditions  
 Weekday AM Peak Hour  
 Milwaukie, Oregon

Figure  
 10

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CM = CRITICAL MOVEMENT (TWSC/AWSC)  
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC/AWSC)  
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC/AWSC)  
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 TWSC = TWO-WAY STOP CONTROL  
 AWSC = ALL-WAY STOP CONTROL

2022 Total Traffic Conditions  
 Weekday PM Peak Hour  
 Milwaukie, Oregon

Figure  
 11

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- The 95<sup>th</sup> percentile westbound queue on SE Harrison Street approaching OR 99E is projected to extend into the SE Main Street intersection under existing 2021 proxy weekday PM peak hour conditions as well as future background and total traffic conditions. The westbound weekday PM peak hour queue is projected to increase by no more than one car length between background and total traffic conditions. Further, the proposed apartments are projected to add up to 8 vehicles to the approach over the course of the PM peak hour. These site trips could alternatively travel south on SE Main Street to access OR 99E at SE Monroe Street or SE Washington Street instead of at SE Harrison Street.

Based on the considerations above including the incremental site trip generation and impacts on queuing as well as the potential for site trips to use alternative routes to travel south on OR 99E, no queuing-based mitigation is recommended at the intersection.

### OR 224/SE Harrison Street

Three movements are projected to exceed the available storage at this intersection regardless of the proposed apartment development.

- The 95<sup>th</sup> percentile northbound through queue on OR 224 is projected to extend through the SE Monroe Street intersection to the south during both the weekday AM and PM peak hours under proxy 2021 and future traffic conditions. The proposed apartments are not expected to add any vehicles to the through movement.
- The 95<sup>th</sup> percentile westbound approach queues on SE Harrison Street are projected to extend east through the SE 32<sup>nd</sup> Avenue intersection during the weekday AM peak hour under proxy 2021 and future traffic conditions. Weekday PM peak hour queues are projected to extend past the railroad crossing east of OR 224. The proposed apartments are projected to add one AM peak hour trip and two PM peak hour trips to the westbound through movement.

The OR 224/SE Harrison Street intersection is projected to operate close to capacity during both peak analysis periods, though the ODOT mobility target is satisfied for the first hour so no second hour analysis was conducted.

Similar to OR 99E/SE Harrison Street, the trip assignment provided in this study conservatively assumes that all site-generated trips destined to/from the south on OR 224 use the OR 224/SE Harrison Street intersection. Those site trips could alternatively access OR 224 via signalized intersections on OR 224 at SE Monroe Street or SE Oak Street.

No queuing-based mitigation is recommended at the intersection with site development recognizing the relative de minimis impact of site trips.

## TRANSPORTATION PLANNING RULE (TPR) ANALYSIS

As part of the redevelopment, the applicant is proposing a Zoning Map Amendment for the approximately 0.20-acre portion of the property that is currently zoned R-5. Today, this property is used for surface parking and as proposed, will continue to do so in the future. As part of the redevelopment, the property would be rezoned to DMU (Downtown Mixed Use) like the remainder of the property. Given that the area will only serve surface parking for the residents of the new apartment building, the applicant is proposing a trip cap to address compliance of the proposed rezone with Oregon's Transportation Planning (TPR) Rule (as outlined in Oregon Administrative Rule, OAR, 660.012.0060).

Per the City's Municipal Code, the R-5 zoning relates to low-density residential development. Table 19.301.4 of the Municipal Code specifies a maximum density of 8.7 units per acre. Based on the 0.20-acre size of the parking lot, this would enable up to 2 homes to be developed under the existing zoning. As proposed the 0.20 acres would be rezoned to DMU to address the existing "split zone" nature of the property but the parking area would remain as the only use on-site. As such, the applicant is proposing a trip cap limited to the vehicular trips that could be generated by the existing zoning for any future development of the property (not including the surface parking to serve the proposed apartments).

### ***Oregon Transportation Planning Rule Considerations***

Two sections of Oregon's TPR apply to amendments to zoning designations. Per OAR 660-012-0060(1) and (2), the first step in assessing an amendment's potential transportation impact is to compare the trip generation potential of the site assuming a "reasonable worst-case" development scenario under the existing and proposed zoning. If the trip generation potential increases under the proposed zoning, additional analysis is required to assess whether the rezone will "significantly affect" the transportation system. Conversely, if the trip generation under the proposed zoning is equal to or less than that under the existing zoning, no additional analysis is necessary to conclude that the proposal does not "significantly affect" the transportation system.

### ***Proposed Trip Cap***

To calculate the trip cap, we used the trip generation potential of the permitted land uses associated with the existing zoning assuming reasonable "worst case" development (i.e., maximum residential density). Per the discussion above, this would equate to no more than 2 homes.

Using the information presented in the *Trip Generation Manual, 10<sup>th</sup> Edition*, Table 5 presents the proposed trip cap based on the development of the property consistent with the existing zoning.

**Table 5. Proposed Trip Cap**

Land Use	ITE Code	Size (units)	Total Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total Trips	In	Out	Total Trips	In	Out
Single Family Homes	210	2	18	1	0	1	2	1	1
Trip Cap			18	1	0	1	2	1	1

With the trip cap shown in Table 5 in-place, the proposed rezone would not result in a significant effect on the transportation system, as defined by the TPR.

**Summary of Applicable Oregon Administrative Rule Criteria**

OAR Section 660-12-0060 of the TPR sets forth the relative criteria for evaluating plan and land use regulation amendments. Table 6 summarizes the criteria in Section 660-012-0060 and the applicability to the proposed Zone Map Amendment application.

**Table 6. Summary of Criteria in OAR 660-012-0060**

Section	Criteria	Applicable?
1	Describes how to determine if a proposed land use action results in a significant effect.	Yes
2	Describes measures for complying with Criteria #1 where a significant effect is determined.	No
3	Describes measures for complying with Criteria #1 and #2 without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility.	No
4	Determinations under Criteria #1, #2, and #3 are coordinated with other local agencies.	Yes
5	Indicates that the presence of a transportation facility shall not be the basis for an exception to allow development on rural lands.	No
6	Indicates that local agencies should credit developments that provide a reduction in trips.	No
7	Outlines requirements for a local street plan, access management plan, or future street plan.	No
8	Defines a mixed-use, pedestrian-friendly neighborhood.	No
9	A significant effect may not occur if the rezone is identified on the City's Comprehensive Plan and assumed in the adopted Transportation System Plan.	No
10	Agencies may consider measures other than vehicular capacity if within an identified multimodal mixed-use area (MMA).	No
11	Allows agencies to override the finding of a significant effect if the application meets the balancing test.	No

The applicable criteria are provided below in italics along with a compliance assessment shown in standard font.

*OAR 660-12-0060(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*



*(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*

*(b) Change standards implementing a functional classification system; or*

*(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*

*(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*

*(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*

*(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

**Compliance Assessment:** The proposed rezone with the associated trip cap will restrict any future redevelopment of the parking lot to the trip generation potential shown in Table 5 (i.e., 18 daily trips, 1 weekday AM peak hour and 2 weekday PM peak hour trips). No changes to the City's functional street classification designations or standards are warranted by the trip cap. Accordingly, the proposed rezone does not result in a significant effect on the transportation system, and mitigation is not necessary with the exception of the imposed trip cap.

*OAR 660-12-0060 (4) Determinations under sections (1)–(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.*

*(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.*

*(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:*

*(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement*

*program or capital improvement plan or program of a transportation service provider.*

*(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.*

*(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.*

*(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.*

*(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.*

*(c) Within interstate interchange areas, the improvements included in (b)(A)–(C) are considered planned facilities, improvements and services, except where:*

*(A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or*

*(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.*

*(d) As used in this section and section (3):*

*(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;*

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within one-quarter mile of the ramp terminal intersection of an existing or planned interchange on an Interstate Highway; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)-(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

**Compliance Assessment:** The traffic impact analysis and TPR analysis for this project have been coordinated with the City of Milwaukie, Clackamas County, and ODOT.

## DRIVEWAY SIGHT DISTANCE

Available intersection sight distance was measured at the existing site driveway using the principles and methods identified in *A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition, 2011* as published by the American Association of State Highway and Transportation Officials (AASHTO). For the analysis, intersection sight distance was measured from an assumed driver viewpoint 14.5 feet behind the travel way and from a height of 3.5 feet above the ground facing an object that is 3.5 feet above the ground.

Using the posted 20 miles per hour (MPH) speed along SE Main Street, Case B1 and Case B2 sight distances were reviewed facing northbound and southbound departing the driveway and entering SE Main Street. Per *A Policy on Geometric Design of Highways and Streets*:

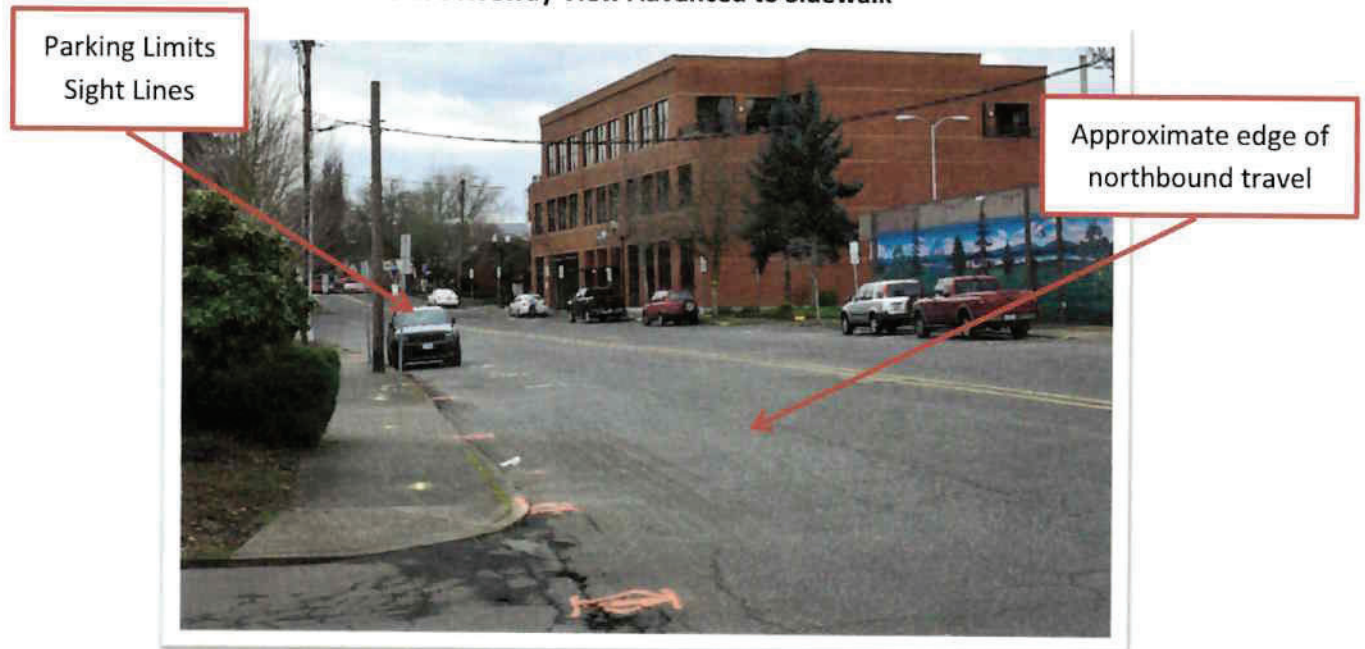
- Case B1 is a left turn from the site driveway and requires at least 225 feet of intersection sight distance for automobiles facing to both the left and right for a two-lane roadway. Available intersection sight distance was observed to be over the desired 225 feet facing in both directions.
- On-street parking along SE Main Street south of the proposed access has the potential to limit sight lines, as does existing landscaping located on the property to the south (see Photo 1 below).

**Photo 1. Exit Driver View Facing Left 14.5 Feet from Curb**



- As drivers departing the site advance to the roadside curb edge, sight lines increase facing to the left (see Photo 2 below). There is potential for a large vehicle (van or truck) parked on-street south of the site driveway to reduce the available sight line to less than 225 feet, consistent with other driveways in the downtown area along SE Main Street.

**Photo 2. Driveway View Advanced to Sidewalk**



- Stopping sight distance traveling along SE Main Street approaching the site driveway should be at least 115 feet. Available stopping sight distance was observed to exceed 115 feet traveling both north bound and southbound on SE Main Street<sup>3</sup>.

Based on the existing sight distance considerations and feedback from City staff, the Applicant proposes to install curb extensions at the SE Main Street site access driveway (refer to the site plan in Figure 2). The curb extensions will allow drivers leaving the site to advance closer to the edge of the travel lane, improving sight lines facing to the north and south similar to the view shown above in Photo 2.

All vegetation, landscaping, and above ground objects adjacent to the site driveway should be placed and maintained to provide adequate minimum sight distance in accordance with City requirements.

## SCHOOL WALKING ROUTES

Per North Clackamas School District school boundary mapping<sup>4</sup>, the proposed apartment residents will likely be served by:

- Milwaukie El Puente Elementary located at 11250 SE 27<sup>th</sup> Avenue, approximately 0.7 mile southeast of the apartment site;
- Rowe Middle School located at 3606 SE Lake Road, approximately 1.3 miles southeast of the apartment site; and
- Milwaukie High School and the Milwaukie Academy of the Arts located at 2301 SE Willard Street, approximately 0.5 mile southeast of the apartment site.

The proposed site development includes new sidewalks along the site frontage on SE Main Street that links with on-site sidewalks connecting to each apartment building. Existing sidewalk on the east side of SE Main Street in turn link the site frontage to SE Harrison Street. The site will also connect to existing sidewalk facilities to the east along SE 23<sup>rd</sup> Avenue.

Figure 12 illustrates one complete potential walking route between the apartment site and each of the respective schools. The figures highlight public street intersections with crosswalks, all-way stop control and/or traffic signals. While not illustrated, pedestrians may choose between multiple potential walking routes. For example, the figure assumes pedestrians access the apartment site via SE 23<sup>rd</sup> Avenue. The pedestrians could alternatively travel to/from the site directly via SE Main Street to SE

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<sup>3</sup> For the analysis, stopping sight distance was measured from an assumed driver height of 3.5 feet above the ground facing an object that is 2.0 feet above the ground.

<sup>4</sup> Source: <https://www.nclack.k12.or.us/registration/page/school-boundaries>












-  Identified walk route
-  Schools
-  All way stop intersection
-  Signalized Intersection
-  Marked school crossing
-  Sidewalk
-  Parks and or Natural Areas
-  School sites
-  Rivers and water bodies



Figure 12

Harrison Street and then reach each of the schools using sidewalk facilities connecting south along SE Main Street or SE 21<sup>st</sup> Avenue (both roadways have intersections with all-way stop control to facilitate crossing SE Harrison Street).

North Clackamas School District has indicated to the City that the District will provide bus service to students residing at the proposed apartments who attend Rowe Middle School.

## PARKING SUPPLY & DEMAND

The proposed development is subject to the vehicular parking standards in Table 19.605.1 of the Milwaukie Municipal Code (MMC). Per this City requirement, the minimum vehicular parking supply required for multifamily dwellings is 1 space per unit for those units of 800 square feet or less and 1.25 space per unit for those units with more than 800 square feet. Regardless of the unit size, the maximum vehicular parking supply is 2 spaces per unit. Based on the proposed site plan, the minimum parking supply for the 178 multifamily units is 125<sup>5</sup> and the maximum supply allowed is 356. The proposed site plan identifies a parking supply of 173<sup>6</sup> spaces on-site with vehicular parking supply provided both within the building as well as in a surface parking lot. Accordingly, both the minimum and maximum code requirements are satisfied.

## ACCESS SPACING

MMC 12.16.040.B.1.b identifies the City's access spacing criteria. Per Code, minimum driveway spacing along collector roadways like SE Main Street is 300 feet measured between the closest edges of driveway aprons where they abut the roadway. None of the existing driveways on SE Main Street between SE Harrison Street and the Milwaukie Expressway to the north satisfy the 300 foot spacing standard, nor do any of the public streets along the downtown grid between SE Scott Street (south of the project site) and SE Washington Street.

The proposed site plan does not meet the minimum 300 feet spacing standard and physically cannot meet this standard due to the limited length of the site frontage (approximately 53 feet). Despite the inability to satisfy the 300-foot minimum access spacing standard, efforts were made to move in the direction of code compliance to the extent practical as described below.

As Figure 2 shows, the project site is a "flag lot" served by a primary access driveway located on the narrow "flag pole" portion of the property situated between the property to the north and the property to the south. The only legal vehicular access available to the site (Tax Lot 402) is the existing site

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<sup>5</sup> The site parking supply required could be reduced to 125 spaces through application of up to a 30% parking reduction in the downtown mixed-use zone per MCM Section 19.605.3 (30% of 178 spaces = 53 spaces).

<sup>6</sup> 173 stalls count includes 64 parking stackers, 78 standard stalls in the garage, and 31 surface parking stalls.

driveway on SE Main Street. Shared access is provided to adjacent properties today via an internal driveway connection linking with the property to the north (Pietro's Pizza) and a separate internal driveway connection linking with the property to the south (veterinary clinic); however, there is no reciprocal access on to the north property or the south property for Tax Lot 402.

A one-way entry only driveway to a banking facility is located west and slightly north of the project site access on SE Main Street.

The proposed site plan retains both of the existing on-site shared access points and reconfigures the existing site driveway connection to SE Main Street (refer to the site plan in Figure 2). Compared to the existing condition, the proposed physical driveway connection to SE Main Street:

- is a reduced width from that provided today, which in turn reduces the crossing distance for someone walking along SE Main Street in front of the driveway;
- provides curb extensions to improve sight distance (as previously discussed);
- provides an east-west sidewalk connection that links the proposed apartments with SE Main Street along the south side of the driveway; and
- limits the existing on-site angled parking along both sides of the driveway today to the north side only and removes parking immediately adjacent to SE Main Street.

The internal parking reconfiguration along the drive aisle reduces the potential for on-site parking maneuvers to queue onto SE Main Street compared to the existing condition and responds to MMC 12.16.040.E.3 that prohibits backing maneuvers into the right-of-way (all vehicle backing maneuvers are contained on site).

MMC 12.16.040.D.2 identifies shared access considerations and states:

*The number of accessways on collector and arterial streets shall be minimized whenever possible through the use of shared accessways and coordinated on-site circulation patterns. Within commercial, industrial, and multifamily areas, shared accessways and internal access between similar uses are required to reduce the number of access points to the higher-classified roadways, to improve internal site circulation, and to reduce local trips or movements on the street system. Shared accessways or internal access between uses shall be established by means of common access easements.*

The proposed site plan provides shared access to the property located both north and south of the project site, continuing existing shared access arrangements. Retention of the primary access to the site is appropriate to avoid out-of-direction Henley Place resident travel through either the restaurant site to the north of the clinic site to the south (forcing all resident vehicle trips through either the restaurant site or the veterinary clinic site would be undesirable from a parking lot and pedestrian interaction perspective). Further, the proposed site plan includes standard sidewalk facilities along the SE Main Street site frontage and extensive on-site facilities that link people walking between the site



and the downtown area. Pedestrian and bicycle connectivity along SE Main Street and both to/through the site is not diminished by the proposed retention of the existing site access direct to SE Main Street.

## RECOMMENDATIONS

Subject to approval by the City of Milwaukie, the primary recommendations of this study are summarized below.

- A trip cap equivalent to 18 daily, one weekday AM and two weekday PM peak hour trips should be placed on the 0.2-acre portion of the site that is currently zoned R-5. This trip cap is needed to address any future development traffic on this site complies with Oregon's Transportation Planning Rule (TPR) if the property is rezoned. If this portion of the site is redeveloped in the future, the need for the trip cap should be re-evaluated relative to TPR requirements.
- Site landscaping, above-ground utilities, and site signage should be located and maintained such that they provide minimum required sight lines within the site as well as at the site driveways on SE Main Street per City requirements.

Please let us know if you have any questions regarding our analyses or findings.

Sincerely,  
KITTELSON & ASSOCIATES, INC.



Chris Brehmer, PE  
Senior Principal Engineer



Julia Kuhn, PE  
Senior Principal Engineer

Cc: Amanda Deering & Reah Flisakowski, DKS Associates on behalf of the City of Milwaukie  
Avi Tayar, Oregon Department of Transportation Region 1  
Marah Danielson, Oregon Department of Transportation Region 1  
Christian Snuffin, Clackamas County Department of Transportation & Development  
Richard Nys, Clackamas County Department of Transportation & Development  
Kathryn Joseph, Pahlisch Commercial

## LIST OF APPENDICES

- ODOT Crash Data
- Traffic Count Calculations
- Existing Conditions Analysis Worksheets
- In-Process Data
- Year 2022 Background Traffic Conditions Analysis Worksheets
- Year 2022 Total Traffic Conditions Analysis Worksheets



## G. 95<sup>th</sup> Percentile Queuing Analysis Summary

## Appendix A ODOT Crash Data

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Crashes on SE Main St, within 400 ft. South of OR-99E Intersection  
 January 1, 2014 through December 31, 2018

YEAR:	COLLISION TYPE	FATAL		NON-FATAL		TOTAL	PEOPLE KILLED	PEOPLE INURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION RELATED	OFF-ROAD
		CRASHES	CRASHES	CRASHES	CRASHES										
TOTAL															
FINAL TOTAL															

**Disclaimers:** Effective 2016, collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants. Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see [https://www.oregon.gov/ODOT/Data/documents/Crash\\_Data\\_Disclaimers.pdf](https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf).

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at SE Main St & OR-99E, Pacific Hwy (#081)  
 January 1, 2014 through December 31, 2018

YEAR:	COLLISION TYPE	FATAL		NON-PROPERTY DAMAGE ONLY		TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION RELATED	OFF-ROAD
		CRASHES	CRASHES	CRASHES	CRASHES										
TOTAL															
FINAL TOTAL															

**Disclaimers:** Effective 2016, collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants. Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see [https://www.oregon.gov/ODOT/Data/documents/Crash\\_Data\\_Disclaimers.pdf](https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf).

CITY OF MILWAUKEE, CLACKAMAS COUNTY

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

DRAN NON-SYSTEM CRASH LISTING

Intersection Crashes at SE Main St & SE Harrison St

January 1, 2014 through December 31, 2018

SER#	INVEST	UNLOC?	D C J L K	DATE	DAY/TIME	PC	PISTR#	CITY STREET	FIRST STREET	SECOND STREET	INTERSECTION SEQ #	RD CHAR	DIRECT	LOCN	INT-TYP	INT-REL	OFF-RD	WTHR	CRASH TYP	SECT	USE	MOVE	TRIP	FROM	TO	P#	PRIC	INJ	G E LICNS	FEED	LOC	ERR#	ACTN	EVENT	CAUSE						
00933	N	N	N	N	02/25/2016	16		HARRISON ST				INTER	SE		CROSS	N		CLR	ANGI-STEP	01	NONE	9	TURN-L	N/A	NB	CE	01	DRVR	NONE	00	U	UNK	000	000	015		00	00			
04727	N	N	N	N	10/13/2016	16		HARRISON ST				INTER	CR		CROSS	N		RAIN	O-1 L-TURN	01	NONE	9	STRIGHT	N/A	NE	SW	01	DRVR	NONE	00	U	UNK	000	000	000	000	015		00	00	
00448	N	N	N	N	02/07/2018	16		HARRISON ST				INTER	CR		CROSS	N		CLR	BIKE	01	NONE	0	STRIGHT	N/A	E	W	01	DRVR	NONE	54	M	OR-Y	027	000	000	015		00	00		
02535	N	N	N	N	07/02/2014	16		HARRISON ST				INTER	CR		CROSS	N		CLR	ANGI-OTH	01	NONE	0	STRIGHT	N/A	NE	SW	01	DRVR	NONE	37	M	NONE	021	000	000	000	000	015		00	00
01510	N	N	N	N	05/04/2018	16		HARRISON ST				INTER	CR		CROSS	N		CLR	O-1 L-TURN	01	NONE	0	STRIGHT	N/A	NE	SW	01	DRVR	NONE	58	M	SUSP	028	000	000	015		00	00		

081 PACIFIC HIGHWAY EAST

Intersection: Crosses at OR-99E, Pacific Hwy (#881) & SE 17th Ave / SE Harrison St  
January 1, 2014 through December 31, 2018

SR	EA / CG	DATE	COUNTY	CITY	URBAN AREA	REF	FC	COM #	STREET	NO CHAR	IND-TYP	INT-REL	OFFRD	WTR	CRASH	TYP	TRF QTY	MVR	PRTC	INT	A S	LICNS	PER	LOC	ERRR	ACTN	EVENT	CAUSE				
INVEST	E L I H R	DAY/TIME				FILEPRT	SECOND	STREET	DIRECT	DIRECT	LEGS	TRAFF	RANET	SURE	COLL	TYP	V#	VEH	TYPE	TO	P#	TYPE	SVRTY	F	X	RES	LOC	ERRR	ACTN	EVENT	CAUSE	
UNDOCS	D C J L R	LAT/LONG				UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS	UNDOCS

00440	N N N N	02/04/2015	CLATSOP	PORTLAND VA		1	14		HARRISON ST	06	CROSS	N	TRF SIGNAL	N	DRY	PCO	01	NONE	0	STRGHT	01	DRVR	NONE	43	M	OR-Y	OR<25	045	000	000	000	35,13	
No	45-26	43.37 -122.38	33.97						PORTLAND VA																								

05280	N Y N	12/10/2015	CLATSOP	PORTLAND VA		1	14		HARRISON ST	06	CROSS	N	TRF SIGNAL	N	DRY	PCO	01	NONE	0	STRGHT	01	DRVR	NONE	23	M	OR-Y	OR<25	043,026	000	000	000	29,07		
No	45-26	43.37 -122.38	33.97						PORTLAND VA																									

84208	N N N	06/25/2016	CLATSOP	PORTLAND VA		2	14		HARRISON ST	06	CROSS	N	TRF SIGNAL	N	DRY	PCO	01	NONE	0	STRGHT	01	DRVR	NONE	49	M	OR-Y	N-RES	026	000	000	000	29			
No	45-26	43.37 -122.38	33.97						PORTLAND VA																										

00401	N N N N	01/30/2017	CLATSOP	PORTLAND VA		1	14		HARRISON ST	06	CROSS	N	TRF SIGNAL	N	DRY	PCO	01	NONE	0	STRGHT	01	DRVR	NONE	39	M	OR-Y	OR<25	026	000	000	000	29			
No	45-26	43.37 -122.38	33.97						PORTLAND VA																										

02991	N N N	07/24/2017	CLATSOP	PORTLAND VA		2	14		HARRISON ST	06	CROSS	N	TRF SIGNAL	N	DRY	PCO	01	NONE	0	STRGHT	01	DRVR	NONE	38	F	OR-Y	UNK	026	000	000	000	29			
No	45-26	43.37 -122.38	33.97						PORTLAND VA																										





081 PACIFIC HIGHWAY EAST

Intersection: Peach at OR-99E, Pacific Hwy (#9081) & SE 17th Ave / SE Harrison St  
January 1, 2014 through December 31, 2018

SR#	LA / CO	DATE	COUNTY	CITY	CRASH TYPE	INT-TYP	INT-BEL	CHRD	WHR	CRASH	TYF	SECT USE	TRIP QTY	MOVE	PRC	IND	C	E	LICNS	ED	LOC	FROR	ACTN	EVENT	CAUSE
INVEST	BY	TIME	DAY/TIME	STREET	DIR	DRGT	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF
DATE	TIME	DAY	TIME	STREET	DIR	DRGT	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF	TRF

01579	N	N	N	04/13/2016	CLACKANAS	INTER	N	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	DRVR	NONE	64	F	OR-Y	OR<25	000	000	000	00	

05892	N	N	N	11/29/2016	CLACKANAS	INTER	N	CROSS	N	TRF SIGNAL	N	DRY	BACK	N/A	01	DRVR	NONE	00	U	UNK	UNK	000	000	000	00

06184	N	N	N	12/28/2016	CLACKANAS	INTER	N	CROSS	N	TRF SIGNAL	N	DRY	REAR	N/A	01	DRVR	NONE	00	U	UNK	UNK	000	000	000	00

00273	N	N	N	01/19/2017	CLACKANAS	INTER	N	CROSS	N	TRF SIGNAL	N	DRY	REAR	N/A	01	DRVR	NONE	26	F	OR-Y	OR<25	000	000	000	00

4526	N	N	N	04/13/2016	CLACKANAS	INTER	N	CROSS	N	TRF SIGNAL	N	DRY	REAR	N/A	01	DRVR	NONE	00	U	UNK	UNK	000	000	000	00

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING  
Intersection: Created at OR-99E, Pacific Hwy (#981) & SE 17th Ave / SE Harrison St  
January 1, 2014 through December 31, 2018

INT-TYP INT-REL OFFRD WITH CRASH TYPE SECL USE  
DIRECT LEGS TRAF- RNDPT SURE COLL TYP OWNER FRGM PRTC INJ G R LICNS FED  
LOCIN (#LANES) CNLT PRVLT LIGHT SVRVLTY V# VEH TYPE TO P# TYPE SVRVLTY E X RES LDC ERROR ACTN EVENT CAUSE

RR# FC CONN # CMPR/MG FIRST STREET R/C CHAR (DEP)AVD INT-REL OFFRD WITH CRASH TYPE SECL USE  
MILEPNT SECOND STREET DIRECT LEGS TRAF- RNDPT SURE COLL TYP OWNER FRGM PRTC INJ G R LICNS FED  
LRS INTERSECTION SEQ# LOCIN (#LANES) CNLT PRVLT LIGHT SVRVLTY V# VEH TYPE TO P# TYPE SVRVLTY E X RES LDC ERROR ACTN EVENT CAUSE

NO 45 26 43.37 -122 38 33.97 008100100500 1 14 HARRISON ST 01 INTER CROSS N TRF SIGNAL N CLR S-OTHER 01 NONE 9 TURN-L 01 PRV NONE 30 M OR-Y 097 000 000 000 000 00 04

NO 45 26 43.37 -122 38 33.97 008100200500 1 14 HARRISON ST 01 INTER CROSS N TRF SIGNAL N CLR S-OTHER 01 NONE 9 TURN-L 01 PRV NONE 00 U DRK 000 000 000 000 00 00

NO 45 26 43.37 -122 38 33.97 008100200500 1 14 HARRISON ST 01 INTER CROSS N TRF SIGNAL N CLR S-OTHER 01 NONE 9 TURN-L 01 PRV NONE 27 F OR-Y 047,020 000 000 000 000 00 04

NO 45 26 43.37 -122 38 33.97 008100100500 1 14 HARRISON ST 03 INTER CROSS N TRF SIGNAL N CLR ANGL ANGL 01 NONE 0 STRGHT 01 PRV NONE 21 F OR-Y 021 000 000 000 000 00 04

NO 45 26 43.37 -122 38 33.97 008100200500 1 14 HARRISON ST 03 INTER CROSS N TRF SIGNAL N CLR ANGL ANGL 01 NONE 0 STRGHT 01 PRV NONE 00 U DRK 000 000 000 000 00 00

NO 45 26 43.37 -122 38 33.97 008100200500 1 14 HARRISON ST 03 INTER CROSS N TRF SIGNAL N CLR ANGL ANGL 01 NONE 0 STRGHT 01 PRV NONE 00 U DRK 000 000 000 000 00 00

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING

081 PACIFIC HIGHWAY EAST  
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Intersectional Crashes at OR-99E, Pacific Hwy (081) & SE 17th Ave / SE Harrison St  
January 1, 2014 through December 31, 2018

SR#	EA/C O	DATE	COUNTRY	RDE	FC	CON#	RPT/MTS	FIRST STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	TYP	SPECL	USE	TRMR	QTY	MOVE	PRIC	INT	G	F	LICNS	ED	A	S	RES	LOC	ERRSR	ACTN	EVENT	CAUSE
INJECT	E	M	H	R	DAY/TIME	CITY	MILEPNT	SECOND STREET	DIR	TRAF	RMBT	SURE	COLL	TYP	W#	VEH	TYPE	TO	F#	TYPE	SURTY	E	X	RES	LOC	ERRSR	ACTN	EVENT	CAUSE				
UNIDC	D	C	J	L	K	LAIR/LONG	IRS	INTERSECTION SEGH	LOCR	GNL	DRVTY	LICHT	SVRVTY																				

02013 N N N N N 05/27/2014 CLACKAMAS 1 14 HARRISON ST INTER CROSS N N CLR ANGL-OTH 01 NONE 0 STRGHT PSNGR CAR 00 T UHR 000 000 000 000 04 04

00490 N N N N N 02/06/2017 CLACKAMAS 2 14 HARRISON ST INTER CROSS N N CLR ANGL-OTH 01 NONE 0 STRGHT PSNGR CAR 00 T UHR 000 000 000 000 04 04

03046 N N N N 08/31/2018 CLACKAMAS 2 14 MCDONOUGHLIN BLVD INTER CROSS N N CLR ANGL-OTH 01 NONE 0 STRGHT PSNGR CAR 00 T UHR 000 000 000 000 04 04

NONE N N N N FEB 11P MILWAUKEE 5.72 17TH AVE INTER CROSS N N CLR ANGL-OTH 01 NONE 0 STRGHT PSNGR CAR 00 T UHR 000 000 000 000 04 04

CITY OF MILWAUKEE, CLACKAMAS COUNTY

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
Intersectional Crashes at OR-99S/ Pacific Hwy (#081) & SE 17th Ave / SE Harrison Ct  
January 1, 2014 through December 31, 2018

SR#	INJECT	UNLOC#	D	R	U	G	S	W	DATE	FC	DISTIC	CITY STREET	FIRST STREET	SECOND STREET	INTERSECTION SEQ #	RD CHAR	DIRECT	LOC/IN	INT-TYP	INT-PEL	OFF-RD	WTHR	CRASH TYP	SPECL	USE	TRAIL QTY	FROM	TO	P#	TYPE	SVRTRY	A	S	G	E	L	O	N	G	P	E	D	LOC	ERROR	ACTN	EVENT	CAUSE
02108	N N N	45	26	43.37	-122	38	33.97		05/10/2016	16		HARRISON ST	MCDONOUGHLIN BLVD	17TH AVE	1	E	06		0	D	N	CLR	S-1STOP	01	NONE	9	STRGHT	E	W	01	DRVR	NCNE	00	U	DNK	DNK	000	000	000	000	006		29				
01805	N N N	45	26	44.37	-122	38	33.97		04/20/2016	16		MCDONOUGHLIN BLVD	17TH AVE	1	W	06		0	N	N	RAIN	BIKE	01	NONE	0	STRGHT	W	E	01	DRVR	NCNE	34	F	OR-Y	OR<25	016,027	016,027	000	000	000	000	035		27			

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 CONTINUOUS SYSTEM CRASH LISTING  
 Intersection: Crashes at OR 99E, Pacific Hwy (#081) & SE Milport Rd  
 January 1, 2014 through December 31, 2018

NO	DATE	TIME	CITY	COUNTY	RD #	STREET	RD CHAR	DIR	INT-TYP	INT-RTN	OFFRD	CRASH TYP	TRFL USE	MOVE	PRC	HT	A S	LIGS	PER	ERR	ACTN	CAUSE	
01382	10.33	-122 38	PORTLAND	WA	1	14 MILPORT RD	N	INTER	5-LEG N	N	CLR	S-1STOP	01 NONE	0 STRGHT	01 DRIVER	NONE	00	0	UNK	026	000	013	07
02579	10.33	-122 38	PORTLAND	WA	1	14 MILPORT RD	N	INTER	5-LEG N	N	CLR	S-1STOP	01 NONE	0 STRGHT	01 DRIVER	NONE	22	M	OR-Y	026	000	001	29
04157	10.33	-122 38	PORTLAND	WA	1	14 MILPORT RD	N	INTER	5-LEG N	N	CLR	S-1STOP	01 NONE	0 STRGHT	01 DRIVER	NONE	41	F	OR-Y	016,043,026	000	000	27,07
81415	10.33	-122 38	PORTLAND	WA	1	14 MILPORT RD	N	INTER	5-LEG N	N	CLR	S-1STOP	01 NONE	0 STRGHT	01 DRIVER	NONE	40	M	OR-Y	042	000	000	29

081 PACIFIC HIGHWAY EAST

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

Intersectional Crashes at OR-99E, Pacific Hwy (4081) & SE Milport Rd  
January 1, 2014 through December 31, 2018

NO	SER#	E A / C O DATE	COUNTY	CITY	URBAN AREA	RD#	FC	COUNT #	CHRT/MTS	FIRST STREET	SECOND STREET	MILEPOST	INTERSECTION SECT#	RD CHAR	(MEDIAN)	INT-REL	OPRD WTHR	CRASH TYP	TRFL QTY	MOVE	PRCG HDI	G F LICNS	RD	A S	RES	LOC	ERRCP	ACIR	EVENT	CAUSE									
																															DIRCT	TRF-TRF	RNDRT	SHRT	COLL	TYP	CMR	FRM	TO
01329	Y N N N N	03/21/2016	CLATSOPAS	MILWAUKIE		1	14	14	MILPORT RD					INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	00	U	DNR			000	000	00	00	01,07			
								5.20	MILDOUGHLIN BLVD					INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	00	U	DNR			000	000	00	00	00			
49 27		10.33	-122 38	28.48				008100100500						INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	00	U	DNR			000	000	00	00	00	00	00	
01004	N N N N	03/21/2018	CLATSOPAS	MILWAUKIE		1	14	14	MILPORT RD					INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	20	F	OR-Y			000	000	00	00	00	00	27,29	
								5.20	MILDOUGHLIN BLVD					INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	20	F	OR-Y			000	000	00	00	00	00	00	
45 27		10.34	-122 38	28.49				008100100500						INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	20	F	OR-Y			000	000	00	00	00	00	00	00
01005	N N N N N	03/21/2018	CLATSOPAS	MILWAUKIE		1	14	14	MILPORT RD					INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	78	M	OR-Y			043,026	000	000	00	00	00	00	07
								5.20	MILDOUGHLIN BLVD					INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	78	M	OR-Y			043,026	000	000	00	00	00	00	07
45 27		10.33	-122 38	28.48				008100100500						INTER	5-LEG	N	N	PAIN	S-1STOP	01	NONE	9	STRGHT	01	DRVR	NONE	78	M	OR-Y			043,026	000	000	00	00	00	00	07

091 PACIFIC HIGHWAY EAST

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTINGS  
Intersections Crashes at OR-992, Pacific Hwy (#091) & SE Milport Rd  
January 1, 2014 through December 31, 2018

NO	SR#	EA/CO DATE	COUNTY	FILE	1P	MILEPOST	SECTION	SEC#	R/C	CHAR	INT-TYPE	INT-BEL	OFFRD	WTR	CRASH TYPE	TRBLR QTY	MOVE	PRC	INI	G	E	LIENS	RED	LOC	ERROR	ACTN	EVENT	CAUSE										
						MILEPNT	INTERSECTION	SEC#	DIRCT	TRF	LEG	TRAP	RNBT	SBR	COLL	TYE	V#	VEH TYPE	IO	P#	TYPE	SURVY	E	X	RES	LOC	ERROR	ACTN	EVENT	CAUSE								
01028	N	N	N	N	03/23/2018	CLACKANAS																																
01028	N	N	N	N	03/23/2018	CLACKANAS																																
02549	N	N	N	N	07/22/2018	CLACKANAS																																
02549	N	N	N	N	07/22/2018	CLACKANAS																																
45	27	10.34	-122	38	28.48	PORTLAND WA																																
45	27	10.34	-122	38	28.48	PORTLAND WA																																
45	27	10.34	-122	38	28.48	PORTLAND WA																																
45	27	10.34	-122	38	28.48	PORTLAND WA																																
45	27	10.34	-122	38	28.48	PORTLAND WA																																

081 PACIFIC HIGHWAY EAST

OFFICE DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING  
Intersectional Crashes at OR-99E, Pacific Hwy (#081) & SE Milport Rd  
January 1, 2014 through December 31, 2018

C U R  
E G S W  
SER# E A / C O DATE COUNTY RD# FC CONN #  
INVEST E I M U R DAY/TIME CITY MILEPOST FIRST STREET  
UNID#2 D C J I R LAT LONG URBAN AREA IBS SECOND STREET  
THIRD STREET  
INTERSECTION SE#

05457 N N N 11/23/2016 CLACKAMAS 1 14  
NONE N Wed 6A MILWAUKIE MN 0 MILPORT RD  
PORTLAND VA 5.20 MCDOUGHLIN BLVD 06  
008100100500 INTER 5-LEGS N N RAIN S-1STOP 01 NONE 9 STRGHT  
N WET REAR H/A  
PSNR CAR 01 DRVY NONE 00 U UNR 000  
02 NONE 9 STOP 011  
H/A S N 000  
PSNR CAR 01 DRVY NONE 00 U UNR 000

03079 N N N N Y 07/26/2017 CLACKAMAS 2 14  
CITY N Fri 4A MILWAUKIE MN 0 MILPORT RD  
PORTLAND VA 5.20 MCDOUGHLIN BLVD 06  
008100200900 INTER 5-LEGS N N CLR BIKE 01 NONE 0 STRGHT  
TRF SIGNAL N DRY ANGL PSNR CAR 01 DRVY NONE 30 M OR-Y  
N DLT INJ PSNR CAR 01 DRVY NONE 00 U UNR 000  
STGHT 01 BIKE INUB 31 M OR-25 01 020 035

00361 N N N 01/29/2018 CLACKAMAS 2 14  
NO RPT N Mon 9A MILWAUKIE MN 0 MILPORT RD  
PORTLAND VA 5.20 MCDOUGHLIN BLVD 06  
008100200900 INTER 5-LEGS N N CLR S-1STOP 01 NONE 9 STRGHT  
TRF SIGNAL N DRY REAR H/A S N  
PSNR CAR 01 DRVY NONE 00 U UNR 000  
02 NONE 9 STOP 011  
H/A S N 000  
PSNR CAR 01 DRVY NONE 00 U UNR 000

02148 N N N N N 06/20/2018 CLACKAMAS 2 14  
CITY N Wed 3P MILWAUKIE MN 0 MILPORT RD  
PORTLAND VA 5.20 MCDOUGHLIN BLVD 06  
008100200900 INTER 5-LEGS N N CLR S-1STOP 01 NONE 9 STRGHT  
TRF SIGNAL N DRY REAR H/A S N  
PSNR CAR 01 DRVY NONE 00 U UNR 000  
02 NONE 9 STOP 011  
H/A S N 000  
PSNR CAR 01 DRVY NONE 00 U UNR 000

80848 N N N 10/05/2015 CLACKAMAS 1 14  
NONE N Mon 9A MILWAUKIE MN 0 MILPORT RD  
PORTLAND VA 5.20 MCDOUGHLIN BLVD 01  
008100100500 INTER 5-LEGS N N CLR ANGL-OTH 01 NONE 0 STRGHT  
TRF SIGNAL N DRY ANGL PSNR CAR 01 DRVY NONE 03 M OR-Y  
02 NONE 9 STOP 011  
H/A S N 000  
PSNR CAR 01 DRVY NONE 00 U UNR 000





OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSTS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING  
Intersectional Crashes at OR-99E, Pacific Hwy (#081) & SE Milport Rd  
January 1, 2014 through December 31, 2018

SER#	EA / C O	LATE	COUNTY	PDR	FC	COUNT #	RD CHAR	INT-TYP	INT-BEL	OFFRD	WTHR	CRASH	TYP	SPECI	USE	TRFR	QTY	MOVE	FRM	TO	P#	TYPE	SVRTY	E	X	RES	LC	ERRQ	ACTR	EVENT	CAUSE							
00869	N	N	N	N	03/01/2014	CLACKANAS	PORTLAND VA	02	14	MILFORD RD	INTER	5-LEG	N	N	CLR	0-1	L-TURN	01	NONE	0	STRGHT	PRVTE	S	N				01	DRVR	NONE	00	U	DNK	000	000	00		
02862	N	N	N	N	07/26/2014	CLACKANAS	PORTLAND VA	2	14	MILFORD RD	INTER	5-LEG	N	N	CLR	S-1TURN	01	NONE	0	TURN-R	PRVTE	S	E				01	DRVR	NONE	21	M	CR-Y	006,003	000	000	00		
03005	N	N	N	N	08/05/2014	CLACKANAS	PORTLAND VA	2	14	MILFORD RD	INTER	5-LEG	N	N	CLR	AMGL-OTR	01	NONE	0	STRGHT	PRVTE	S	N				01	DRVR	NONE	32	M	CR-Y	000	000	000	00		
00263	N	N	N	N	01/22/2015	CLACKANAS	PORTLAND VA	2	14	MILFORD RD	INTER	5-LEG	N	N	CLR	S-1TURN	01	NONE	0	TURN-R	PRVTE	S	E				01	DRVR	NONE	45	M	CR-Y	005,006	000	000	00		



081 PACIFIC HIGHWAY EAST

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

Intersections Covered by OR-99S, Pacific Hwy (#081) & SE Milport Rd  
January 1, 2014 through December 31, 2018

SR#	E A / C O DATE	COUNTY	PDR	FC	CON#	CHPT/MTG	FRTST	STREET	RD CHAR	INT-TYP	INT-LEG	OFFPD	WTHR	CRASH	TYP	TRFL	QTY	MOVE	FRM	ERTC	INI	G E	LONG	PER	A S	LOC	ERRR	CAUSE
INVEST	E L M H R DAY/TIME	CITY	MILEBN	SECOND	STREET	DIRECT	LEGS	TRAF-	RNDR	STRE	COLL	TYP	OWBR	TO	PH	TYPE	SVRVTY	E X	RES	LOC	ERRR	CAUSE						
UNHOC?	D C O J L R	DAY	TIME	URBAN	AREA	LEGS	INTERS	SECTION	SEQ#	LEGS	TRAF-	RNDR	STRE	COLL	TYP	OWBR	TO	PH	TYPE	SVRVTY	E X	RES	LOC	ERRR	CAUSE			

04930	N R N	10/02/2017	CLACKAMAS	2	14	MILPORT RD	04	INTER	5-LEG	N	N	CID	O-1	L-TURN	01	NONE	9	STRGHT	01	DRVR	NONE	00	U	UNK	UNK	000	000	00	14.08	
CITY	N	Sun	6P	MILWAUKIE	MM	0	CH	INTER	TRF SIGNAL	N	DRY	PDO				PSNGR	CAR	S	N										00	
No	45	27	10.18	-122	38	27.50																								

00240	N R N N N	01/16/2017	CLACKAMAS	2	14	MILPORT RD	04	INTER	5-LEG	N	N	CID	S-STRGHT	01	NONE	9	STRGHT	01	DRVR	NONE	00	U	UNK	UNK	000	000	000	124	13	
CITY	N	Mon	9A	MILWAUKIE	MM	0	CH	INTER	TRF SIGNAL	N	DRY	PDO				PSNGR	CAR	S	N										00	
No	45	27	10.18	-122	38	27.50																								

02362	N R N N N	06/16/2017	CLACKAMAS	2	14	MILPORT RD	04	INTER	5-LEG	N	N	CID	S-1TURN	01	NONE	0	TURN-R	01	DRVR	NONE	58	F	OR-X	OR<25	020,006	000	000	000	00	08.14
CITY	N	Fri	5P	MILWAUKIE	MM	0	CH	INTER	TRF SIGNAL	N	DRY	TURN				PRVTE	S	E											00	
No	45	27	10.18	-122	38	27.50																								

03813	N R N N N	09/16/2017	CLACKAMAS	2	14	MILPORT RD	04	INTER	5-LEG	N	N	CID	O-1	L-TURN	01	NONE	0	STRGHT	01	DRVR	NONE	54	F	OR-X	OR<25	000	000	000	14.08	
CITY	N	Sat	5A	MILWAUKIE	MM	0	CH	INTER	TRF SIGNAL	N	DRY	TURN				PRVTE	S	N											00	
No	45	27	10.18	-122	38	27.50																								

04697	N R N N N	11/08/2017	CLACKAMAS	2	14	MILPORT RD	04	INTER	5-LEG	N	N	CID	S-1TURN	01	NONE	0	STRGHT	01	DRVR	NONE	46	N	OR-X	N-RES	000	000	000	058	04.08	
CITY	N	Wed	2P	MILWAUKIE	MM	0	CH	INTER	TRF SIGNAL	N	DRY	TURN				PRVTE	S	N											00	
No	45	27	10.18	-122	38	27.50																								

081 PACIFIC HIGHWAY EAST  
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OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING  
Intersection Crashes at OR-99E, Pacific Hwy (081) & SE Milport Rd  
January 1, 2014 through December 31, 2018

No	DATE	TIME	CITY	STATE	ZIP	ROAD	DRGT	LNTH	INT-TYP	INT-DETAILED	INT-REASON	OFFRD	CRASH	TYPE	SPECI	USE	TRFL	DRGT	MOVE	PRTC	INT	A	S	E	LICNS	PEI	DRG	ERR	ACTN	EVNT	CAUSE	
01659	05/16/2018	06:38	CLACKAMAS	OR	97106	MILPORT RD	R	14	5-LEGS	N	N	CLD	S-1TURN	01 NONE	0	TURN-R	PRVTE	S	E	01	DRVR	INTC	57	M	OR-Y	OR<25	020,703	000	000	000	00	04,08
02087	06/17/2018	06:27	CLACKAMAS	OR	97106	MILWOLKITE	N	0	5-LEGS	N	N	CLD	WET	ANGI	01 NONE	0	STRGHT	PRVTE	S	N	01	DRVR	INTC	47	F	OR-Y	OR<25	028	052	000	27,02	
02327	08/06/2018	08:48	CLACKAMAS	OR	97106	MILWOLKITE	N	0	5-LEGS	N	N	CLD	S-1TURN	01 NONE	0	STRGHT	PRVTE	S	N	01	DRVR	INTC	57	M	OR-Y	OR<25	000	000	000	00	14,08	
03490	09/29/2018	07:14	CLACKAMAS	OR	97106	MILWOLKITE	N	0	5-LEGS	N	N	CLD	WET	ANGI	01 NONE	0	STRGHT	PRVTE	S	N	01	DRVR	INTC	51	F	OR-Y	OR<25	000	000	000	00	14,08

081 PACIFIC HIGHWAY EAST

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 CONTINUOUS SYSTEM CRASH LISTING  
 Intersectional Crashes at OR-995, Pacific Hwy (#081) & SE Milport Rd  
 January 1, 2014 through December 31, 2018

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 E A / C O DATE COUNTY  
 INVEST E L M H R DAY/TIME CITY  
 UNLOC D C J L K LAT LONG ORBAN ABBA  
 RD# FC CONN #  
 CMPT/ML; FIRST STREET  
 MILEERR SECND STREET  
 IRRS INTERSECTION 350#  
 RD CHAR (KRDYAN) INT-BEL OPED WTHR CRASH TYP  
 DIRECT LGS TRAF- RNDP CURR COLL TYP  
 LOCRN (ALARMS) ENTL DRVR LIGHT SFRTY V# VEH TYPE TO P# TYPE SVRNTY E X RES LDC ERGR  
 INT-TYPE  
 (KRDYAN) INT-BEL OPED WTHR CRASH TYP  
 LGS TRAF- RNDP CURR COLL TYP  
 (ALARMS) ENTL DRVR LIGHT SFRTY V# VEH TYPE TO P# TYPE SVRNTY E X RES LDC ERGR  
 SPTL USE  
 TRLR QTY MOVE  
 ORRBR  
 A S LICNS HED  
 G B RES LDC ERGR  
 ACTN EVNTM CAUSE

02 NONE 0 STRGHT  
 PRVTE M E  
 TRUCK 01 DRVR INTR 48 M OR-Y 020 000 04  
 OR<25

CITY OF MILWAUKEE, CLACKAMAS COUNTY

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSTS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
Inter-sectional Crashes at OR-99E, Pacific Hwy (#081) & SE Milport Rd  
January 1, 2014 through December 31, 2018

SR#	INVEST	UNLOC?	NO	CITY	DATE	DAY/TIME	PG	DISTR	INTERSECTION SEQ #	RD CHRN	DIRECT	LOC	INT-REF	INT-REF	OFF-3D	WTHR	CRASH TYP	COLL TYP	EJECT	USE	TRFR QTY	FROM	TO	P#	TYPE	SVHTY	A	S	E	LICNS	PEO	LOC	ERRP	ACTA	EVEN	CAUSE					
02630	N	N	N	N	06/18/2015	14				MILPORT RD		W	06	5-LFG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT				01	DRVR	NONE	25	M	SUSP	0R<25	076,752	000	038	000	00	27,29,32			
										INTER					TRF SIGNAL	N	DRY	REAR			PRVTE	W	E																		
										W											PRVTE	W	E																		
										W											PRVTE	W	E																		

																					02	NONE	0	STOP																								
																						PRVTE	W	E																								
																						PRVTE	W	E																								
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OR<25

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CITY OF MILWAUKEE, CLACKAMAS COUNTY

Intersection Crashes at SE 21st Ave & SE Harrison St  
January 1, 2014 through December 31, 2018

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

NO	ROUTE	DATE	TIME	EQ	DISTR	CITY STREET	FIRST STREET	SECOND STREET	INTERSECTION SEQ #	RD CHAR	INT-TYPE	INT-REF	OFF-RD	WTR	CRASH TYPE	SPECI	VEH	FROM	TO	P#	TYPE SVRY	A	S	LOC	ERRGR	ACTN	EVENT	CAUSE					
00303	N N N	01/24/2015	16	HARRISON ST	1					INTER	CROSS	N	CLB	BIKE	01	NONE	0	STRGHT	NE SW	01	DRVR	NONE	38	M	OTR-X		015		03,08,05				
										CN	STOP SIGN	N	DRY	TURB	PRVTE	NE SW																	
04487	N N N	10/30/2015	16	HARRISON ST	1					INTER	CROSS	N	CLB	ANG-OTH	01	NONE	0	STRGHT	NE SW	01	DRVR	NONE	44	F	OR-Y		015		02				
										CN	STOP SIGN	N	DRY	ANGL	PRVTE	NE SW																	
00401	N N N	02/02/2018	16	HARRISON ST	1					INTER	CROSS	N	CLB	3-1-I-TURN	01	NONE	9	STRGHT	NE SW	01	DRVR	NONE	00	U	DNK		015		03,08,05				
										CN	STOP SIGN	N	DRY	TURN	PSNR CAR																		
03333	N N N	07/24/2016	16	HARRISON ST	1					INTER	CROSS	N	CLB	O-OTHER	01	NONE	9	TURB-L	SE NE	01	DRVR	NONE	00	U	DNK		015		08				
										CN	STOP SIGN	N	DRY	TURN	PSNR CAR																		



CITY OF MILWAUKEE, CLACKAMAS COUNTY

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 URBAN NON-SYSTEM CRASH LISTING

Intersection Crashes at SE 23rd Ave & SE Harrison St  
 January 1, 2014 through December 31, 2018

SER#	INVEST	UNLOC?	DATE	DAY/TIME	FC	DISTRICT	CITY STREET	FIRST STREET	SECOND STREET	INTERSECTION SEQ #	RD CHAR	DIRECT	LOC	INT-TYP	(MEDIAN) LEGS	INT-REL	OFF-RD	WTR	CRASH TYP	SECT	USE	TRAIL	STY	FROM	TO	P#	PRTC	INJ	A	S	E	LICNS	PEID	LOC	ENROR	ACTN	EVENT	CASE		
04012	N	N	09/01/2016	16	HARRISON ST	23RD AVE	HARRISON ST				W	05	0	3-LEGS	N	Y	CLD	FLX	OBJ	01	NONE	0	STRGHT			01	DRVR	INJ	75	M	OR-Y	081	000	091	00	17				

171 CLACKAMAS

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING

Intersection: Crashes at SE Harrison St & OR-244, Clackamas Hwy (#171)  
January 1, 2014 through December 31, 2018

NO	45	26	47.55	-122	37	56.24	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	026	000	011	00	29
89450	N	N	N	N	09/12/2014	CLACKAMAS	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	026	000	000	000	29
01258	Y	N	N	N	04/14/2018	CLACKAMAS	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	047,026,049	000	000	000	00
01900	N	N	N	N	06/03/2018	CLACKAMAS	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	000	000	000	000	00
02097	N	N	N	N	06/17/2018	CLACKAMAS	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	000	000	000	000	00
88417	N	N	N	N	04/18/2017	CLACKAMAS	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	026	000	000	000	00
45	26	47.55	-122	37	56.24	PORTLAND WA	017100100300	1	12	CLACKAMAS HWY	INTER	CROSS	N	TRF SIGNAL	N	DRY	REAR	INJ	01	NONE	0	STRIGHT	01	DRVP	NONE	20	M	OR-Y	OR<25	000	000	000	000	00	

171 CLACKAMAS  
Intersectional Crashes at SE Harrison St & OR-224, Clackamas Hwy (#171)  
January 1, 2014 through December 31, 2018

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING

NO	DATE	TIME	CITY	STREET	INT-171	INT-TYPE	INTR	CROSS	TRF SIGNAL	N CLR	S-1STOP	CRASH TYPE	TRIP USE	MOVE	PRTC	INJ	A	S	E	LICNS	FED	LOG	ERRCR	ACTN	EVENT	CAUSE		
04572	Y Y N N N	11/01/2017	CLACKAMAS	CLACKAMAS HWY	1	12	INTER	0	N	DRY	SS-0	01 NONE	0 STRGHT	PRVTE	S	N	01 DRVR NONE	38 M	OR-Y	020,032,047	000	000	000	000	011	00	04,06,01	
04572	Y Y N N N	11/01/2017	CLACKAMAS	CLACKAMAS HWY	1	12	INTER	0	N	DRY	SS-0	01 NONE	0 STRGHT	PRVTE	S	N	01 DRVR NONE	38 M	OR-Y	020,032,047	000	000	000	000	011	00	04,06,01	
04526	45 26	47.55 -122 37	56.24	PORTLAND VA	0.68	HARRISON ST	1	06	0	N	DRY	SS-0	01 NONE	0 STRGHT	PRVTE	S	N	01 DRVR NONE	25 M	OR-Y	000	000	000	000	011	00	00	
02121	N N N N N	06/19/2018	CLACKAMAS	CLACKAMAS HWY	1	12	INTER	0	N	DRY	SS-0	01 NONE	0 STRGHT	PRVTE	S	N	01 DRVR NONE	00 U	DRK	000	000	000	000	000	000	000	00	29
02296	S N N	05/21/2016	CLACKAMAS	CLACKAMAS HWY	1	12	INTER	0	N	DRY	SS-0	01 NONE	0 STRGHT	PRVTE	S	N	01 DRVR NONE	00 U	DRK	000	000	000	000	000	000	000	00	23
45 26	47.55 -122 37	56.24	PORTLAND VA	0.68	HARRISON ST	1	06	0	N	DRY	SS-0	01 NONE	0 STRGHT	PRVTE	S	N	01 DRVR NONE	00 U	DRK	000	000	000	000	000	000	000	00	00





OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 CONTINUOUS SYSTEM CRASH LISTING  
 Intersectional Crashes at SE Harrison St & OR-224, Clackamas Hwy (#171)  
 January 1, 2014 through December 31, 2018

171 CLACKAMAS

ID	SR#	E A / C O DATE	TIME	COUNTY	CITY	URBAN AREA	RDR	FC	COIN #	CMPT/MIS	FIRST MILENT	STREET	SECOND STREET	INTERSECTION SEQ#	R/C CHAR	(MEDIAN) DIRECT	INT-TYP	LEG	INT-BEL	TRAF- (PLANES)	OFFD	DRVM	OTHR	CRASH TYP	COLL TYP	SPL USE	TRIP QTY	MOVE	FROM	TO	ENRC	INJ	F	E	A	S	LICNS	PDR	ERRC	ERRP	ACTN	EVENT	CAUSE																										
																																												INT-TYP	INT-BEL	TRAF-	OFFD	DRVM	OTHR	CRASH TYP	COLL TYP	SPL USE	TRIP QTY	MOVE	FROM	TO	ENRC	INJ	F	E	A	S	LICNS	PDR	ERRC	ERRP	ACTN	EVENT	CAUSE
																																												INT-TYP	INT-BEL	TRAF-	OFFD	DRVM	OTHR	CRASH TYP	COLL TYP	SPL USE	TRIP QTY	MOVE	FROM	TO	ENRC	INJ	F	E	A	S	LICNS	PDR	ERRC	ERRP	ACTN	EVENT	CAUSE
02869	N N N	08/16/2018	08:15	CLACKAMAS	PORTLAND	GA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	ANGI-OTH	01	NONE	9	STRGHT	N/A	01	DRVR	NONE	00	U	DNK	DNK	000	000	000	000	000	000	000	000	000	000	00	04																								
02869	N N N	08/16/2018	08:15	CLACKAMAS	PORTLAND	GA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	ANGI-OTH	01	NONE	9	STRGHT	N/A	01	DRVR	NONE	00	U	DNK	DNK	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	00	04																			
02620	N N N	07/08/2014	07:08	CLACKAMAS	PORTLAND	VA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	S-1STOP	01	NONE	0	TURN-R	PRYTE	W	S	01	DRVR	NONE	27	F	OR-X	OR<25	000	000	000	000	000	000	000	000	000	000	000	000	000	00	29																			
02620	N N N	07/08/2014	07:08	CLACKAMAS	PORTLAND	VA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	S-1STOP	01	NONE	0	TURN-R	PRYTE	W	S	01	DRVR	NONE	27	F	OR-X	OR<25	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	00	29																
00489	N N N N	01/25/2015	01:25	CLACKAMAS	PORTLAND	VA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	ANGI-OTH	01	NONE	0	STRGHT	PRYTE	W	S	01	DRVR	NONE	37	N	OR-Y	OR<25	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	00	04																	
00489	N N N N	01/25/2015	01:25	CLACKAMAS	PORTLAND	VA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	ANGI-OTH	01	NONE	0	STRGHT	PRYTE	W	S	01	DRVR	NONE	37	N	OR-Y	OR<25	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	00	04															
00458	N N N N	01/27/2016	01:27	CLACKAMAS	PORTLAND	VA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	S-1TURN	01	NONE	9	TURN-R	N/A	01	DRVR	NONE	00	U	DNK	DNK	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	00	08																	
00458	N N N N	01/27/2016	01:27	CLACKAMAS	PORTLAND	VA	1	12	CLACKAMAS	HX	0	0.68	HARRISON	ST	1	03	INTER	CROSS	N	N CLR	S-1TURN	01	NONE	9	TURN-R	N/A	01	DRVR	NONE	00	U	DNK	DNK	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	000	00	08																

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING  
Intersection: Crashes at SE Harrison St & OR-224, Clackamas Hwy (#171)  
January 1, 2014 through December 31, 2018

NO	SER#	E A / C O DATE	COUNTY	RD CHAR	INT-TYPE	INT-REF	OPRD WTR	CRASH TYP	SPEL USE	TRFR QTY	MOVE	PRIC HI	C B LICNS	ESG	ACTN	EVENT	CAUSE			
00923	N N N N	02/26/2016	CLACKAMAS	PORTLAND WA	INTER	CROSS	N	N CLR 0-1 L-TURN	01 NONE	9	STRGHT								02	
00942	N N N N	12/18/2016	CLACKAMAS	PORTLAND WA	INTER	CROSS	N	N CLR 0-1 L-TURN	01 NONE	0	STRGHT									02
03832	N N N N	10/22/2018	CLACKAMAS	PORTLAND WA	INTER	CROSS	N	N CLR ANGL-OTH	01 NONE	0	STRGHT									04
01634	N N N N	04/10/2016	CLACKAMAS	PORTLAND WA	INTER	CROSS	N	N CLR 0-1 L-TURN	01 NONE	0	STRGHT									04
02492	N N N N	06/18/2017	CLACKAMAS	PORTLAND WA	INTER	CROSS	N	N CLR ANGL-OTH	01 NONE	9	STRGHT									02

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 CONTINUOUS SYSTEM CRASH LISTING  
 Intersection 1 Crashes at SE Harrison St & OR-224, Clackamas Hwy (#171)  
 January 1, 2014 through December 31, 2018

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 171 CLACKAMAS  
 F A / C O DATE COUNTY  
 INVEST E L M H R DAY/TIME CITY  
 UNDOCS D C M L K LAST EDNG URBAN AREA

RD# FC CONN #  
 CMPT/MTG FLEGT STREET  
 MILEINT SECOND STREET  
 UNDOCS D C M L K LAST EDNG URBAN AREA

INT-TYP  
 RU CHAR (MEDIAN) INT-BEL OFFRD WTHR CRASH TYP  
 DIRECT LEGS TRAF- RABDT SBRF COLL TYP  
 (41MINES) CRFL DRVM1 LGHT SYM1 V# VER1 TYPE TO

SPECL USE  
 TRLR QTY MOVE  
 CORR# FROM  
 P# TYPE SYM1 E X RES

A S  
 E LICNS PED  
 LOC ERNOR  
 ACTN EVENT  
 CAUSE

01148 N N N 04/02/2015 CLACKAMAS  
 NONE N Thu 10A MILWAUKIE  
 45 26 47.55 -122.37 56.24  
 PORTLAND WA  
 0171AB100300  
 1 16 1  
 CN 0 CLACKAMAS HWY  
 0.68 HARRISON ST  
 INTER CROSS N N CLR S-1STOP  
 E TRF SIGNAL N DRY REAR  
 06 0 N DAY INJ  
 01 NONE 0 STOP  
 PRVTE E W  
 PSNGR CAR 01 DRVR INJC 20 F OR-Y  
 OR<25  
 011 004  
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 004

00686 N N N 02/24/2015 CLACKAMAS  
 NONE N Tue 7A MILWAUKIE  
 45 26 47.55 -122.37 56.24  
 PORTLAND WA  
 0171AB100300  
 1 16 1  
 CN 0 CLACKAMAS HWY  
 0.68 HARRISON ST  
 INTER CROSS N N CLR S-1STOP  
 W TRF SIGNAL N DRY REAR  
 06 0 N DAY INJ  
 01 NONE 0 STOP  
 PRVTE W E  
 PSNGR CAR 01 PRVR NONE 47 M OR-Y  
 OR<25  
 011 004  
 000  
 00  
 004



ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANUEVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PRD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DMV	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DMV	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRNR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STROCK, OR WAS STROCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLIGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSuing OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PKOFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGUL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/SGUL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING BETWEEN INTERSECTIONS - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYING	PLAYING IN STREET OR ROAD
044	PUSH KV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-TVE	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHR	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO.
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF SIER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
6	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PEB	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIBE - MEETING
5	SS-O	SIDESWIBE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANUEVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
6	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PKRD MV	PARKED MOTOR VEHICLE
3	PEB	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDESTALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-OTH	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	H-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	COT CORN	COT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	TRNG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BCK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PAK	IMPROPERLY PARKED
013	UNPAR	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSP VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANUEVER
019	DIS DRYV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGM	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGSMAN
024	DIS EMER	DISREGARDED SPLEN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	SRKE RCM	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	RED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CUVY	PASSING ON A CURVE
031	PAS WRCS	PASSING ON THE WRONG SIDE
032	PAS TANK	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HTLH	PASSING ON CREST OF HILL
036	N/PAS 2N	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	E/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLD MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STROD LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY OR ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGHL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGHL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BETWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-3	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-3	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMF USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	CVKSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVERLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	PELL/TWMP	OCCUPANT PELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTE	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRECT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	393--PED	*SUB-PED*: PEDESTRIAN INVOLVED SUBSEQUENT TO COLLISION, ETC.
006	INDRECT BIK	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHHIK	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	WV PUSHD	VEHICLE BEING PUSHED
012	WV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	IT PL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE: TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OPEN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPM	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEEL OFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIRERAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LIVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSERFID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH HANGHOLE
038	ATTENUATR	IMPACT ATTENUATOR
039	PK METER	IMPACT ATTENUATOR PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GOARDRAIL
043	GDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED *APPROACH ENDS* THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOP SIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
063	MARKER	DELIMITER OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SEN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SEN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQE WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN WALL	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRREG PYMT	OTHER BUMP (NOT SPEED BUMP), POT HOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FM MV	STUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	HIDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO I SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL CPL	TERRAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGW
095	GOY WIRE	GOY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	*SUB-BIKE*: POLICE OFFICER
110	N-MTR	*SUB-BIKE*: PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (OR RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRACT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRACT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ TN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)
135	RAIL OCC	INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR



FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER
14	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COMPLETE
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJE	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	FRI	DIED PRIOR TO CRASH
7	NOKS	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MARKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-2	PAKED - PROPERLY
8	PRKD-1	PAKED - IMPROPERLY
9	PARKNG	PARKING MANUEVER

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCV	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PEB	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	BIKE
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XALK AVAIL UNKNOWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LAKE
09	NOT AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LAKE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBEN-R	FLASHING BEACON - RED (STOP)
003	FLASHBEN-A	FLASHING BEACON - AMBER (SLOW)
004	STO2 SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCH X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OPCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BOCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WM W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	ROUNDLE STR	RUMBLE STRIP
090	I-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/EL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSSN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

VEHICLE TYPE CODE TRANSLATION LIST

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION	CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES	0	UNK	UNKNOWN
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.	1	CLR	CLEAR
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)	2	CLD	CLOUDY
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT	3	RAIN	RAIN
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW	4	SLE	SLEET
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.	5	FOG	FOG
06	MOPEL	MOPEL, MINIBIKE, SEALED MOTOR SCOOTER, MOTOR BIKE	6	SNOW	SNOW
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)	7	DUST	DUST
08	OTH BUS	OTHER BUS	8	SMOK	SMOKE
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE	3	ASH	ASH
10	OTHR	OTHER: FORKLIFT, BACKHOE, ETC.			
11	MOTRHOME	MOTORHOME			
12	TRODLEY	MOTORIZED STREET CAR/TRODLEY (NO RAILS/WIRES)			
13	ATV	ATV			
14	MTRSCOTR	MOTORIZED SCOOTER (STANDING)			
15	SNOWMOBILE	SNOWMOBILE			
99	UNKNOWN	UNKNOWN VEHICLE TYPE			

# OR 224 (Milwaukie Expy) / SE Harrison Street Crash Diagram

Reported Crashes: January 1, 2014 to December 31, 2018



# OR 99E (SE McLoughlin Boulevard) / SE Milport Road Crash Diagram

Reported Crashes: January 1, 2014 to December 31, 2018



# OR 99E (SE McLoughlin Boulevard) / SE Harrison Street Crash Diagram

Reported Crashes: January 1, 2014 to December 31, 2018



## Appendix B Traffic Count Calculations

## PROXY COUNT DEVELOPMENT

Documentation of prior traffic counts at the study intersections was requested from the City, ODOT, and Clackamas County as well as the data collection firm Quality Counts. Table B-1 summarizes the data that was subsequently identified.

**Table B-1. Previous Traffic Counts<sup>1</sup>**

Location	Identified Previous Count Data
Milport Road/OR 99E	No historic data identified
SE Main Street/OR 99E	No historic data identified
Site Access/SE Main Street	No historic data identified
SE Harrison Street/OR 99E	2020 Proxy AM & PM peak hour turn movement data found in <i>Waverly Woods Apartments Transportation Impact Analysis</i> , volumes based on combination of historic count and ODOT traffic signal controller traffic count data
SE Main Street/SE Harrison Street	No historic data identified
SE 21 <sup>st</sup> Avenue/SE Harrison Street	2017 Weekday AM & PM peak hour turn movement counts
SE 23 <sup>rd</sup> Avenue/SE Harrison Street	No historic data identified
SE Harrison Street/OR 224	2019 weekday AM & PM peak hour turn movement counts

<sup>1</sup>Some additional traffic count data was available within the City's 2006 TSP (for the intersections of SE Harrison Street/OR 99E, SE Main Street/SE Harrison Street and SE Harrison Street/OR 224); however, that data is now over 15 years old and pre-dates the arrival of TriMet light rail service in Milwaukie.

The traffic count data collected at the study intersections in January 2021 was compared to the historic count data summarized in Table B-1 above. The comparison suggested that, on balance, multiplying the existing turn movement volumes on City streets by a factor of 1.787 for the AM peak hour<sup>5</sup> and 1.4 for the PM peak hour would be appropriate to estimate proxy volumes where no historic count data was available. Table B-2 summarizes how the 2021 proxy volumes were developed at each study intersection.

<sup>5</sup> The 1.787 factor for the AM peak hour was previously identified in the January 2021 Hillside Master Plan Transportation Impact Study based on comparison of September 2018 and July 2020 traffic counts at the nearby SE Harrison Street/SE 32<sup>nd</sup> Avenue intersection.



**Table B-2. Proxy Turn Movement Volume Derivation Methodology**

Location	2021 Proxy Volume Methodology Applied
Milport Road/ OR 99E	AM Peak: Applied a factor of 1.787 to 2021 Milport turn movements & 1.4 to 2021 OR 99E through movements PM Peak: Applied a factor of 1.4 to 2021 traffic volumes
SE Main Street/ OR 99E	AM Peak: Applied a factor of 1.787 to 2021 traffic volumes PM Peak: Applied a factor of 1.4 to 2021 traffic volumes
Site Access/ SE Main Street	AM Peak: Applied a factor of 1.787 to 2021 traffic volumes PM Peak: Applied a factor of 1.4 to 2021 traffic volumes
SE Harrison Street/ OR 99E	Used 2020 Proxy AM & PM peak hour counts from Waverly Woods Apartments Transportation Impact Analysis as-is recognizing no growth has occurred between 2020 and 2021 due to COVID pandemic
SE Main Street/ SE Harrison Street	AM Peak: Applied a factor of 1.787 to 2021 traffic volumes PM Peak: Applied a factor of 1.4 to 2021 traffic volumes
SE 21 <sup>st</sup> Avenue/ SE Harrison Street	AM Peak: Applied a factor of 1.787 to 2021 traffic volumes PM Peak: Applied a factor of 1.4 to 2021 traffic volumes
SE 23 <sup>rd</sup> Avenue/ SE Harrison Street	AM Peak: Applied a factor of 1.787 to 2021 traffic volumes PM Peak: Applied a factor of 1.4 to 2021 traffic volumes
SE Harrison Street/ OR 224	Applied a factor of 1.04 to 2019 weekday AM and PM peak hour turn movement counts (reflects assumption of 2% growth/year)

The proxy count methodology was also previewed with DKS Associates staff during preparation of this study and judged to be reasonable given the limited data available.

For illustrative purposes, the 2021 proxy counts for the SE 21<sup>st</sup> Avenue/SE Harrison Street intersection were compared to the 2017 traffic counts conducted at the intersection as shown in Exhibit B-1 and were judged to be reasonable.

**Exhibit B-1: Comparison of 2021 Proxy Count and 2017 Turn Movement Counts at SE 21<sup>st</sup> Avenue/SE Harrison Street**

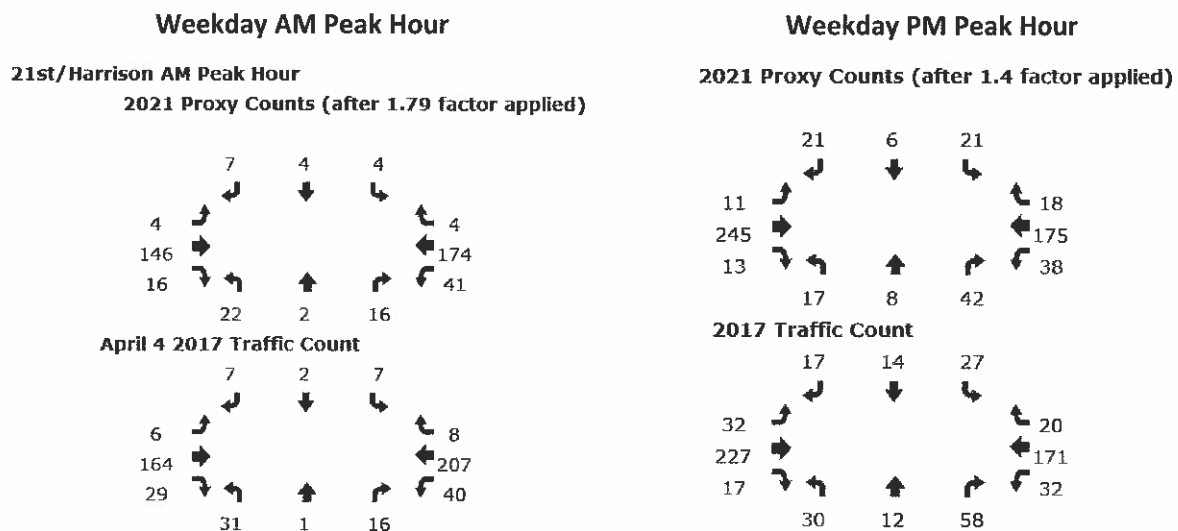
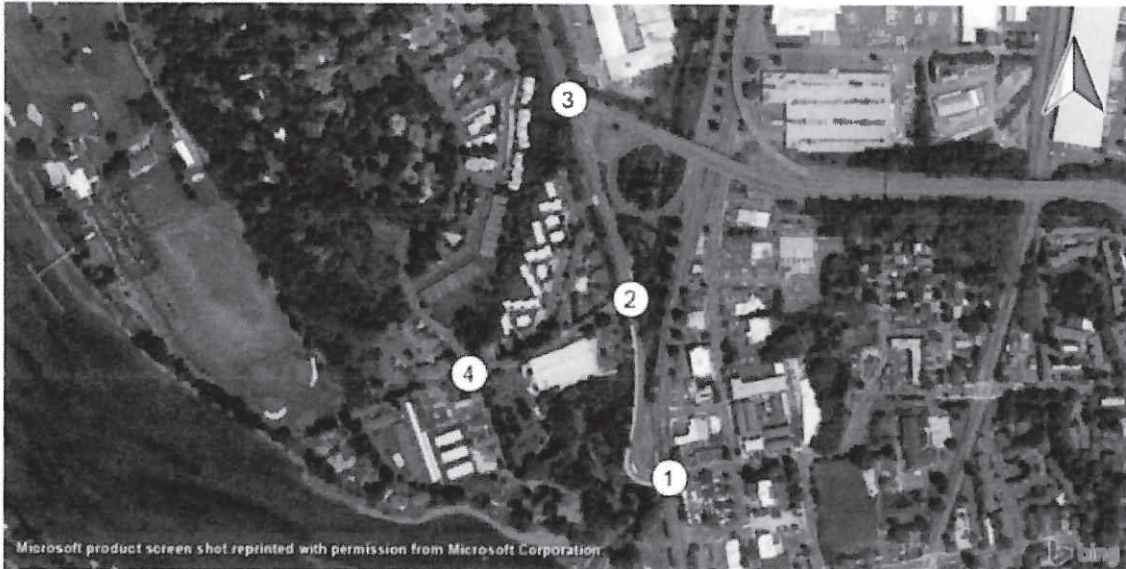
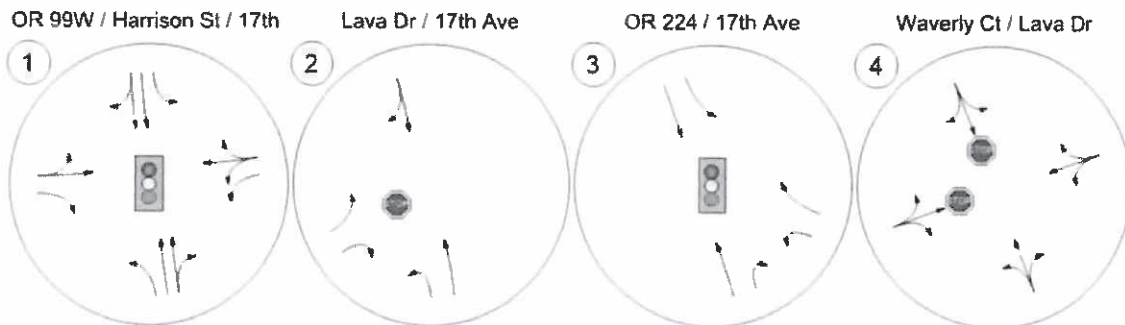


Exhibit 2 shows existing lane configurations, traffic control devices, and existing traffic volumes at the study intersections.

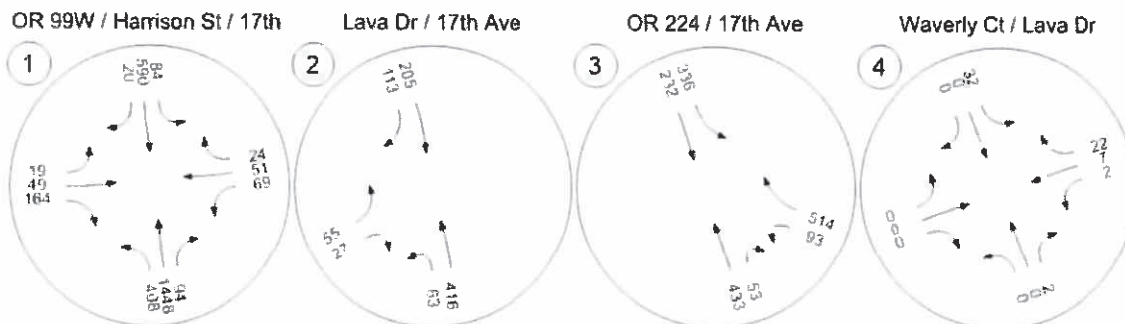
**Exhibit 2. Existing Lane Configurations, Traffic Control Devices, and Traffic Volumes**



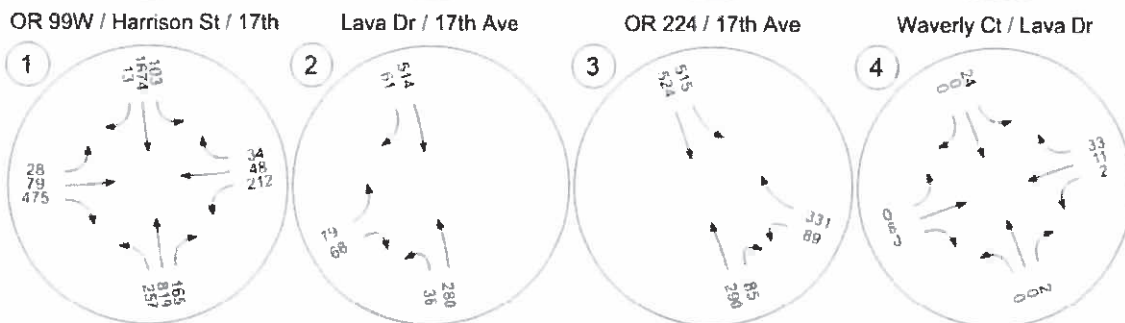
LANE CONFIGURATION  
& CONTROL DEVICES



WEEKDAY AM  
PEAK HOUR VOLUMES



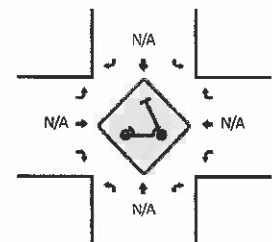
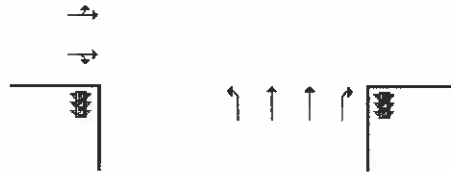
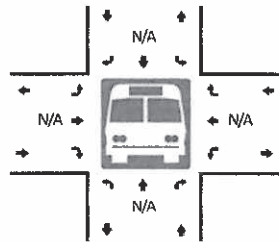
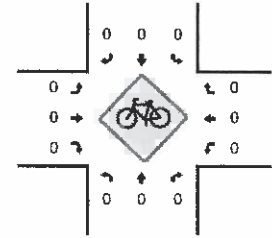
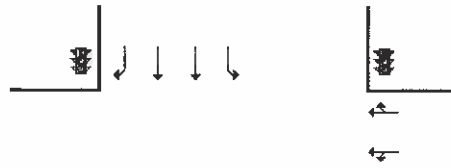
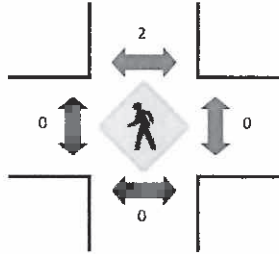
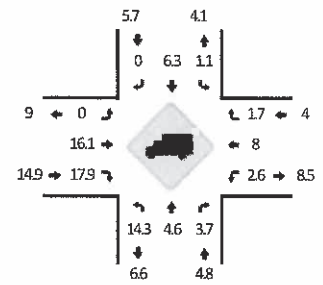
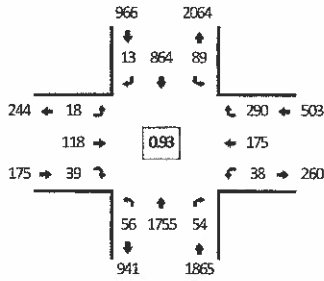
WEEKDAY PM  
PEAK HOUR VOLUMES



LOCATION: Milwaukie Expy -- SE Harrison St  
 CITY/STATE: Clackamas, OR

QC JOB #: 14894501  
 DATE: Thu, Feb 7 2019

Peak-Hour: 7:15 AM -- 8:15 AM  
 Peak 15-Min: 7:25 AM -- 7:40 AM

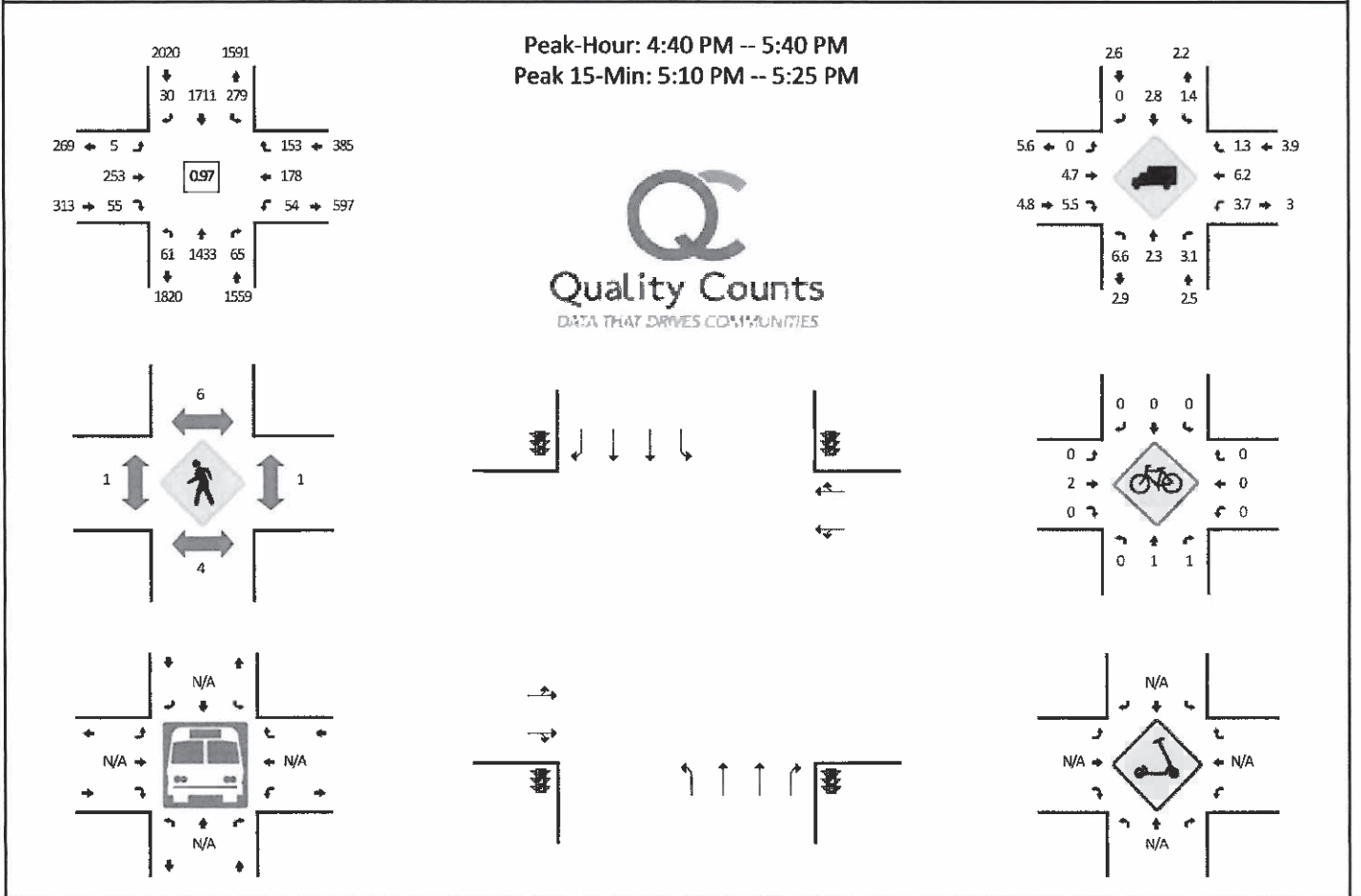


5-Min Count Period Beginning At	Milwaukie Expy (Northbound)				Milwaukie Expy (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	149	1	0	2	65	0	0	1	5	6	0	6	18	28	0	286	
7:05 AM	3	177	3	0	3	63	0	0	1	7	2	0	4	4	21	0	288	
7:10 AM	8	127	0	0	2	56	3	0	2	9	2	0	2	9	36	0	256	
7:15 AM	2	163	8	0	13	77	0	0	4	13	1	0	4	9	18	0	312	
7:20 AM	7	144	0	0	5	68	1	0	1	10	1	0	2	8	28	0	275	
7:25 AM	3	181	2	0	2	76	0	0	2	7	1	0	1	16	36	0	327	
7:30 AM	6	136	4	0	7	62	0	1	1	12	3	0	2	18	29	0	281	
7:35 AM	4	182	10	0	11	85	3	0	0	9	5	0	2	7	21	0	339	
7:40 AM	6	118	4	0	7	64	2	0	0	7	5	0	3	10	26	0	252	
7:45 AM	3	165	7	0	4	82	0	0	3	13	8	0	8	10	28	0	331	
7:50 AM	3	107	4	0	11	73	1	0	3	9	2	0	7	29	22	0	271	
7:55 AM	5	144	5	0	6	78	1	0	0	6	3	0	1	15	17	0	281	3499
8:00 AM	5	110	5	0	10	74	2	0	1	11	4	0	2	19	21	0	264	3477
8:05 AM	6	149	4	0	4	64	3	0	1	8	0	0	5	14	19	0	277	3466
8:10 AM	6	156	1	0	8	61	0	0	2	13	6	0	1	20	25	0	299	3509
8:15 AM	3	144	5	0	9	46	1	0	2	11	6	0	4	11	14	0	256	3453
8:20 AM	9	118	2	0	9	58	2	0	2	16	8	0	2	24	23	0	273	3451
8:25 AM	3	161	6	0	5	83	0	0	2	7	5	0	3	15	18	0	308	3432
8:30 AM	5	126	4	0	5	53	2	0	3	11	3	0	3	18	17	0	250	3401
8:35 AM	6	156	6	0	6	66	0	0	0	10	3	0	2	13	15	0	283	3345
8:40 AM	5	98	7	0	6	57	2	0	0	14	4	0	7	14	19	0	233	3326
8:45 AM	6	121	5	0	4	62	4	0	0	11	3	0	3	17	15	0	251	3246
8:50 AM	8	85	9	0	12	39	2	0	1	25	5	0	5	24	17	0	232	3207
8:55 AM	9	119	6	0	11	66	0	0	0	5	3	0	4	10	14	0	247	3173
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	52	1996	64	0	80	892	12	4	12	112	36	0	20	164	344	0	3788	
Heavy Trucks	4	48	4		0	52	0		0	16	4		0	20	8		156	
Buses																		
Pedestrians	0	0	0		0	0	0		0	0	0		0	0	0		0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Milwaukie Expy -- SE Harrison St  
 CITY/STATE: Clackamas, OR

QC JOB #: 14894502  
 DATE: Thu, Feb 7 2019



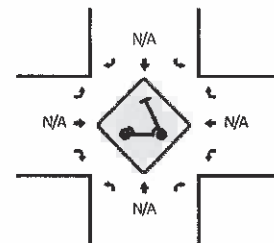
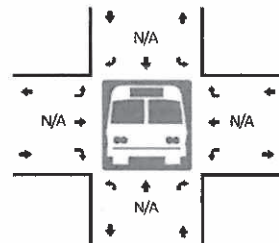
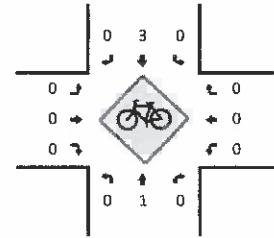
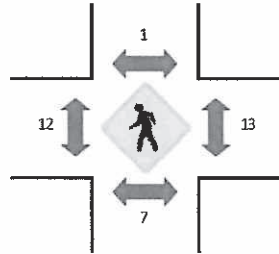
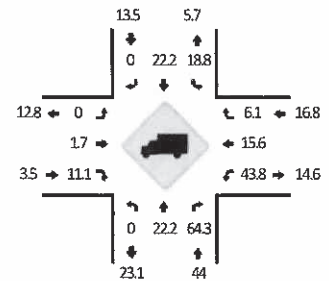
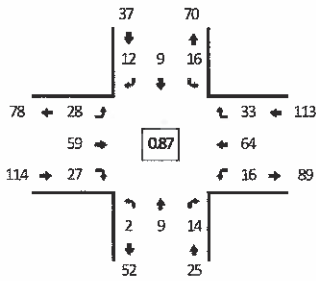
5-Min Count Period Beginning At	Milwaukie Expy (Northbound)				Milwaukie Expy (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	107	5	0	18	120	2	0	0	25	3	0	8	10	10	0	316	
4:05 PM	5	105	1	0	18	118	2	0	2	23	13	0	2	8	9	0	306	
4:10 PM	4	139	10	0	19	143	1	0	0	18	3	0	1	13	17	0	368	
4:15 PM	7	94	3	0	15	117	1	0	0	25	6	0	1	16	13	0	298	
4:20 PM	4	115	9	0	8	144	2	0	0	16	4	0	4	17	3	0	326	
4:25 PM	4	120	9	0	32	155	2	0	1	17	6	0	5	10	14	0	375	
4:30 PM	6	99	4	0	26	128	0	0	0	21	4	0	6	16	10	0	320	
4:35 PM	3	105	3	0	27	128	3	0	0	16	5	0	8	18	17	0	333	
4:40 PM	4	147	9	0	7	182	2	0	0	0	2	0	5	5	3	0	366	
4:45 PM	4	105	4	0	12	155	2	0	1	18	4	0	2	8	7	0	322	
4:50 PM	4	103	3	0	23	131	3	0	0	36	8	0	8	23	14	0	356	
4:55 PM	3	105	3	0	32	149	2	0	0	11	6	0	7	19	22	0	359	4045
5:00 PM	3	147	5	0	17	140	3	0	0	14	1	0	4	20	13	0	367	4096
5:05 PM	7	125	12	0	17	113	2	0	1	39	5	0	3	15	12	0	351	4141
5:10 PM	5	108	8	0	30	140	3	0	1	29	5	0	6	17	13	0	365	4138
5:15 PM	5	126	7	0	26	153	2	0	1	16	7	0	7	12	16	0	378	4218
5:20 PM	6	126	4	0	25	140	1	0	0	25	1	0	2	13	14	0	357	4249
5:25 PM	6	111	3	0	24	119	4	0	0	30	6	0	3	16	16	0	338	4212
5:30 PM	6	117	4	0	39	153	1	0	0	16	4	0	6	19	12	0	377	4269
5:35 PM	8	113	3	0	27	136	5	0	1	19	6	0	1	11	11	0	341	4277
5:40 PM	7	81	5	0	25	128	3	0	1	26	7	0	7	13	18	0	321	4232
5:45 PM	9	73	7	0	32	148	3	0	0	14	6	0	4	10	10	0	316	4226
5:50 PM	7	101	5	0	24	145	0	0	0	13	6	0	7	12	11	0	331	4201
5:55 PM	6	71	5	0	24	110	1	0	0	21	6	0	4	22	11	0	281	4123
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	64	1440	76	0	324	1732	24	0	8	280	52	0	60	168	172	0	4400	
Heavy Trucks	12	36	4	0	0	52	0	0	0	12	8	0	0	4	0	0	128	
Buses		16				12				4				0			32	
Pedestrians	0	0	4		0	0	0		0	4	0		0	0	0		8	
Bicycles																		
Scooters																		

Comments:

LOCATION: SE Main St -- SE Harrison St  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350905  
 DATE: Thu, Jan 28 2021

Peak-Hour: 8:00 AM -- 9:00 AM  
 Peak 15-Min: 8:45 AM -- 9:00 AM



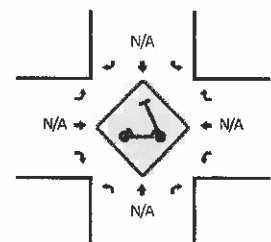
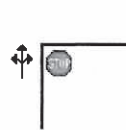
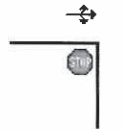
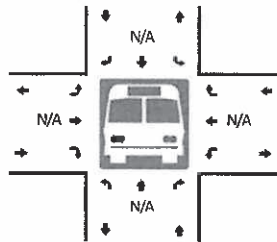
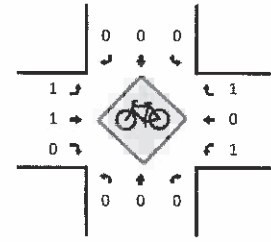
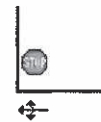
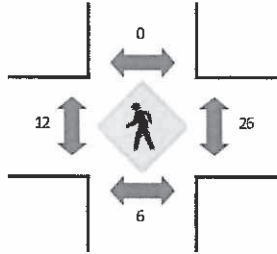
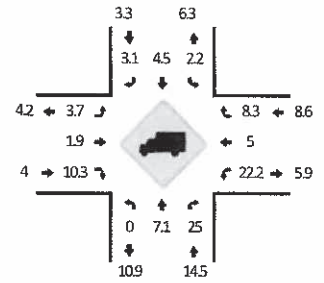
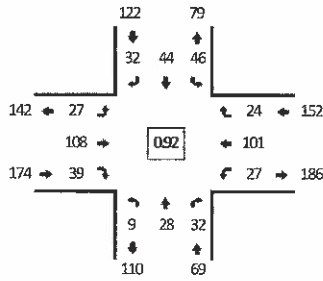
5-Min Count Period Beginning At	SE Main St (Northbound)				SE Main St (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	1	4	3	0	1	5	3	0	18	
7:05 AM	0	1	1	0	0	1	0	0	1	5	0	0	2	4	4	0	19	
7:10 AM	1	0	1	0	2	1	0	0	0	3	0	0	0	7	1	0	16	
7:15 AM	0	1	1	0	1	0	1	0	3	3	0	0	0	5	2	0	17	
7:20 AM	0	1	0	0	1	1	1	0	2	4	1	0	1	4	2	0	18	
7:25 AM	1	0	1	0	1	0	0	0	3	3	0	0	2	3	2	0	16	
7:30 AM	0	2	1	0	1	0	1	0	3	2	1	0	1	5	2	0	19	
7:35 AM	0	0	1	0	0	0	1	0	1	2	1	0	1	8	3	0	18	
7:40 AM	0	2	2	0	0	2	0	0	1	5	2	0	0	9	4	0	27	
7:45 AM	0	2	1	0	0	2	0	0	1	4	1	0	1	8	6	0	26	
7:50 AM	0	1	0	0	0	0	0	0	2	5	3	0	2	3	3	0	19	
7:55 AM	1	2	2	0	1	2	2	0	1	2	2	0	4	4	2	0	25	238
8:00 AM	0	0	1	0	4	0	0	0	2	4	2	0	0	4	4	0	21	241
8:05 AM	0	2	1	0	0	0	2	0	5	5	0	0	0	4	3	0	22	244
8:10 AM	0	1	2	0	2	2	0	0	2	4	1	0	1	5	1	0	21	249
8:15 AM	0	0	1	0	0	0	1	0	5	4	1	0	1	7	2	0	22	254
8:20 AM	0	2	0	0	2	1	2	0	2	2	1	0	1	6	5	0	24	260
8:25 AM	0	1	1	0	2	0	0	0	2	6	1	0	3	5	6	0	27	271
8:30 AM	1	0	2	0	3	0	1	0	3	6	2	0	0	2	1	0	21	273
8:35 AM	0	0	0	0	1	3	2	0	3	5	3	0	1	5	3	0	26	281
8:40 AM	0	2	2	0	0	1	2	0	1	5	1	0	1	6	1	0	22	276
8:45 AM	0	1	1	0	1	1	2	0	2	8	3	0	0	5	1	0	25	275
8:50 AM	0	0	1	0	1	1	0	0	1	2	7	0	7	8	3	0	31	287
8:55 AM	1	0	2	0	0	0	0	0	0	8	5	0	1	7	3	0	27	289
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	4	16	0	8	8	8	0	12	72	60	0	32	80	28	0	332	
Heavy Trucks	0	4	8	0	0	4	0	0	0	0	4	0	12	4	4	0	40	
Buses		16				0				8				8			32	
Pedestrians						0				0	0			0	0		0	
Bicycles																		
Scoters																		

Comments:

LOCATION: SE Main St -- SE Harrison St  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350906  
 DATE: Thu, Jan 28 2021

Peak-Hour: 4:00 PM -- 5:00 PM  
 Peak 15-Min: 4:00 PM -- 4:15 PM

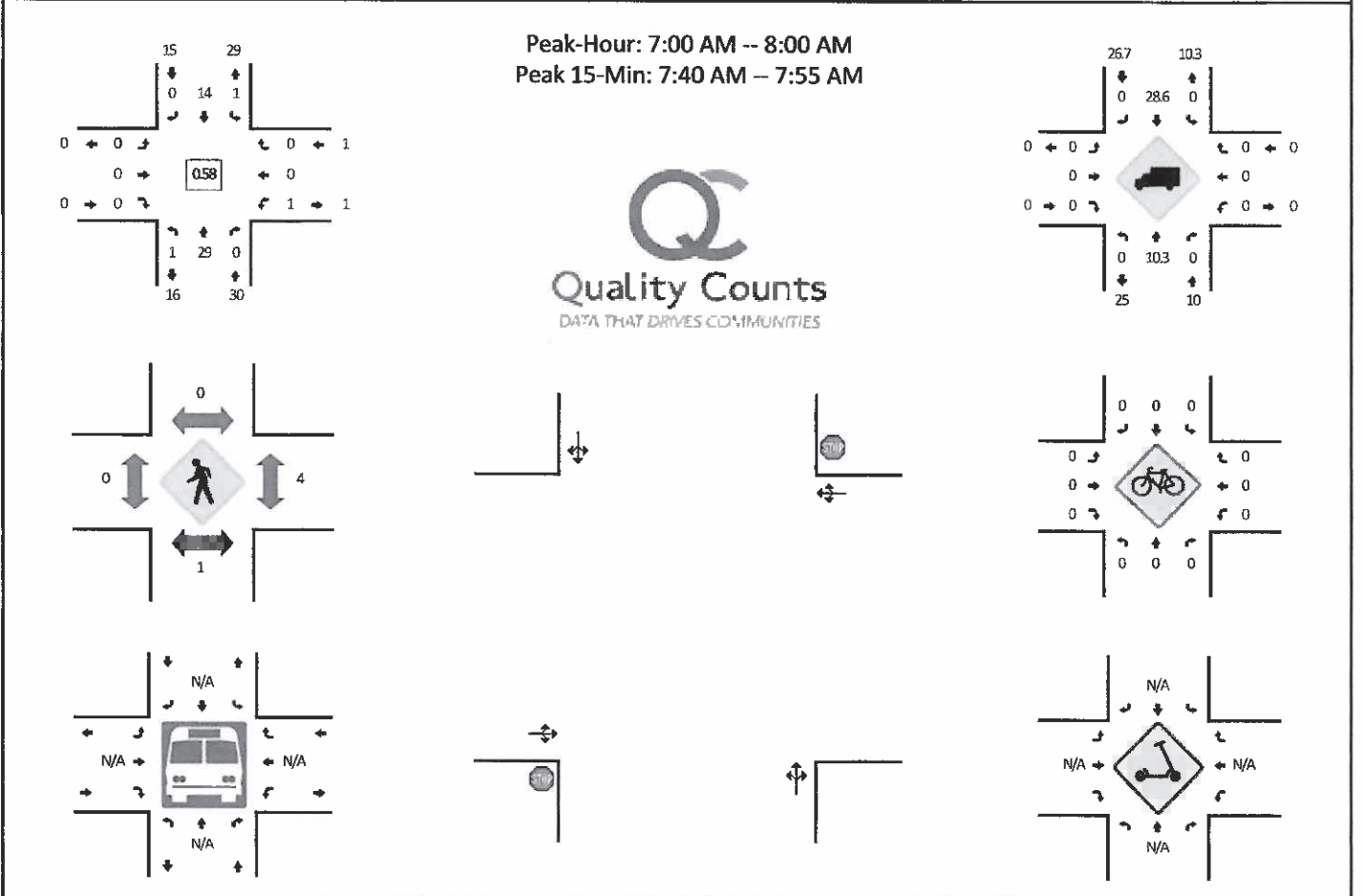


5-Min Count Period Beginning At	SE Main St (Northbound)				SE Main St (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	4	0	4	2	5	0	3	10	4	0	0	15	2	0	50	
4:05 PM	0	3	5	0	4	2	6	0	3	16	6	0	5	12	0	0	62	
4:10 PM	0	2	4	0	2	0	1	0	2	7	1	0	1	7	2	0	29	
4:15 PM	1	2	1	0	2	4	1	0	1	6	5	0	3	10	2	0	38	
4:20 PM	0	2	2	0	1	5	0	0	3	6	4	0	2	4	2	0	31	
4:25 PM	2	0	3	0	1	5	5	0	2	9	3	0	3	7	4	0	44	
4:30 PM	2	2	0	0	5	2	3	0	1	10	4	0	1	14	2	0	46	
4:35 PM	0	3	2	0	6	6	3	0	3	10	4	0	2	5	2	0	46	
4:40 PM	0	4	1	0	5	4	1	0	3	10	4	0	2	7	3	0	44	
4:45 PM	2	2	2	0	6	4	4	0	2	11	1	0	3	11	3	0	51	
4:50 PM	1	2	4	0	8	7	1	0	2	8	2	0	4	4	0	0	43	
4:55 PM	0	6	4	0	2	3	2	0	2	5	1	0	1	5	2	0	33	517
5:00 PM	0	3	3	0	3	10	4	0	2	9	2	0	0	2	1	0	39	506
5:05 PM	2	2	3	0	4	4	1	0	2	8	1	0	3	8	3	0	41	485
5:10 PM	0	1	2	0	4	3	1	0	2	8	6	0	0	6	2	0	35	491
5:15 PM	0	2	0	0	5	4	3	0	1	11	1	0	2	11	2	0	42	495
5:20 PM	0	1	3	0	1	3	1	0	1	10	3	0	2	5	2	0	32	496
5:25 PM	2	4	3	0	1	2	2	0	1	12	2	0	0	8	2	0	39	491
5:30 PM	0	0	2	0	8	3	3	0	2	8	4	0	1	6	5	0	42	487
5:35 PM	0	2	2	0	3	4	4	0	1	15	3	0	1	9	4	0	48	489
5:40 PM	0	3	1	0	6	6	6	0	3	17	2	1	3	4	0	0	52	497
5:45 PM	0	0	1	0	2	2	4	0	0	6	4	0	1	5	2	0	27	473
5:50 PM	3	2	3	0	2	1	2	0	3	8	1	0	1	7	2	0	35	465
5:55 PM	0	1	3	0	4	2	3	0	1	6	1	0	1	6	4	0	32	464
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	20	52	0	40	16	48	0	32	132	44	0	24	136	16	0	564	
Heavy Trucks	0	0	8		0	4	0		4	0	4		8	4	4		36	
Buses																		
Pedestrians		4				0				20				16			40	
Bicycles	0	0	0		0	0	0		0	0	0		4	0	0		4	
Scoters																		

Comments:

LOCATION: SE Main St -- Kellogg Bowl Dwy  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350907  
 DATE: Thu, Jan 28 2021

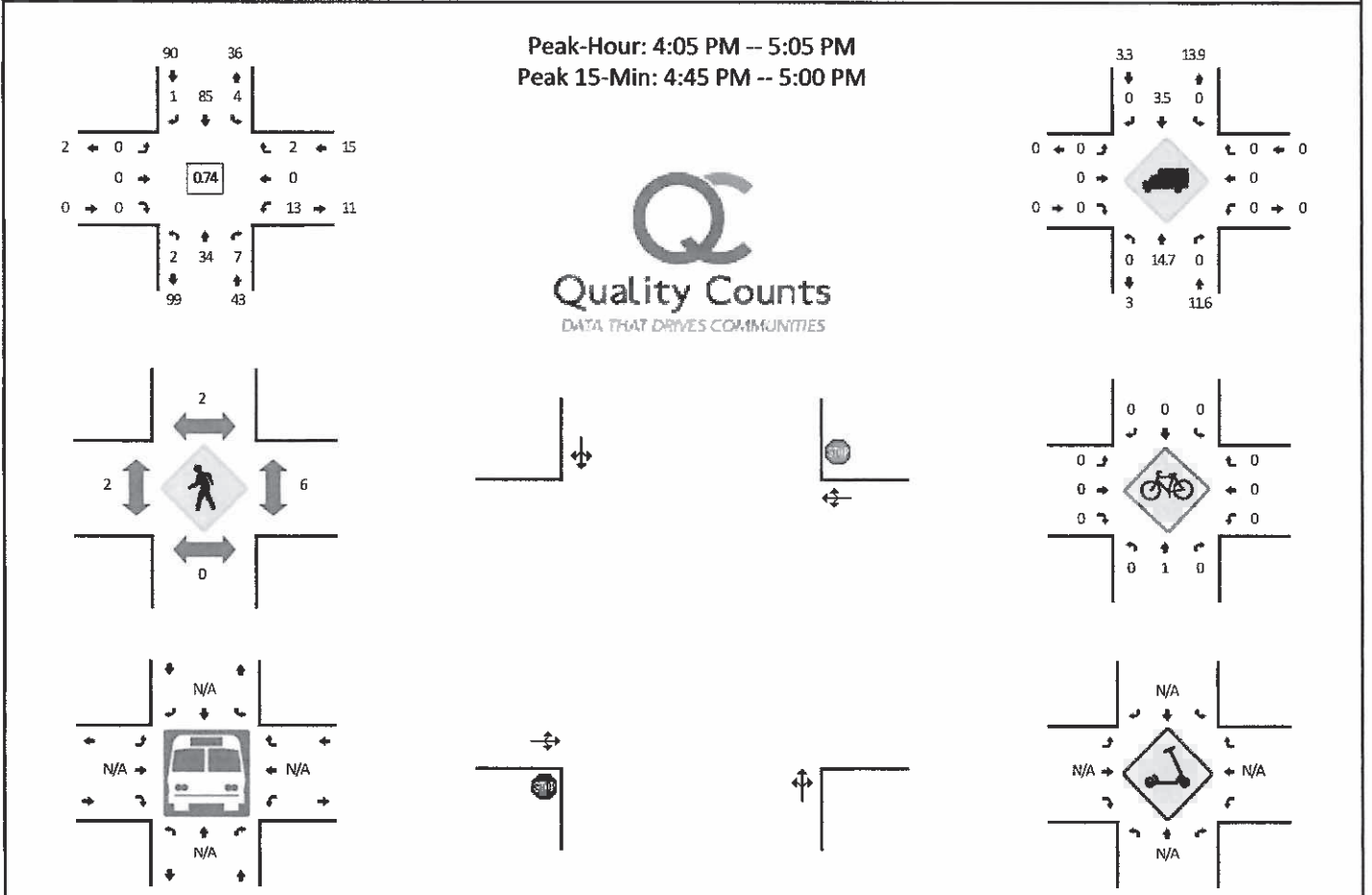


5-Min Count Period Beginning At	SE Main St (Northbound)				SE Main St (Southbound)				Kellogg Bowl Dwy (Eastbound)				Kellogg Bowl Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:05 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
7:10 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5	
7:15 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:20 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
7:25 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:30 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:35 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:40 AM	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	10	
7:45 AM	0	4	0	1	1	1	0	0	0	0	0	0	1	0	0	0	8	
7:50 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
7:55 AM	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6	46
8:00 AM	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6	50
8:05 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	51
8:10 AM	0	1	1	0	0	5	0	0	0	0	0	0	0	0	1	0	8	54
8:15 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	54
8:20 AM	0	6	0	0	0	6	0	0	0	0	0	0	1	0	0	0	13	65
8:25 AM	1	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	6	69
8:30 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	69
8:35 AM	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4	72
8:40 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	64
8:45 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	1	0	6	62
8:50 AM	0	2	1	0	0	1	0	0	0	0	0	0	1	0	1	0	6	66
8:55 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	61
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	40	0	4	4	28	0	0	0	0	0	0	4	0	0	0	80	
Heavy Trucks	0	4	0		0	4	0		0	0	0		0	0	0		8	
Buses																		
Pedestrians		0				0					0			0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments: Need to treat this as a 4-legged intersections (driveways to North and South need to be in count)

LOCATION: SE Main St -- Kellogg Bowl Dwy  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350908  
 DATE: Thu, Jan 28 2021



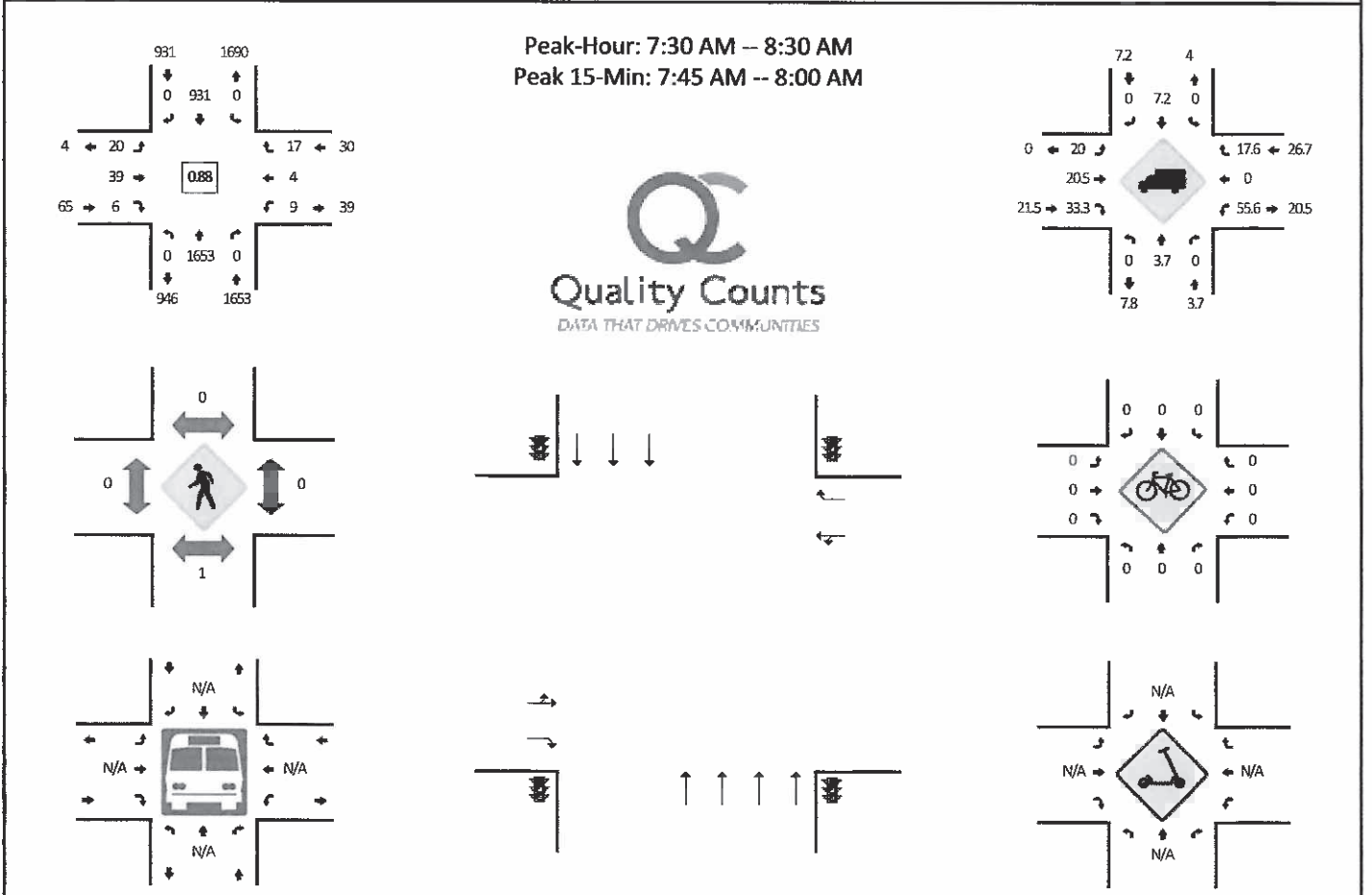
5-Min Count Period Beginning At	SE Main St (Northbound)				SE Main St (Southbound)				Kellogg Bowl Dwy (Eastbound)				Kellogg Bowl Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	1	1	0	0	9	0	0	0	0	0	0	1	0	0	0	12	
4:05 PM	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0	8	
4:10 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	
4:15 PM	0	2	0	0	1	7	0	0	0	0	0	0	1	0	0	0	11	
4:20 PM	0	2	1	0	0	4	0	0	0	0	0	0	1	0	0	0	8	
4:25 PM	1	1	2	1	0	11	0	0	0	0	0	0	2	0	0	0	18	
4:30 PM	0	3	1	0	1	4	0	0	0	0	0	0	0	0	0	0	9	
4:35 PM	0	3	0	0	0	8	0	0	0	0	0	0	1	0	1	0	13	
4:40 PM	0	4	2	0	0	5	0	0	0	0	0	0	1	0	0	0	12	
4:45 PM	0	4	0	0	0	13	0	0	0	0	0	0	2	0	0	0	19	
4:50 PM	0	4	1	0	2	8	0	0	0	0	0	0	1	0	0	0	16	
4:55 PM	0	4	0	0	0	8	1	0	0	0	0	0	1	0	1	0	15	144
5:00 PM	0	3	0	0	0	10	0	0	0	0	0	0	3	0	0	0	16	148
5:05 PM	0	5	0	0	0	2	0	0	0	0	0	0	2	0	1	0	10	150
5:10 PM	0	2	1	1	0	7	1	0	0	0	0	0	1	0	0	0	13	160
5:15 PM	0	0	0	1	0	6	0	0	0	0	0	0	0	0	0	0	7	156
5:20 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	151
5:25 PM	0	2	0	1	0	1	0	0	0	0	0	0	0	0	1	0	5	138
5:30 PM	0	2	1	0	0	4	0	0	0	0	0	0	2	0	0	0	9	138
5:35 PM	0	3	2	0	0	3	0	0	0	0	0	0	4	0	0	0	12	137
5:40 PM	0	2	1	0	0	2	0	0	0	0	0	0	1	0	0	0	6	131
5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3	115
5:50 PM	0	5	1	1	0	1	0	0	0	0	0	0	1	0	0	0	9	108
5:55 PM	0	1	0	0	1	2	0	0	0	0	0	0	2	0	0	0	6	99
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	48	4	0	8	116	4	0	0	0	0	0	16	0	4	0	200	
Heavy Trucks	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	8	
Buses																		
Pedestrians		0				0					4			20			24	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments: Need to treat this as a 4-legged intersections (driveways to North and South need to be in count)



LOCATION: SE McLoughlin Blvd -- SE Milport Rd  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350909  
 DATE: Thu, Jan 28 2021



5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				SE Milport Rd (Eastbound)				SE Milport Rd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:00 AM	0	101	0	0	0	39	0	0	1	9	1	0	0	1	1	1	0	153	
7:05 AM	0	134	0	0	0	48	0	0	0	4	1	0	0	1	2	0	0	190	
7:10 AM	0	130	0	0	0	57	0	0	0	4	0	0	0	1	0	0	0	192	
7:15 AM	0	136	0	0	0	64	0	0	0	1	0	0	0	0	0	1	0	202	
7:20 AM	0	139	0	0	0	64	0	0	1	4	0	0	0	1	0	0	0	209	
7:25 AM	0	130	0	0	0	69	0	0	0	2	0	0	0	0	0	0	0	201	
7:30 AM	0	190	0	0	0	70	0	0	2	3	0	0	0	1	0	3	0	209	
7:35 AM	0	142	0	0	0	74	0	0	2	2	0	0	0	2	1	0	0	223	
7:40 AM	0	141	0	0	0	57	0	0	3	6	0	0	0	0	0	1	0	208	
7:45 AM	0	193	0	0	0	100	0	0	2	4	0	0	0	0	0	1	0	300	
7:50 AM	0	121	0	0	0	87	0	0	3	6	1	0	0	0	0	1	0	219	
7:55 AM	0	139	0	0	0	90	0	0	2	4	1	0	0	1	1	0	0	238	2544
8:00 AM	0	110	0	0	0	65	0	0	1	4	0	0	0	0	1	0	0	181	2572
8:05 AM	0	142	0	0	0	78	0	0	0	1	0	0	0	2	0	2	0	225	2607
8:10 AM	0	137	0	0	0	75	0	0	1	3	0	0	0	0	0	3	0	219	2634
8:15 AM	0	125	0	0	0	82	0	0	1	1	3	0	0	0	0	0	0	212	2644
8:20 AM	0	110	0	0	0	61	0	0	1	2	1	0	0	2	1	2	0	180	2615
8:25 AM	0	163	0	0	0	92	0	0	2	3	0	0	0	1	0	4	0	265	2679
8:30 AM	0	80	0	0	0	69	0	0	1	5	1	0	0	2	0	3	0	161	2631
8:35 AM	0	148	0	0	0	84	0	0	0	2	0	0	0	0	0	4	0	238	2646
8:40 AM	0	100	0	0	0	62	0	0	0	4	0	0	0	2	0	3	0	171	2609
8:45 AM	0	148	0	0	0	86	0	0	0	4	0	0	0	1	0	3	0	242	2551
8:50 AM	0	99	0	0	0	78	0	0	0	2	0	0	0	2	0	3	0	184	2516
8:55 AM	0	109	0	0	0	88	0	0	1	2	3	0	0	1	0	1	0	205	2483

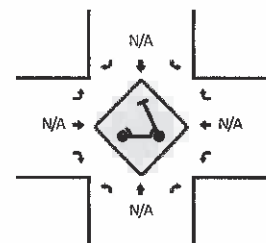
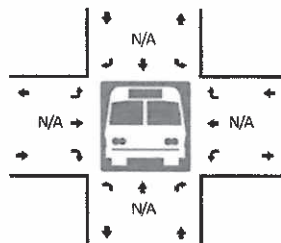
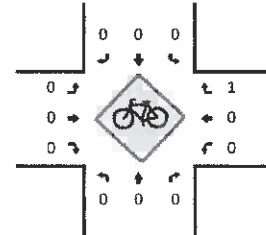
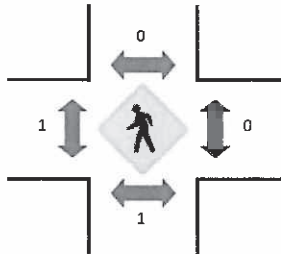
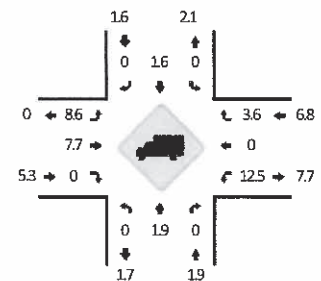
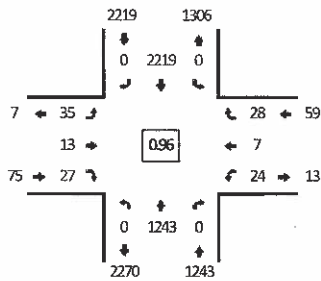
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	1812	0	0	0	1108	0	0	28	56	8	0	4	4	8	0	0	3028
Heavy Trucks	0	32	0	0	0	72	0	0	8	8	8	0	0	0	0	0	0	120
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scoters																		

Comments:

LOCATION: SE McLoughlin Blvd -- SE Milport Rd  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350910  
 DATE: Thu, Jan 28 2021

Peak-Hour: 4:30 PM -- 5:30 PM  
 Peak 15-Min: 5:10 PM -- 5:25 PM

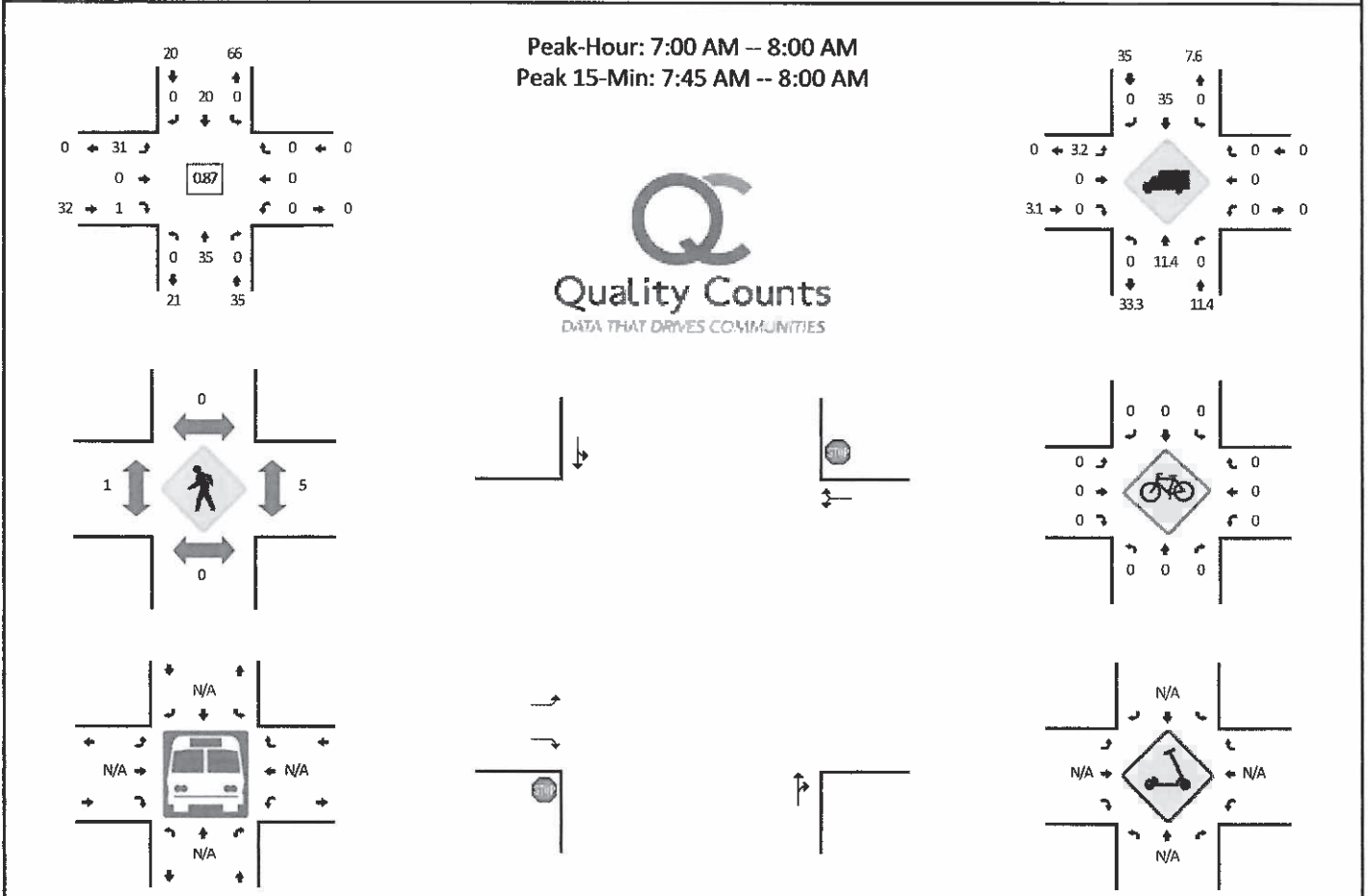


5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)			SE McLoughlin Blvd (Southbound)			SE Milport Rd (Eastbound)			SE Milport Rd (Westbound)			Total	Hourly Totals		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			U	
4:00 PM	0	90	0	0	164	0	0	1	0	1	0	1	1	4	0	262
4:05 PM	0	97	0	0	160	0	0	6	0	4	0	3	0	2	0	272
4:10 PM	0	109	0	0	168	0	0	0	0	1	0	2	0	1	0	281
4:15 PM	0	105	0	0	202	0	0	5	0	2	0	2	0	6	0	322
4:20 PM	0	107	1	0	195	0	0	2	2	1	0	3	0	2	0	313
4:25 PM	0	86	0	0	189	0	0	1	1	1	0	3	0	1	0	282
4:30 PM	0	102	0	0	172	0	0	2	2	2	0	1	1	3	0	285
4:35 PM	0	104	0	0	199	0	0	3	1	10	0	2	1	4	0	324
4:40 PM	0	103	0	0	193	0	0	3	1	3	0	2	0	3	0	308
4:45 PM	0	95	0	0	178	0	0	1	4	3	0	2	0	1	0	284
4:50 PM	0	107	0	0	200	0	0	2	1	1	0	1	0	3	0	315
4:55 PM	0	79	0	0	179	0	0	3	1	1	0	3	1	6	0	273
5:00 PM	0	112	0	0	178	0	0	2	0	0	0	4	2	1	0	299
5:05 PM	0	88	0	0	170	0	0	2	1	1	0	2	1	2	0	267
5:10 PM	0	123	0	0	176	0	0	4	1	2	0	2	1	3	0	312
5:15 PM	0	113	0	0	189	0	0	6	0	1	0	1	0	0	0	310
5:20 PM	0	121	0	0	183	0	0	2	0	1	0	2	0	1	0	310
5:25 PM	0	96	0	0	202	0	0	5	1	2	0	2	0	1	0	309
5:30 PM	0	110	0	0	141	0	0	2	1	3	0	0	0	0	0	257
5:35 PM	0	83	0	0	153	0	0	1	2	0	0	0	0	3	0	242
5:40 PM	0	93	0	0	151	0	0	1	0	1	0	0	0	1	0	247
5:45 PM	0	75	0	0	198	0	0	0	1	3	0	0	0	1	0	278
5:50 PM	0	82	0	0	143	0	0	2	1	2	0	0	0	3	0	233
5:55 PM	0	68	0	0	101	0	0	2	1	0	0	0	0	1	0	173
Peak 15-Min Flowrates	Northbound			Southbound			Eastbound			Westbound			Total			
Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left		Thru	Right	U
All Vehicles	0	1428	0	0	2192	0	0	48	4	16	0	20	4	16	0	3728
Heavy Trucks	0	16	0	0	40	0	0	0	0	0	0	8	0	0	0	64
Buses																
Pedestrians		4			0				4				0			8
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Scooters																

Comments:

LOCATION: SE Main St -- SE McLoughlin Blvd Ramp  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350913  
 DATE: Wed, Feb 3 2021

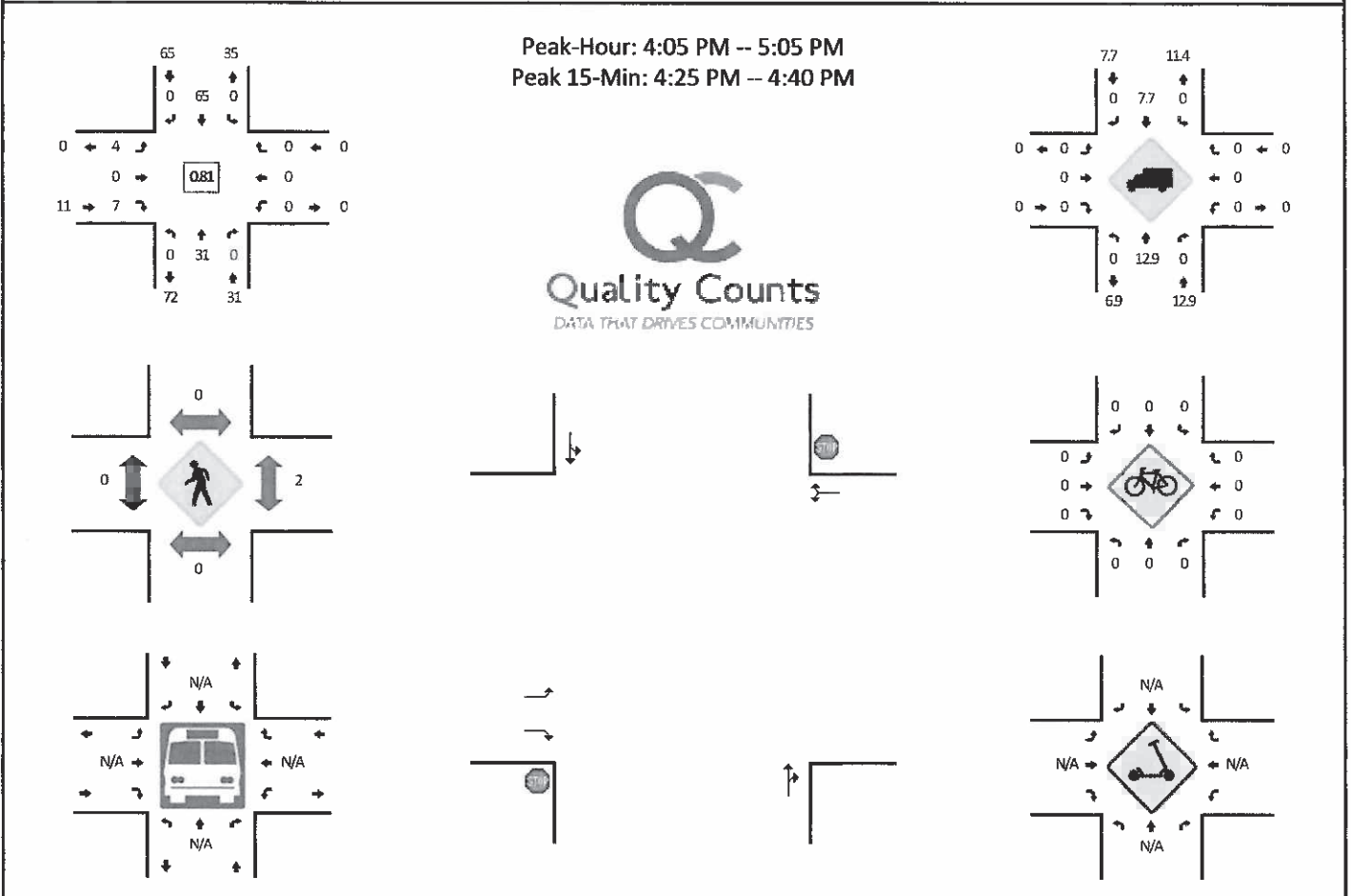


5-Min Count Period Beginning At	SE Main St (Northbound)				SE Main St (Southbound)				SE McLoughlin Blvd Ramp (Eastbound)				SE McLoughlin Blvd Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	0	0	0	2	0	0	3	0	0	0	0	0	0	0	6	
7:05 AM	0	2	0	0	0	4	0	0	2	0	0	0	0	0	0	0	8	
7:10 AM	0	2	0	0	0	3	0	0	4	0	0	0	0	0	0	0	9	
7:15 AM	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	
7:20 AM	0	3	0	0	0	1	0	0	3	0	0	0	0	0	0	0	7	
7:25 AM	0	4	0	0	0	0	0	0	2	0	0	0	0	0	0	0	6	
7:30 AM	0	4	0	0	0	2	0	0	3	0	0	0	0	0	0	0	9	
7:35 AM	0	4	0	0	0	1	0	0	1	0	0	0	0	0	0	0	6	
7:40 AM	0	2	0	0	0	2	0	0	3	0	0	0	0	0	0	0	7	
7:45 AM	0	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	7	
7:50 AM	0	2	0	0	0	2	0	0	3	0	0	0	0	0	0	0	7	
7:55 AM	0	3	0	0	0	3	0	0	4	0	1	0	0	0	0	0	11	87
8:00 AM	0	1	0	0	0	1	0	0	1	0	2	0	0	0	0	0	5	86
8:05 AM	0	3	0	0	0	1	0	0	3	0	0	0	0	0	0	0	7	85
8:10 AM	0	3	0	0	0	3	0	0	1	0	0	0	0	0	0	0	7	83
8:15 AM	0	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5	84
8:20 AM	0	4	0	0	0	3	0	0	0	0	1	0	0	0	0	0	8	85
8:25 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	81
8:30 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	77
8:35 AM	0	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5	76
8:40 AM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4	73
8:45 AM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	70
8:50 AM	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7	70
8:55 AM	0	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5	64
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	40	0	0	0	20	0	0	36	0	4	0	0	0	0	0	100	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians		0				0				0				12			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments: Need to count turns on and off 99E and to driveway to Odd Fellows (probably none?)

LOCATION: SE Main St -- SE McLoughlin Blvd Ramp  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350914  
 DATE: Tue, Feb 2 2021

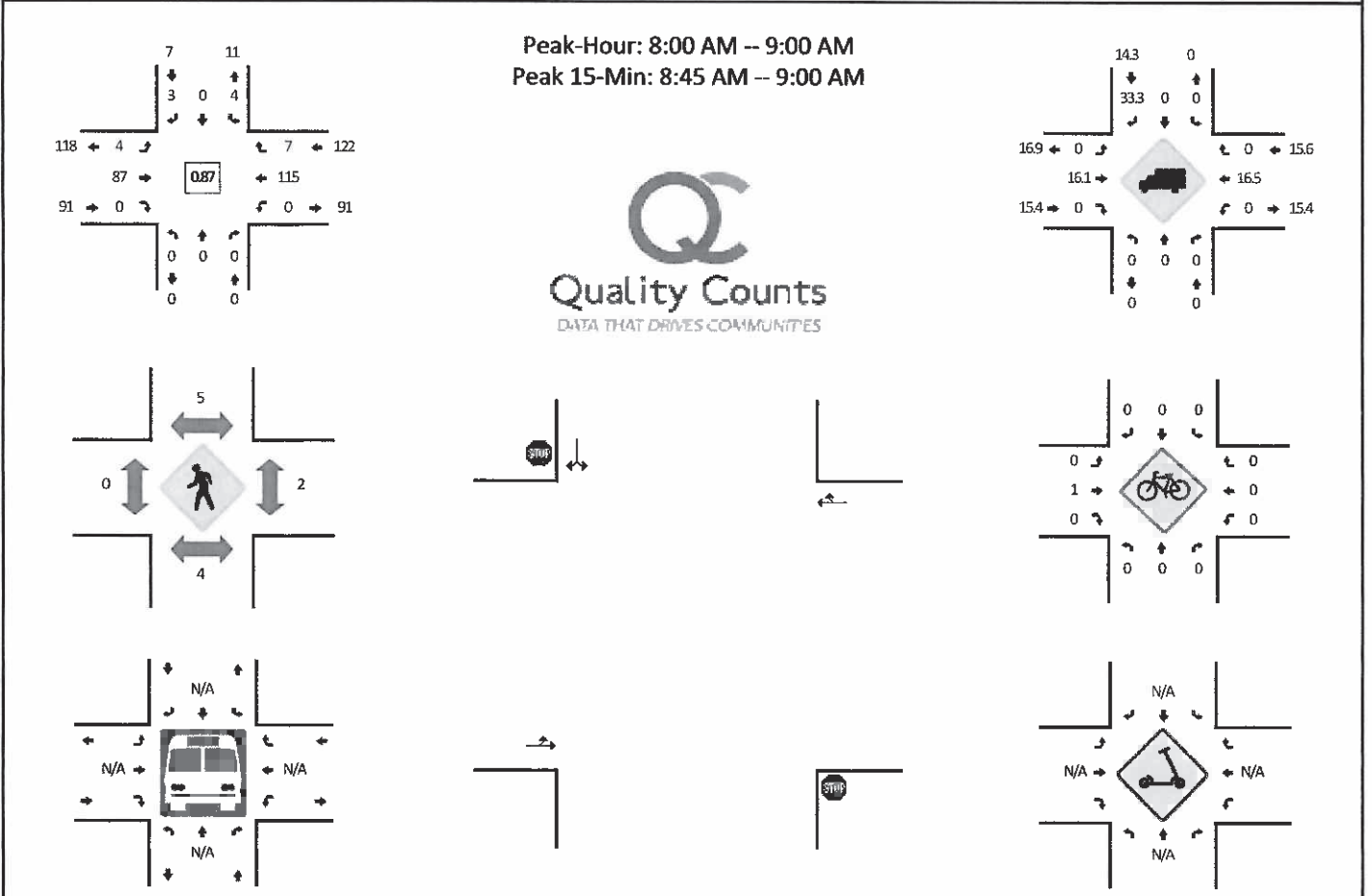


5-Min Count Period Beginning At	SE Main St (Northbound)				SE Main St (Southbound)				SE McLoughlin Blvd Ramp (Eastbound)				SE McLoughlin Blvd Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5	
4:05 PM	0	3	0	0	0	8	0	0	0	0	0	1	0	0	0	0	12	
4:10 PM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5	
4:15 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	
4:20 PM	0	3	0	0	0	8	0	0	0	0	0	1	0	0	0	0	12	
4:25 PM	0	3	0	0	0	4	0	0	0	1	0	0	0	0	0	0	8	
4:30 PM	0	3	0	0	0	6	0	0	0	0	0	1	0	0	0	0	10	
4:35 PM	0	4	0	0	0	9	0	0	0	1	0	1	0	0	0	0	15	
4:40 PM	0	1	0	0	0	4	0	0	0	0	0	3	0	0	0	0	8	
4:45 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	
4:50 PM	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	5	
4:55 PM	0	2	0	0	0	9	0	0	0	0	0	0	0	0	0	0	11	99
5:00 PM	0	5	0	0	0	7	0	0	0	1	0	0	0	0	0	0	13	107
5:05 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	97
5:10 PM	0	2	0	0	0	2	0	0	0	0	0	3	0	0	0	0	7	99
5:15 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	100
5:20 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	89
5:25 PM	0	3	0	0	0	1	0	0	0	1	0	0	0	0	0	0	5	86
5:30 PM	0	4	0	0	0	2	0	0	0	1	0	0	0	0	0	0	7	83
5:35 PM	0	3	0	0	0	2	0	0	0	0	0	1	0	0	0	0	6	74
5:40 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	70
5:45 PM	0	3	0	0	0	0	0	0	0	2	0	1	0	0	0	0	6	72
5:50 PM	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6	73
5:55 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	67
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	40	0	0	0	76	0	0	8	0	8	0	0	0	0	0	132	
Heavy Trucks	0	0	0	0	0	4	0	0	0	0	8	0	0	0	0	0	4	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0		0				8			8	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters																		

Comments: Need to count turns on and off 99E and to driveway to Odd Fellows (probably none?)

LOCATION: SE 23rd Ave -- SE Harrison St  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350915  
 DATE: Thu, Jan 28 2021



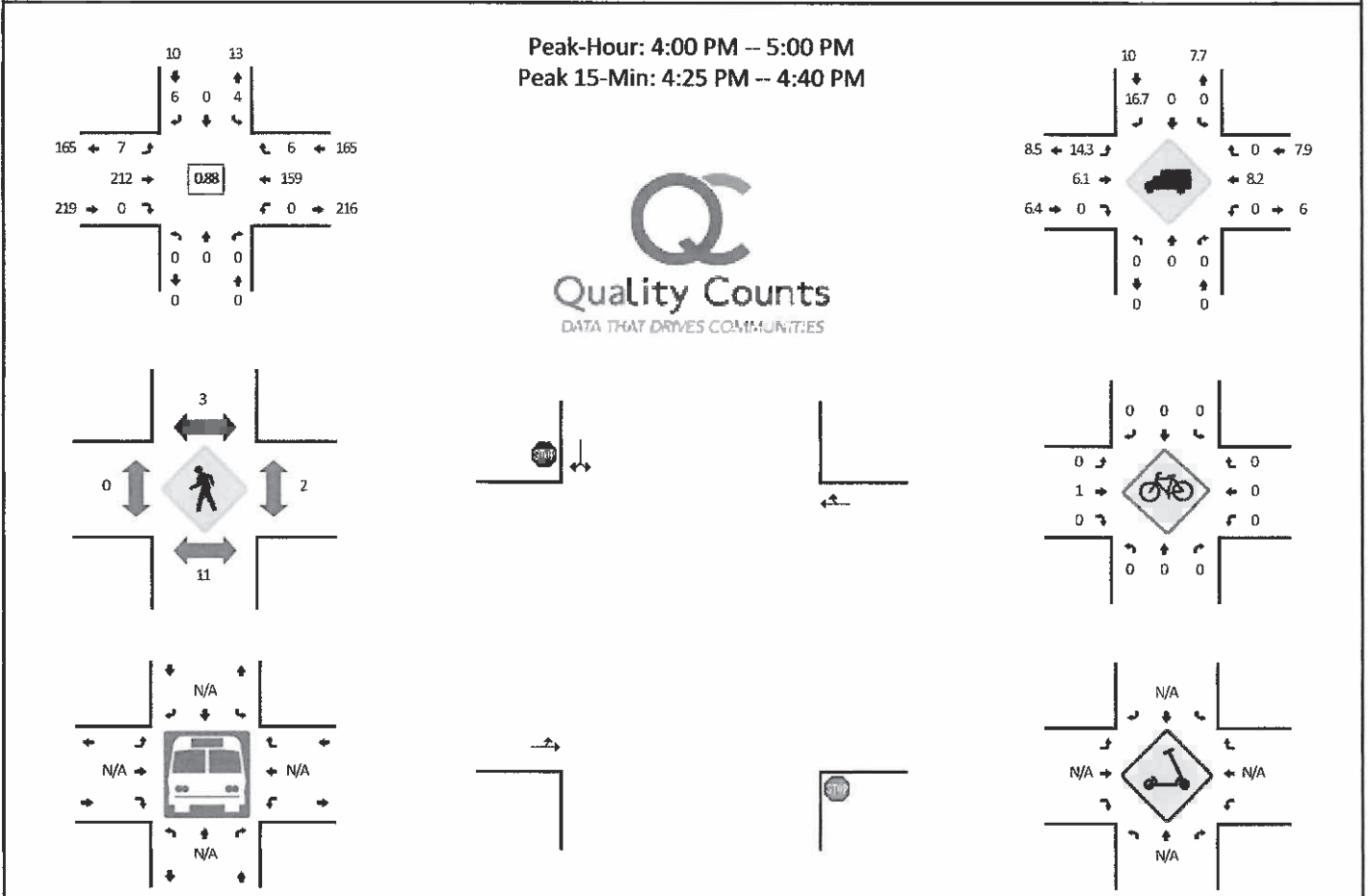
5-Min Count Period Beginning At	SE 23rd Ave (Northbound)				SE 23rd Ave (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	12	0	0	19	
7:05 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	0	10	
7:10 AM	0	0	0	0	1	0	0	0	0	9	0	0	0	10	1	0	21	
7:15 AM	0	0	0	0	0	0	1	0	0	4	0	0	0	4	0	0	9	
7:20 AM	0	0	0	0	0	0	0	0	1	4	0	0	0	10	0	0	15	
7:25 AM	0	0	0	0	0	0	2	0	0	5	0	0	0	9	0	0	16	
7:30 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	8	0	0	15	
7:35 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	14	0	0	16	
7:40 AM	0	0	0	0	0	0	0	0	2	6	0	0	0	14	0	0	22	
7:45 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	9	0	0	16	
7:50 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	11	0	0	14	
7:55 AM	0	0	0	0	1	0	1	0	0	7	0	0	0	10	1	0	20	193
8:00 AM	0	0	0	0	1	0	0	0	0	8	0	0	0	7	0	0	16	190
8:05 AM	0	0	0	0	0	0	1	0	0	5	0	0	0	4	1	0	11	191
8:10 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	14	0	0	21	191
8:15 AM	0	0	0	0	2	0	0	0	0	5	0	0	0	8	1	0	16	198
8:20 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	14	0	0	21	204
8:25 AM	0	0	0	0	0	0	1	0	0	10	0	0	0	9	0	0	20	208
8:30 AM	0	0	0	0	0	0	0	0	1	8	0	0	0	10	0	0	19	212
8:35 AM	0	0	0	0	0	0	0	0	1	5	0	0	0	9	3	0	18	214
8:40 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	6	1	0	15	207
8:45 AM	0	0	0	0	0	0	0	0	1	9	0	0	0	10	0	0	20	211
8:50 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	15	0	0	19	216
8:55 AM	0	0	0	0	0	0	0	0	1	13	0	0	0	9	1	0	24	220

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	0	0	8	100	0	0	0	136	4	0	252
Heavy Trucks	0	0	0	0	0	0	0	0	0	12	0	0	0	20	0	0	32
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

LOCATION: SE 23rd Ave -- SE Harrison St  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350916  
 DATE: Thu, Jan 28 2021

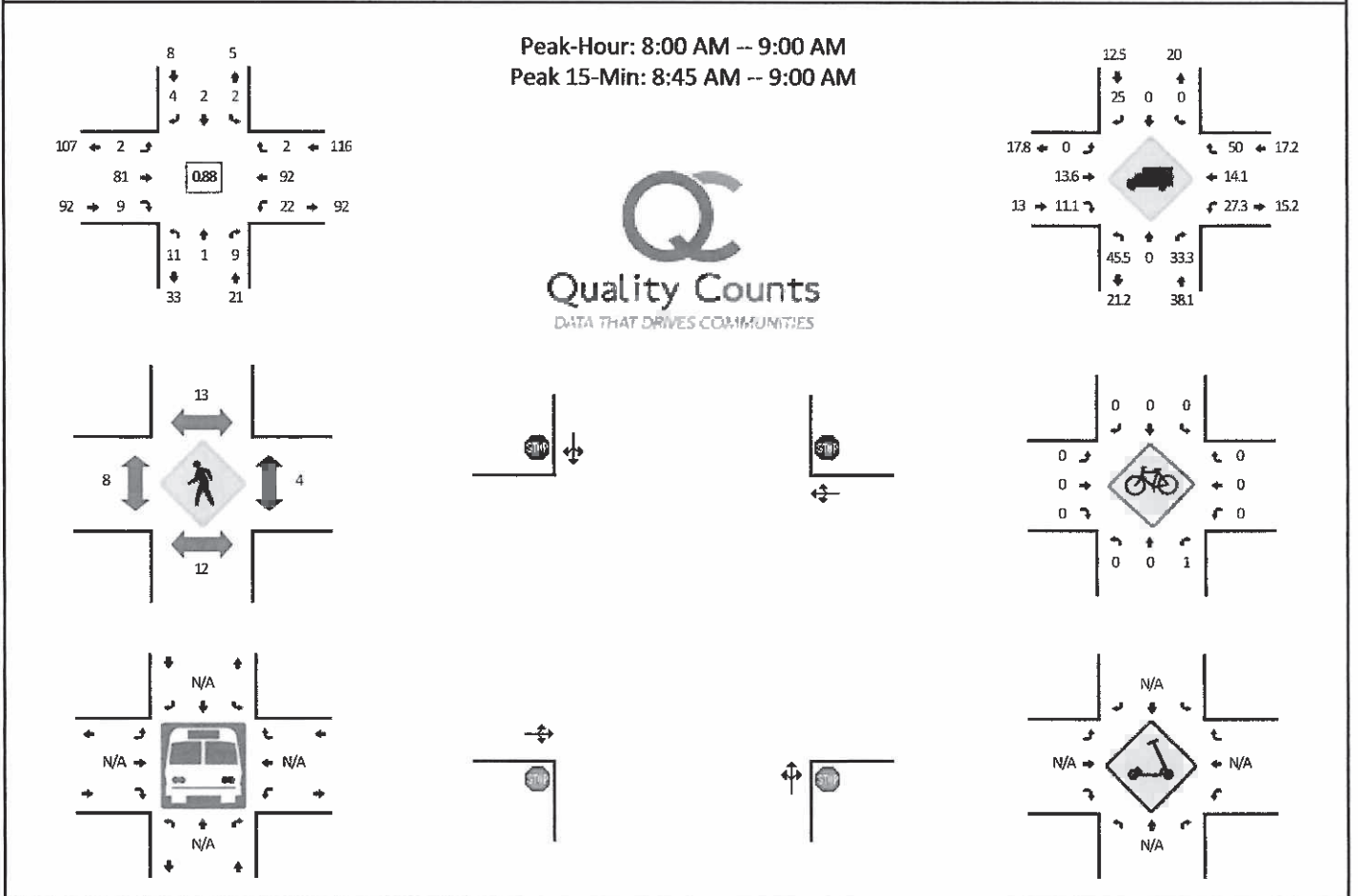


5-Min Count Period Beginning At	SE 23rd Ave (Northbound)				SE 23rd Ave (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	1	0	2	21	0	0	0	15	0	0	39	
4:05 PM	0	0	0	0	0	0	0	0	0	23	0	0	0	9	0	0	32	
4:10 PM	0	0	0	0	0	0	2	0	0	16	0	0	0	13	0	0	31	
4:15 PM	0	0	0	0	1	0	0	0	0	10	0	0	0	12	1	0	24	
4:20 PM	0	0	0	0	0	0	0	0	0	10	0	0	0	15	2	0	27	
4:25 PM	0	0	0	0	0	0	1	0	0	21	0	0	0	16	0	0	38	
4:30 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	18	0	0	36	
4:35 PM	0	0	0	0	1	0	0	0	1	22	0	0	0	13	1	0	38	
4:40 PM	0	0	0	0	0	0	0	0	1	20	0	0	0	14	0	0	35	
4:45 PM	0	0	0	0	0	0	0	0	0	19	0	0	0	17	2	0	38	
4:50 PM	0	0	0	0	1	0	1	0	2	18	0	0	0	9	0	0	31	
4:55 PM	0	0	0	0	1	0	0	0	0	16	0	0	0	8	0	0	25	394
5:00 PM	0	0	0	0	0	0	1	0	0	16	0	0	0	13	0	0	30	385
5:05 PM	0	0	0	0	1	0	0	0	2	16	0	0	0	8	0	0	27	380
5:10 PM	0	0	0	0	0	0	0	0	1	19	0	0	0	13	0	0	33	382
5:15 PM	0	0	0	0	0	0	0	0	0	13	0	0	0	8	0	0	21	379
5:20 PM	0	0	0	0	0	0	1	0	0	17	0	0	0	14	1	0	33	385
5:25 PM	0	0	0	0	2	0	0	0	2	19	0	0	0	11	1	0	35	382
5:30 PM	0	0	0	0	0	0	1	0	2	21	0	0	0	10	1	0	35	381
5:35 PM	0	0	0	0	0	0	0	0	0	27	0	0	0	9	0	0	36	379
5:40 PM	0	0	0	0	1	0	1	0	1	15	0	0	0	9	0	0	27	371
5:45 PM	0	0	0	0	1	0	0	0	1	10	0	0	0	7	0	0	19	352
5:50 PM	0	0	0	0	0	0	0	0	1	14	0	0	0	13	2	0	30	351
5:55 PM	0	0	0	0	1	0	1	0	2	15	0	0	0	15	1	0	35	361
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	4	0	8	0	8	236	0	0	0	188	4	0	448	
Heavy Trucks	0	0	0	0	0	0	0	0	0	16	0	0	0	16	0	0	32	
Buses																		
Pedestrians		16				0				0				4			20	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 21st Ave -- SE Harrison St  
CITY/STATE: Milwaukie, OR

QC JOB #: 15350917  
DATE: Thu, Jan 28 2021

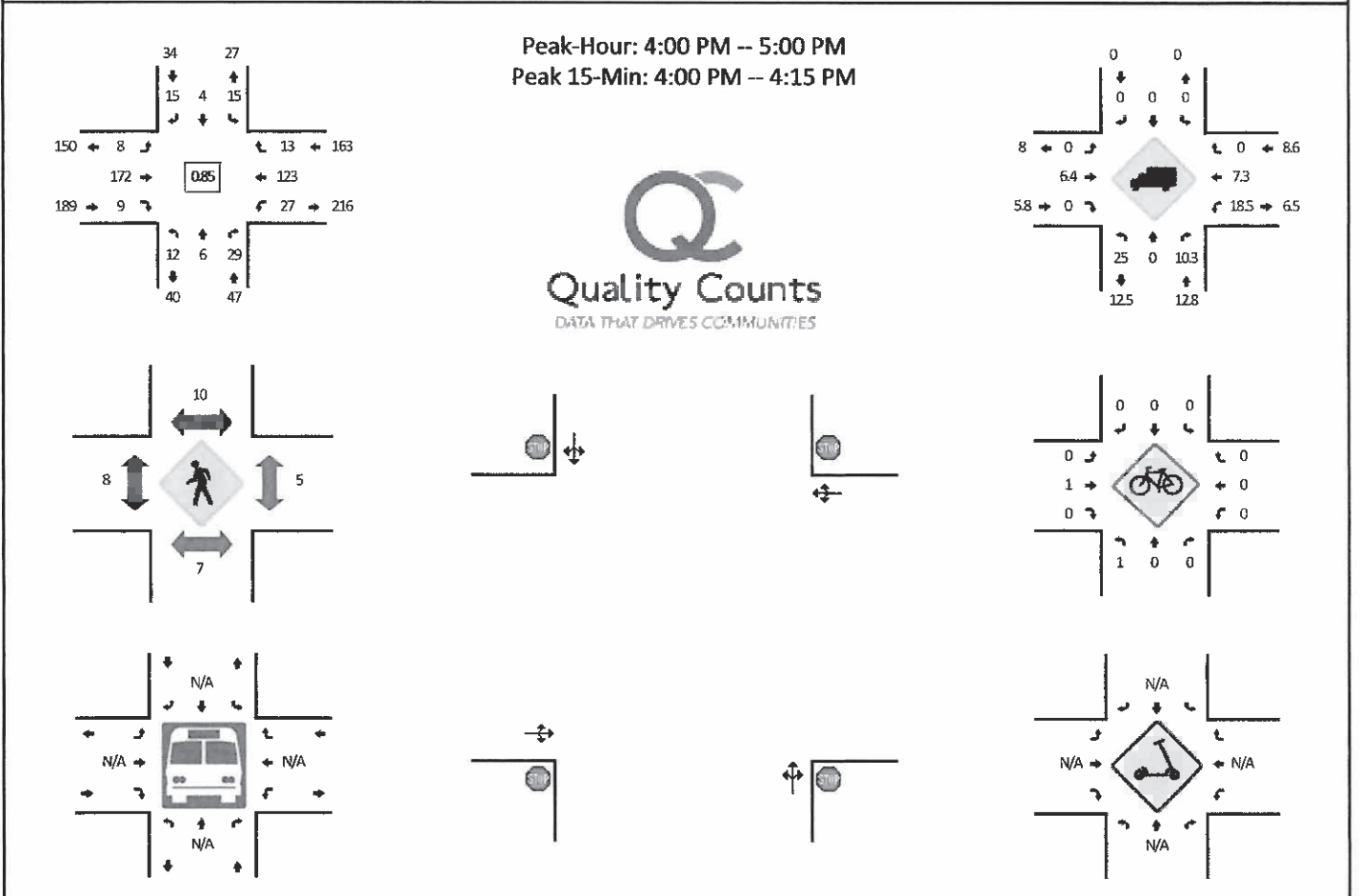


5-Min Count Period Beginning At	SE 21st Ave (Northbound)				SE 21st Ave (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	0	0	0	0	0	0	0	6	0	0	3	11	0	0	22	
7:05 AM	0	0	0	0	0	0	0	0	0	4	0	0	1	6	0	0	11	
7:10 AM	1	0	2	0	0	0	0	0	0	7	0	0	2	8	0	0	20	
7:15 AM	1	0	0	0	0	0	0	0	0	4	0	0	1	5	0	0	11	
7:20 AM	1	0	0	0	0	0	0	0	1	5	0	0	1	9	0	0	17	
7:25 AM	1	0	1	0	0	0	0	0	0	4	0	0	1	6	0	0	13	
7:30 AM	0	0	3	0	0	0	0	0	0	4	1	0	1	6	0	0	15	
7:35 AM	0	0	0	0	0	0	0	0	0	2	1	0	1	13	0	0	17	
7:40 AM	1	0	0	0	0	0	0	0	0	7	1	0	1	11	0	0	21	
7:45 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	14	0	0	20	
7:50 AM	1	0	0	0	1	0	0	0	0	2	0	0	2	8	0	0	14	
7:55 AM	0	0	1	0	0	0	0	0	0	6	0	0	0	12	0	0	19	200
8:00 AM	1	0	0	0	0	0	1	0	0	8	1	0	3	3	0	0	17	195
8:05 AM	1	0	0	0	0	0	0	0	0	5	2	0	1	4	1	0	14	198
8:10 AM	0	0	1	0	0	0	1	0	0	7	0	0	3	8	0	0	20	198
8:15 AM	2	1	1	0	0	0	0	0	1	4	0	0	2	7	1	0	19	206
8:20 AM	1	0	1	0	1	0	1	0	0	4	0	0	1	10	0	0	19	208
8:25 AM	1	0	0	0	0	0	0	0	0	10	1	0	2	9	0	0	23	218
8:30 AM	0	0	2	0	0	1	0	0	0	7	3	0	1	4	0	0	18	221
8:35 AM	1	0	1	0	0	1	0	0	0	5	0	0	4	10	0	0	22	226
8:40 AM	1	0	1	0	1	0	1	0	1	6	1	0	1	5	0	0	18	223
8:45 AM	1	0	1	0	0	0	0	0	0	9	0	0	2	6	0	0	19	222
8:50 AM	1	0	0	0	0	0	0	0	0	3	0	0	2	17	0	0	23	231
8:55 AM	1	0	1	0	0	0	0	0	0	13	1	0	0	9	0	0	25	237
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	0	8	0	0	0	0	0	0	100	4	0	16	128	0	0	268	
Heavy Trucks	4	0	4	0	0	0	0	0	0	8	0	0	4	16	0	0	36	
Buses																		
Pedestrians		20				16				8				0			44	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 21st Ave -- SE Harrison St  
 CITY/STATE: Milwaukie, OR

QC JOB #: 15350918  
 DATE: Thu, Jan 28 2021



5-Min Count Period Beginning At	SE 21st Ave (Northbound)				SE 21st Ave (Southbound)				SE Harrison St (Eastbound)				SE Harrison St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	4	0	1	0	4	0	2	20	2	0	0	14	2	0	50	
4:05 PM	0	1	5	0	3	0	1	0	3	14	4	0	3	11	0	0	45	
4:10 PM	0	1	2	0	0	0	3	0	0	14	0	0	1	10	2	0	33	
4:15 PM	1	1	1	0	1	1	2	0	0	9	0	0	2	12	0	0	30	
4:20 PM	1	2	2	0	1	1	0	0	1	6	0	0	0	9	0	0	23	
4:25 PM	3	0	0	0	1	0	0	0	0	18	0	0	5	15	0	0	42	
4:30 PM	1	1	3	0	4	0	1	0	1	9	0	0	2	12	3	0	37	
4:35 PM	1	0	4	0	2	0	1	0	0	17	1	0	6	5	2	0	39	
4:40 PM	0	0	3	0	0	1	3	0	1	18	2	0	2	10	1	0	41	
4:45 PM	1	0	2	0	1	1	0	0	0	17	0	0	3	14	1	0	40	
4:50 PM	2	0	2	0	0	0	0	0	0	17	0	0	2	8	2	0	33	
4:55 PM	1	0	1	0	1	0	0	0	0	13	0	0	1	3	0	0	20	433
5:00 PM	0	0	2	0	1	0	0	0	1	14	0	0	0	7	3	0	28	411
5:05 PM	2	0	5	0	2	1	0	0	2	11	0	0	3	10	1	0	37	403
5:10 PM	2	1	3	0	3	0	2	0	1	14	0	0	1	8	1	0	36	406
5:15 PM	0	1	1	0	0	0	1	0	0	12	0	0	1	8	0	0	24	400
5:20 PM	1	0	2	0	1	1	1	0	1	13	1	0	1	12	3	0	37	414
5:25 PM	0	0	3	0	2	1	0	0	0	17	0	0	2	10	1	0	36	408
5:30 PM	3	0	4	0	1	1	1	0	1	18	0	0	2	9	0	0	40	411
5:35 PM	2	0	4	0	1	0	0	0	1	22	1	0	0	10	0	0	41	413
5:40 PM	0	0	0	0	0	1	0	0	2	16	2	0	1	7	0	0	29	401
5:45 PM	0	0	2	0	0	1	0	0	0	9	0	0	2	7	0	0	21	382
5:50 PM	0	0	0	0	2	0	0	0	1	14	0	0	1	12	0	0	30	379
5:55 PM	1	0	3	0	0	0	0	0	0	13	0	0	2	8	0	0	27	386
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	8	44	0	16	0	32	0	20	192	24	0	16	140	16	0	512	
Heavy Trucks	0	0	8	0	0	0	0	0	0	12	0	0	0	16	0	0	36	
Buses																		
Pedestrians		4				0				0				4			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:



Appendix C Existing Conditions Analysis  
Worksheets

**Intersection Level Of Service Report**  
**Intersection 1: OR 99E (SE McLoughlin Blvd)/SE Milport Rd**

Control Type:	Signalized	Delay (sec / veh):	5.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

**Intersection Setup**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑↑↑			↑↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Base Volume Input [veh/h]	0	2314	0	0	1303	0	36	70	11	16	7	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	4.00	2.00	2.00	7.00	2.00	20.00	21.00	33.00	56.00	0.00	18.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2314	0	0	1303	0	36	70	11	16	7	31
Peak Hour Factor	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	643	0	0	362	0	10	19	3	4	2	9
Total Analysis Volume [veh/h]	0	2571	0	0	1448	0	40	78	12	18	8	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		1			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [		0			0			1			0	
v_co, Outbound Pedestrian Volume crossing minor street		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	25	0	0	25	0
Amber [s]	0.0	4.7	0.0	0.0	4.7	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	0.7	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	98	0	0	98	0	0	22	0	0	22	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	0	0	0	12	0	0	9	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	14	0	0	38	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.4	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	5.40	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	98	98	12	12	12	12
g / C, Green / Cycle	0.81	0.81	0.10	0.10	0.10	0.10
(v / s)_j Volume / Saturation Flow Rate	0.38	0.30	0.08	0.01	0.02	0.02
s, saturation flow rate [veh/h]	6683	4889	1474	1190	1159	1385
c, Capacity [veh/h]	5438	3979	187	118	166	138
d1, Uniform Delay [s]	3.38	2.95	52.66	49.08	49.35	49.81
k, delay calibration	0.50	0.50	0.15	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.26	4.94	0.53	0.62	1.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.47	0.36	0.63	0.10	0.16	0.25
d, Delay for Lane Group [s/veh]	3.67	3.21	57.61	49.61	49.97	51.13
Lane Group LOS	A	A	E	D	D	D
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.87	1.90	3.70	0.34	0.74	0.99
50th-Percentile Queue Length [ft/ln]	71.64	47.57	92.52	8.58	18.50	24.68
95th-Percentile Queue Length [veh/ln]	5.16	3.43	6.66	0.62	1.33	1.78
95th-Percentile Queue Length [ft/ln]	128.96	85.63	166.54	15.45	33.29	44.43

**Movement, Approach, & Intersection Results**

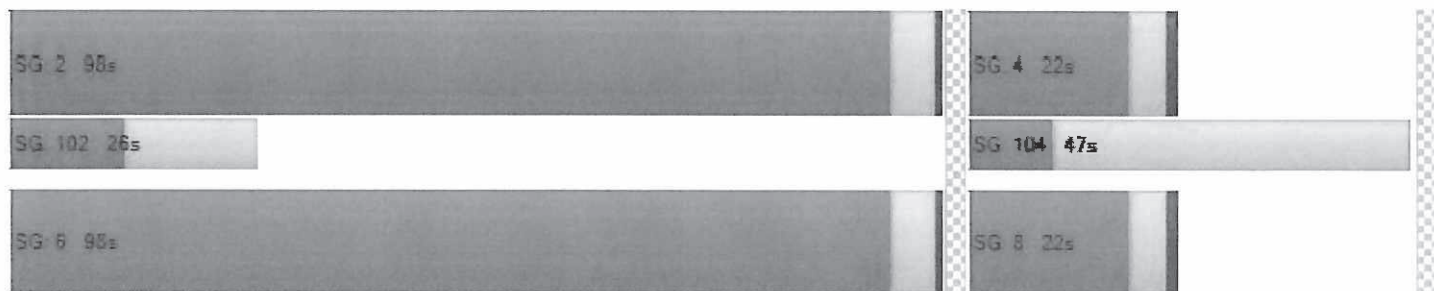
d_M, Delay for Movement [s/veh]	0.00	3.67	0.00	0.00	3.21	0.00	57.61	57.61	49.61	49.97	49.97	51.13
Movement LOS		A			A		E	E	D	D	D	D
d_A, Approach Delay [s/veh]	3.67		3.21		56.87		50.62					
Approach LOS	A		A		E		D					
d_I, Intersection Delay [s/veh]	5.83											
Intersection LOS	A											
Intersection V/C	0.489											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	0.0	16.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	12323.74	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.70	0.00	45.07	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.478	0.000	2.003	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1543	1543	283	283
d_b, Bicycle Delay [s]	3.13	3.13	44.20	44.20
l_b,int, Bicycle LOS Score for Intersection	2.620	2.356	1.774	1.659
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: SE Main St/OR 99E**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.4  
Level Of Service: A  
Volume to Capacity (v/c): 0.073

**Intersection Setup**

Name	SE Main St		SE Main St		OR 99E	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑		↑		↗↘	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	SE Main St		SE Main St		OR 99E	
Base Volume Input [veh/h]	0	63	36	0	56	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	11.00	35.00	0.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	63	36	0	56	2
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	10	0	16	1
Total Analysis Volume [veh/h]	0	72	41	0	64	2
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	9.41	8.48
Movement LOS		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.23	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.86	0.15
d_A, Approach Delay [s/veh]	0.00		0.00		9.38	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.46					
Intersection LOS	A					



**Intersection Level Of Service Report**  
**Intersection 3: SE Main St/Site Access**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.5  
Level Of Service: A  
Volume to Capacity (v/c): 0.005

**Intersection Setup**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+						+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			10.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
Base Volume Input [veh/h]	2	52	0	2	25	0	0	0	0	2	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	10.00	0.00	0.00	29.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	52	0	2	25	0	0	0	0	2	0	0
Peak Hour Factor	0.5700	0.5700	0.5700	0.5700	0.5700	0.5700	1.0000	1.0000	1.0000	0.5700	0.5700	0.5700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	23	0	1	11	0	0	0	0	1	0	0
Total Analysis Volume [veh/h]	4	91	0	4	44	0	0	0	0	4	0	0
Pedestrian Volume [ped/h]	0			0			0			4		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.29	0.00	0.00	7.40	0.00	0.00	0.00	0.00	0.00	9.47	9.93	8.76
Movement LOS	A	A	A	A	A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	0.19	0.19	0.19	0.20	0.20	0.20	0.00	0.00	0.00	0.37	0.37	0.37
d_A, Approach Delay [s/veh]	0.31			0.62			0.00			9.47		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.66											
Intersection LOS	A											

**Intersection Level Of Service Report**

**Intersection 4: OR 99E (SE McLoughlin Blvd)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

**Intersection Setup**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	370.00	100.00	100.00	375.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			Yes		

**Volumes**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	408	1448	94	84	590	20	19	49	164	69	51	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	5.00	11.00	7.00	2.00	6.00	10.00	4.00	7.00	11.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	82	0	0	0
Total Hourly Volume [veh/h]	408	1448	94	84	590	20	19	49	82	69	51	24
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	369	24	21	151	5	5	13	21	18	13	6
Total Analysis Volume [veh/h]	416	1478	96	86	602	20	19	50	84	70	52	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		15			0			15			0	
v_di, Inbound Pedestrian Volume crossing major street [		15			0			15			0	
v_co, Outbound Pedestrian Volume crossing minor street		1			0			0			1	
v_ci, Inbound Pedestrian Volume crossing minor street [		1			0			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		10			0			13			8	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	93.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Split	Split	Overla	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	1	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	6	10	0	0	6	4	0	6	0
Maximum Green [s]	30	63	0	16	49	0	0	11	30	0	14	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	3.5	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	34	56	0	20	42	0	0	26	34	0	18	0
Vehicle Extension [s]	2.3	6.1	0.0	2.3	6.1	0.0	0.0	2.3	2.3	0.0	2.3	0.0
Walk [s]	0	7	0	0	11	0	0	8	0	0	0	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	21	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.50	2.50
g_i, Effective Green Time [s]	30	72	72	8	49	49	15	63	9	9
g / C, Green / Cycle	0.25	0.60	0.60	0.06	0.41	0.41	0.13	0.52	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.24	0.43	0.44	0.05	0.17	0.17	0.04	0.05	0.04	0.06
s, saturation flow rate [veh/h]	1752	1840	1794	1652	1795	1775	1726	1549	1360	1596
c, Capacity [veh/h]	436	1096	1068	108	739	731	222	809	141	151
d1, Uniform Delay [s]	39.41	7.54	7.70	55.29	25.13	25.14	47.46	14.52	55.44	54.52
k, delay calibration	0.40	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.85	4.06	4.54	7.92	1.77	1.79	0.48	0.03	1.17	2.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	0.72	0.74	0.80	0.42	0.42	0.31	0.10	0.41	0.59
d, Delay for Lane Group [s/veh]	68.26	11.60	12.24	63.21	26.90	26.93	47.94	14.55	56.60	56.71
Lane Group LOS	E	B	B	E	C	C	D	B	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.71	6.72	7.03	2.80	6.69	6.63	1.89	1.15	1.79	2.75
50th-Percentile Queue Length [ft/ln]	367.75	168.00	175.64	70.09	167.27	165.66	47.33	28.71	44.75	68.80
95th-Percentile Queue Length [veh/ln]	21.00	10.97	11.37	5.05	10.93	10.85	3.41	2.07	3.22	4.95
95th-Percentile Queue Length [ft/ln]	525.00	274.29	284.31	126.16	273.32	271.20	85.20	51.67	80.56	123.84

**Movement, Approach, & Intersection Results**

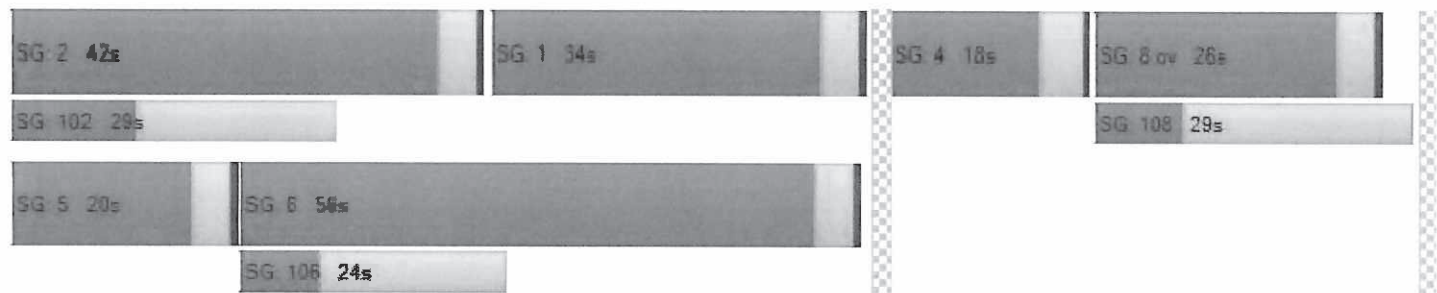
d_M, Delay for Movement [s/veh]	68.26	11.90	12.24	63.21	26.92	26.93	47.94	47.94	14.55	56.60	56.71	56.71
Movement LOS	E	B	B	E	C	C	D	D	B	E	E	E
d_A, Approach Delay [s/veh]	23.70			31.33			29.61			56.67		
Approach LOS	C			C			C			E		
d_I, Intersection Delay [s/veh]	27.41											
Intersection LOS	C											
Intersection V/C	0.676											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	15.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	282.03	0.00	0.00	3971.81
d_p, Pedestrian Delay [s]	48.60	0.00	45.94	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.981	0.000	2.342	2.036
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	633	367	225
d_b, Bicycle Delay [s]	19.36	28.02	40.28	47.45
I_b,int, Bicycle LOS Score for Intersection	3.201	2.144	1.947	1.801
Bicycle LOS	C	B	A	A

**Sequence**

Ring 1	2	1	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SE Main St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.303

**Intersection Setup**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	4	16	26	30	16	22	50	109	49	29	115	59
Base Volume Input [veh/h]	4	16	26	30	16	22	50	109	49	29	115	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	22.00	64.00	19.00	22.00	0.00	0.00	2.00	11.00	44.00	16.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	26	30	16	22	50	109	49	29	115	59
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	7	9	5	6	14	31	14	8	33	17
Total Analysis Volume [veh/h]	5	18	30	34	18	25	57	125	56	33	132	68
Pedestrian Volume [ped/h]	7			1			12			13		



**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	648	690	798	769
Degree of Utilization, x	0.08	0.11	0.30	0.30

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.27	0.37	1.25	1.28
95th-Percentile Queue Length [ft]	6.65	9.37	31.30	31.99
Approach Delay [s/veh]	9.05	8.87	9.41	9.70
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.42			
Intersection LOS	A			

**Intersection Level Of Service Report**  
**Intersection 6: SE 21st St/SE Harrison St**

Control Type: All-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.3  
Level Of Service: A  
Volume to Capacity (v/c): 0.320

**Intersection Setup**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	22	2	16	4	4	7	4	146	16	41	174	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	45.00	0.00	33.00	0.00	0.00	25.00	0.00	14.00	11.00	27.00	14.00	50.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	2	16	4	4	7	4	146	16	41	174	4
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	5	1	1	2	1	41	5	12	49	1
Total Analysis Volume [veh/h]	25	2	18	5	5	8	5	166	18	47	198	5
Pedestrian Volume [ped/h]	12			13			8			4		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	657	723	795	782
Degree of Utilization, x	0.07	0.02	0.24	0.32

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.22	0.08	0.92	1.38
95th-Percentile Queue Length [ft]	5.50	1.91	23.12	34.52
Approach Delay [s/veh]	8.88	8.11	8.94	9.75
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.31			
Intersection LOS	A			

**Intersection Level Of Service Report**  
**Intersection 7: SE 23rd St/SE Harrison St**

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

**Intersection Setup**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⤴		⤵		⤵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Base Volume Input [veh/h]	7	157	7	5	213	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	16.00	0.00	33.00	17.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	157	7	5	213	13
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	45	2	1	61	4
Total Analysis Volume [veh/h]	8	180	8	6	245	15
Pedestrian Volume [ped/h]	0		5		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	7.76	0.00	11.47	11.21	0.00	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.07	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.49	12.49	1.85	1.85	0.00	0.00
d_A, Approach Delay [s/veh]	0.33		11.36		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.48					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 8: OR 224 (Milwaukie Expy)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

**Intersection Setup**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↘			↵ ↑ ↘			↔ ↑			↔ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	160.00	100.00	160.00	615.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	58	1825	56	93	899	14	19	123	41	40	182	302
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	5.00	4.00	1.00	6.00	0.00	0.00	16.00	18.00	3.00	8.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	1825	56	93	899	14	19	123	41	40	182	302
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	491	15	25	242	4	5	33	11	11	49	81
Total Analysis Volume [veh/h]	62	1962	60	100	967	15	20	132	44	43	196	325
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	10	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		2		0		0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [	0		0		0		0		2		0	
v_co, Outbound Pedestrian Volume crossing minor street	0		0		0		0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [	0		0		0		0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		0		0		0	
Bicycle Volume [bicycles/h]	0		0		0		0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag			Lead								
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	2.0	0.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	15	77	0	15	77	0	0	28	0	0	28	0
Vehicle Extension [s]	2.3	3.9	0.0	2.3	3.9	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	5	10	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	18	0	10	22	0	0	29	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	2.00	5.00	5.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	68	68	8	70	70	28	28	28	28
g / C, Green / Cycle	0.05	0.56	0.56	0.07	0.58	0.58	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.56	0.04	0.06	0.28	0.01	10000.00	0.13	0.20	0.24
s, saturation flow rate [veh/h]	1609	3475	1564	1795	3446	1615	0	1389	1201	1373
c, Capacity [veh/h]	77	1957	881	124	2014	944	60	325	317	322
d1, Uniform Delay [s]	55.59	14.94	6.68	55.04	14.40	10.46	59.98	40.27	44.45	45.93
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.15	0.30	0.42
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.22	20.98	0.15	7.31	0.82	0.03	2.38	1.95	9.69	48.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	1.00	0.07	0.81	0.48	0.02	0.33	0.54	0.75	1.01
d, Delay for Lane Group [s/veh]	66.82	35.92	6.83	62.35	15.22	10.49	62.37	42.22	54.14	94.63
Lane Group LOS	E	F	A	E	B	B	E	D	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.04	20.93	0.43	3.18	7.31	0.17	0.65	4.78	7.82	13.95
50th-Percentile Queue Length [ft/ln]	50.99	523.24	10.76	79.60	182.70	4.19	16.33	119.50	195.57	348.80
95th-Percentile Queue Length [veh/ln]	3.67	28.49	0.77	5.73	11.74	0.30	1.18	8.37	12.41	20.19
95th-Percentile Queue Length [ft/ln]	91.77	712.36	19.37	143.28	293.53	7.54	29.39	209.14	310.25	504.85

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	66.82	35.92	6.83	62.35	15.22	10.49	62.37	42.22	42.22	54.14	54.14	94.63
Movement LOS	E	F	A	E	B	B	E	D	D	D	D	F
d_A, Approach Delay [s/veh]	36.01		19.51		44.28		77.47					
Approach LOS	D		B		D		E					
d_I, Intersection Delay [s/veh]	37.83											
Intersection LOS	D											
Intersection V/C	0.918											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	14.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	3589.38	0.00	0.00
d_p, Pedestrian Delay [s]	47.70	48.60	46.82	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.206	3.229	2.238	2.319
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	1167	383	383
d_b, Bicycle Delay [s]	10.42	10.42	39.20	39.20
l_b,int, Bicycle LOS Score for Intersection	3.279	2.452	1.721	2.025
Bicycle LOS	C	B	A	B

**Sequence**

Ring 1	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 1: OR 99E (SE McLoughlin Blvd)/SE Milport Rd**

Control Type:	Signalized	Delay (sec / veh):	3.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

**Intersection Setup**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	OR 99E		OR 99E		SE Milport Rd			SE Milport Rd				
Base Volume Input [veh/h]	0	1740	0	0	3107	0	49	18	38	34	10	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	9.00	8.00	0.00	12.00	0.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1740	0	0	3107	0	49	18	38	34	10	39
Peak Hour Factor	1.0000	0.9600	1.0000	1.0000	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	453	0	0	809	0	13	5	10	9	3	10
Total Analysis Volume [veh/h]	0	1813	0	0	3236	0	51	19	40	35	10	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		1			0				0			0
v_di, Inbound Pedestrian Volume crossing major street [		0			0				1			0
v_co, Outbound Pedestrian Volume crossing minor street		0			0				1			0
v_ci, Inbound Pedestrian Volume crossing minor street [		0			1				0			0
v_ab, Corner Pedestrian Volume [ped/h]		0			0				0			0
Bicycle Volume [bicycles/h]		0			0				0			1

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	86.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	25	0	0	25	0
Amber [s]	0.0	4.7	0.0	0.0	4.7	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	0.7	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	98	0	0	98	0	0	22	0	0	22	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	0	0	0	12	0	0	9	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	14	0	0	38	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.4	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	5.40	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	102	102	8	8	8	8
g / C, Green / Cycle	0.85	0.85	0.06	0.06	0.06	0.06
(v / s)_j Volume / Saturation Flow Rate	0.27	0.64	0.05	0.02	0.03	0.03
s, saturation flow rate [veh/h]	6792	5094	1535	1607	1497	1540
c, Capacity [veh/h]	5764	4323	151	103	150	99
d1, Uniform Delay [s]	1.87	0.00	54.76	53.70	53.89	53.78
k, delay calibration	0.50	0.50	0.15	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	1.23	3.14	3.33	1.58	3.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.31	0.75	0.46	0.39	0.30	0.41
d, Delay for Lane Group [s/veh]	2.01	1.23	57.90	57.03	55.47	57.66
Lane Group LOS	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.98	0.49	2.18	1.24	1.36	1.29
50th-Percentile Queue Length [ft/ln]	24.41	12.27	54.56	31.12	34.10	32.16
95th-Percentile Queue Length [veh/ln]	1.76	0.88	3.93	2.24	2.46	2.32
95th-Percentile Queue Length [ft/ln]	43.94	22.09	98.20	56.01	61.39	57.89

**Movement, Approach, & Intersection Results**

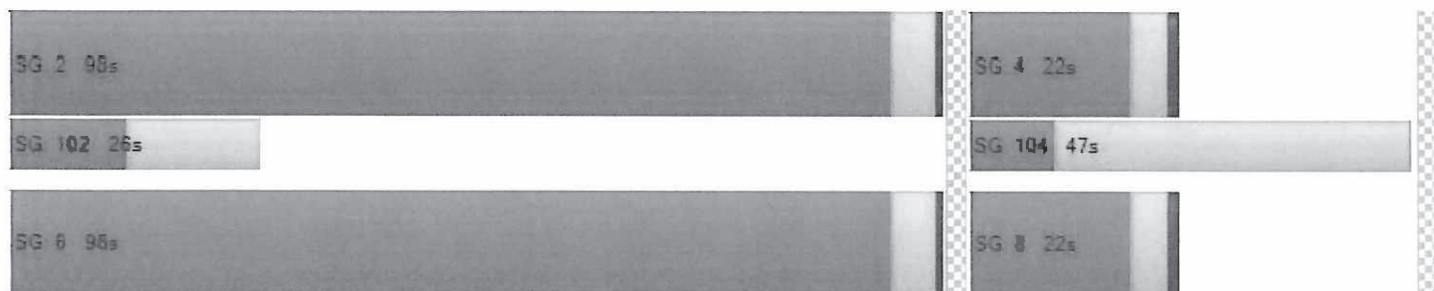
d_M, Delay for Movement [s/veh]	0.00	2.01	0.00	0.00	1.23	0.00	57.90	57.90	57.03	55.47	55.47	57.66
Movement LOS		A			A		E	E	E	E	E	E
d_A, Approach Delay [s/veh]	2.01		1.23			57.58			56.52			
Approach LOS	A		A			E			E			
d_I, Intersection Delay [s/veh]	3.59											
Intersection LOS	A											
Intersection V/C	0.717											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	0.0	16.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	11895.83	0.00	13719.37	0.00
d_p, Pedestrian Delay [s]	47.70	0.00	45.07	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.727	0.000	1.996	0.000
Crosswalk LOS	D	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1543	1543	283	283
d_b, Bicycle Delay [s]	3.13	3.13	44.20	44.23
l_b,int, Bicycle LOS Score for Intersection	2.307	3.339	1.741	1.702
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: SE Main St/OR 99E**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.4  
Level Of Service: A  
Volume to Capacity (v/c): 0.008

**Intersection Setup**

Name	SE Main St		SE Main St		OR 99E	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑		↑		↗↘	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	SE Main St		SE Main St		OR 99E	
Base Volume Input [veh/h]	0	43	91	0	6	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	13.00	8.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	43	91	0	6	10
Peak Hour Factor	1.0000	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	28	0	2	3
Total Analysis Volume [veh/h]	0	53	112	0	7	12
Pedestrian Volume [ped/h]	0	0	0	0	0	0



**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	9.37	8.85
Movement LOS		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.64	0.96
d_A, Approach Delay [s/veh]	0.00		0.00		9.04	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.93					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 3: SE Main St/Site Access**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 10.5  
Level Of Service: B  
Volume to Capacity (v/c): 0.035

**Intersection Setup**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+						+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			10.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	3	48	10	6	119	1	0	0	0	18	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	15.00	0.00	0.00	4.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	48	10	6	119	1	0	0	0	18	0	3
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	1.0000	1.0000	1.0000	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	16	3	2	40	0	0	0	0	6	0	1
Total Analysis Volume [veh/h]	4	65	14	8	161	1	0	0	0	24	0	4
Pedestrian Volume [ped/h]	0			0			0			6		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	7.39	0.00	0.00	0.00	0.00	0.00	0.00	10.47	10.87	8.87
Movement LOS	A	A	A	A	A	A					B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.12	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	0.40	0.40	0.40	0.00	0.00	0.00	0.00	3.05	3.05	3.05
d_A, Approach Delay [s/veh]	0.36			0.35			0.00			10.24			
Approach LOS	A			A			A			B			
d_I, Intersection Delay [s/veh]	1.34												
Intersection LOS	B												

**Intersection Level Of Service Report**

**Intersection 4: OR 99E (SE McLoughlin Blvd)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	40.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.935

**Intersection Setup**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	370.00	100.00	100.00	375.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			Yes		

**Volumes**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	257	819	165	103	1674	13	28	79	475	212	48	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	4.00	4.00	1.00	2.00	2.00	0.00	6.00	1.00	2.00	9.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	0	0	0	238	0	0	22
Total Hourly Volume [veh/h]	257	819	157	103	1674	13	28	79	237	212	48	12
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	207	40	26	423	3	7	20	60	54	12	3
Total Analysis Volume [veh/h]	260	827	159	104	1691	13	28	80	239	214	48	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	12			0			12			0		
v_di, Inbound Pedestrian Volume crossing major street [	12			0			12			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing minor street [	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			13			6		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Split	Split	Overla	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	1	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	6	10	0	0	6	4	0	6	0
Maximum Green [s]	19	66	0	15	62	0	0	10	19	0	15	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	3.5	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	23	60	0	19	56	0	0	26	23	0	15	0
Vehicle Extension [s]	2.3	6.1	0.0	2.3	6.1	0.0	0.0	2.3	2.3	0.0	2.3	0.0
Walk [s]	0	7	0	0	11	0	0	8	0	0	0	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	21	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.50	2.50
g_i, Effective Green Time [s]	19	69	69	9	58	58	16	39	11	11
g / C, Green / Cycle	0.16	0.57	0.57	0.07	0.48	0.48	0.13	0.32	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.15	0.27	0.28	0.06	0.46	0.46	0.06	0.15	0.08	0.08
s, saturation flow rate [veh/h]	1781	1840	1724	1795	1870	1865	1787	1571	1781	1692
c, Capacity [veh/h]	282	1049	983	131	907	905	233	505	158	150
d1, Uniform Delay [s]	46.65	7.69	7.72	54.74	29.25	29.30	48.30	32.42	54.14	54.14
k, delay calibration	0.36	0.50	0.50	0.07	0.50	0.50	0.07	0.39	0.10	0.10
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.44	1.59	1.73	6.40	18.40	18.70	0.87	2.45	14.67	15.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.48	0.49	0.79	0.94	0.94	0.46	0.47	0.89	0.89
d, Delay for Lane Group [s/veh]	76.09	9.28	9.46	61.14	47.65	48.00	49.17	34.87	68.81	69.26
Lane Group LOS	E	A	A	E	D	D	D	C	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	9.56	4.27	4.09	3.33	27.02	27.10	3.03	5.81	4.91	4.68
50th-Percentile Queue Length [ft/ln]	238.90	106.65	102.27	83.24	675.41	677.55	75.72	145.31	122.84	117.02
95th-Percentile Queue Length [veh/ln]	14.63	7.65	7.36	5.99	35.54	35.64	5.45	9.77	8.55	8.23
95th-Percentile Queue Length [ft/ln]	365.64	191.33	184.08	149.82	888.52	890.99	136.29	244.16	213.72	205.72

**Movement, Approach, & Intersection Results**

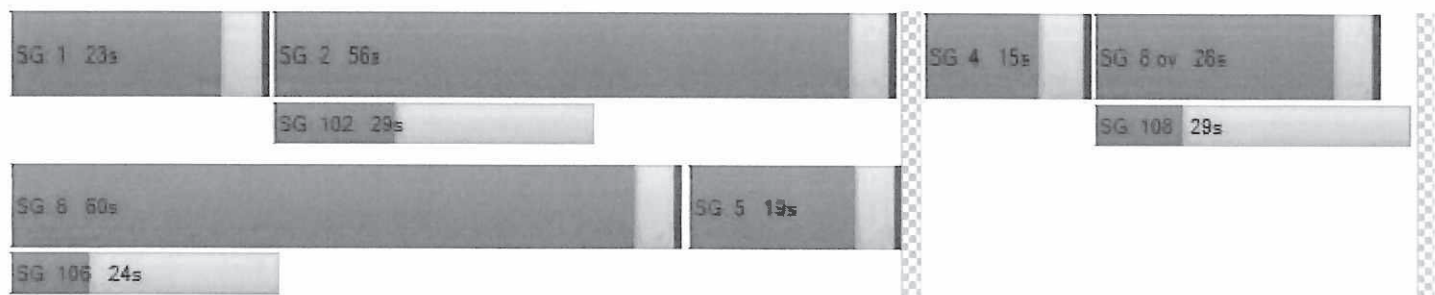
d_M, Delay for Movement [s/veh]	76.09	9.35	9.46	61.14	47.82	48.00	49.17	49.17	34.87	68.97	69.26	69.26
Movement LOS	E	A	A	E	D	D	D	D	C	E	E	E
d_A, Approach Delay [s/veh]	23.29			48.59			39.32			69.03		
Approach LOS	C			D			D			E		
d_I, Intersection Delay [s/veh]	40.66											
Intersection LOS	D											
Intersection V/C	0.935											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	15.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	306.51	0.00	0.00	6739.17
d_p, Pedestrian Delay [s]	48.60	0.00	45.94	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.033	0.000	2.633	2.125
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	867	367	175
d_b, Bicycle Delay [s]	17.08	19.27	40.28	50.11
l_b,int, Bicycle LOS Score for Intersection	2.594	3.051	2.525	2.048
Bicycle LOS	B	C	B	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 5: SE Main St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

**Intersection Setup**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Base Volume Input [veh/h]	13	39	47	66	62	45	38	156	55	38	141
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	25.00	2.00	5.00	3.00	4.00	2.00	10.00	22.00	5.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	39	47	66	62	45	38	156	55	38	141	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	11	13	18	17	12	10	42	15	10	38	9
Total Analysis Volume [veh/h]	14	42	51	72	67	49	41	170	60	41	153	37
Pedestrian Volume [ped/h]	6			0			12			26		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	650	669	713	690
Degree of Utilization, x	0.16	0.28	0.38	0.33

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.59	1.15	1.78	1.47
95th-Percentile Queue Length [ft]	14.65	28.75	44.57	36.80
Approach Delay [s/veh]	9.63	10.47	11.12	10.82
Approach LOS	A	B	B	B
Intersection Delay [s/veh]	10.68			
Intersection LOS	B			

**Intersection Level Of Service Report**  
**Intersection 6: SE 21st St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.410

**Intersection Setup**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	17	8	42	21	6	21	11	245	13	38	175	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	25.00	0.00	10.00	0.00	0.00	0.00	0.00	6.00	0.00	19.00	7.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	8	42	21	6	21	11	245	13	38	175	18
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	2	12	6	2	6	3	72	4	11	51	5
Total Analysis Volume [veh/h]	20	9	49	25	7	25	13	288	15	45	206	21
Pedestrian Volume [ped/h]	7			10			8			5		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	682	685	770	754
Degree of Utilization, x	0.11	0.08	0.41	0.36

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.39	0.27	2.02	1.65
95th-Percentile Queue Length [ft]	9.64	6.78	50.39	41.23
Approach Delay [s/veh]	8.96	8.73	10.89	10.45
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	10.34			
Intersection LOS	B			

**Intersection Level Of Service Report**  
**Intersection 7: SE 23rd St/SE Harrison St**

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

**Intersection Setup**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Base Volume Input [veh/h]	10	297	6	8	223	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	6.00	0.00	17.00	8.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	297	6	8	223	8
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	84	2	2	63	2
Total Analysis Volume [veh/h]	11	338	7	9	253	9
Pedestrian Volume [ped/h]	0		3		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	7.94	0.00	13.05	11.04	0.00	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh/ln]	1.17	1.17	0.09	0.09	0.00	0.00
95th-Percentile Queue Length [ft/ln]	29.27	29.27	2.30	2.30	0.00	0.00
d_A, Approach Delay [s/veh]	0.25		11.92		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.44					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 8: OR 224 (Milwaukie Expy)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

**Intersection Setup**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	160.00	100.00	160.00	615.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	63	1490	68	290	1779	31	5	263	57	56	185	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	2.00	3.00	1.00	3.00	0.00	0.00	5.00	6.00	4.00	6.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	1490	68	290	1779	31	5	263	57	56	185	159
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	384	18	75	459	8	1	68	15	14	48	41
Total Analysis Volume [veh/h]	65	1536	70	299	1834	32	5	271	59	58	191	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	10	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		4			6			0			0	
v_di, Inbound Pedestrian Volume crossing major street		0			0			4			6	
v_co, Outbound Pedestrian Volume crossing minor street		0			0			1			1	
v_ci, Inbound Pedestrian Volume crossing minor street		1			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			2			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	72.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	2.0	0.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	15	70	0	30	85	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	3.9	0.0	2.3	3.9	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	5	10	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	18	0	10	22	0	0	29	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	2.00	5.00	5.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	63	63	23	80	80	28	28	28	28
g / C, Green / Cycle	0.05	0.48	0.48	0.18	0.62	0.62	0.21	0.21	0.21	0.21
(v / s)_j Volume / Saturation Flow Rate	0.04	0.43	0.05	0.17	0.52	0.02	0.11	0.11	0.18	0.17
s, saturation flow rate [veh/h]	1709	3560	1555	1795	3532	1614	1579	1488	926	1465
c, Capacity [veh/h]	82	1718	751	323	2171	992	367	319	236	314
d1, Uniform Delay [s]	60.21	20.39	12.39	52.41	20.06	9.84	44.32	45.14	51.33	48.23
k, delay calibration	0.07	0.50	0.50	0.30	0.50	0.50	0.08	0.09	0.26	0.22
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.03	7.62	0.25	24.12	4.25	0.06	0.68	1.11	9.13	8.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.89	0.09	0.92	0.84	0.03	0.46	0.52	0.71	0.78
d, Delay for Lane Group [s/veh]	70.24	28.01	12.63	76.54	24.31	9.90	44.99	46.25	60.46	56.62
Lane Group LOS	E	C	B	E	C	A	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.29	17.03	0.81	11.59	21.43	0.36	4.89	4.87	5.98	8.33
50th-Percentile Queue Length [ft/ln]	57.23	425.85	20.36	289.76	535.79	9.04	122.35	121.77	149.56	208.27
95th-Percentile Queue Length [veh/ln]	4.12	23.80	1.47	17.17	29.02	0.65	8.52	8.49	9.99	13.06
95th-Percentile Queue Length [ft/ln]	103.02	595.06	36.65	429.35	725.60	16.27	213.05	212.26	249.84	326.61

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	70.24	28.01	12.63	76.54	24.31	9.90	44.99	45.49	46.25	60.46	58.81	56.62
Movement LOS	E	C	B	E	C	A	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	29.01			31.31			45.61			58.17		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	33.94											
Intersection LOS	C											
Intersection V/C	0.830											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	14.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2502.48	1405.43	11541.18	7913.35
d_p, Pedestrian Delay [s]	52.65	53.55	51.75	54.47
I_p,int, Pedestrian LOS Score for Intersection	3.336	3.315	2.273	2.363
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	969	1200	385	385
d_b, Bicycle Delay [s]	17.28	10.40	42.45	42.40
I_b,int, Bicycle LOS Score for Intersection	2.938	3.346	1.836	1.900
Bicycle LOS	C	C	A	A

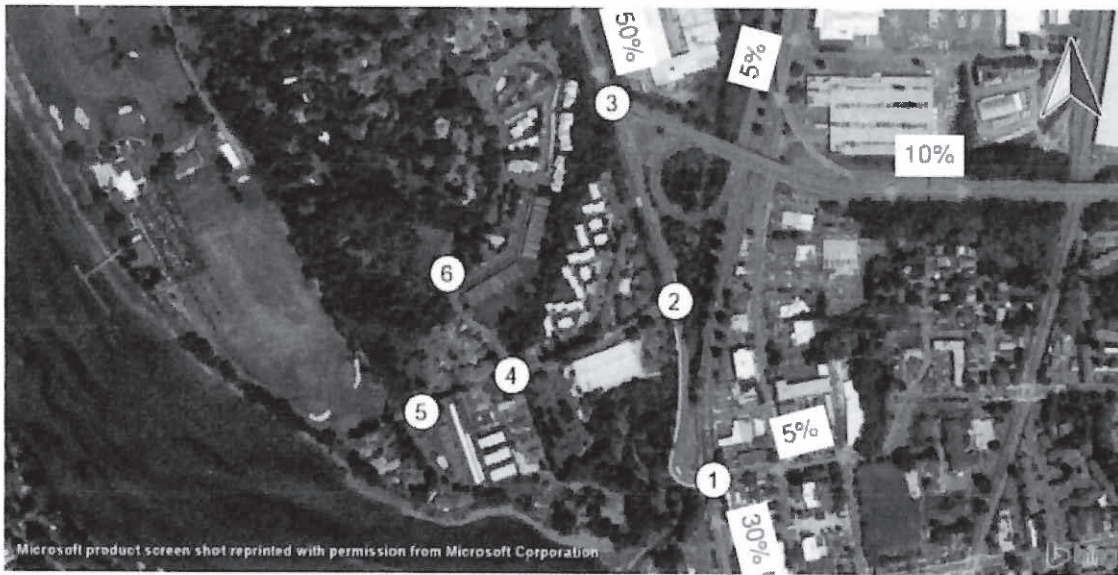
**Sequence**

Ring 1	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

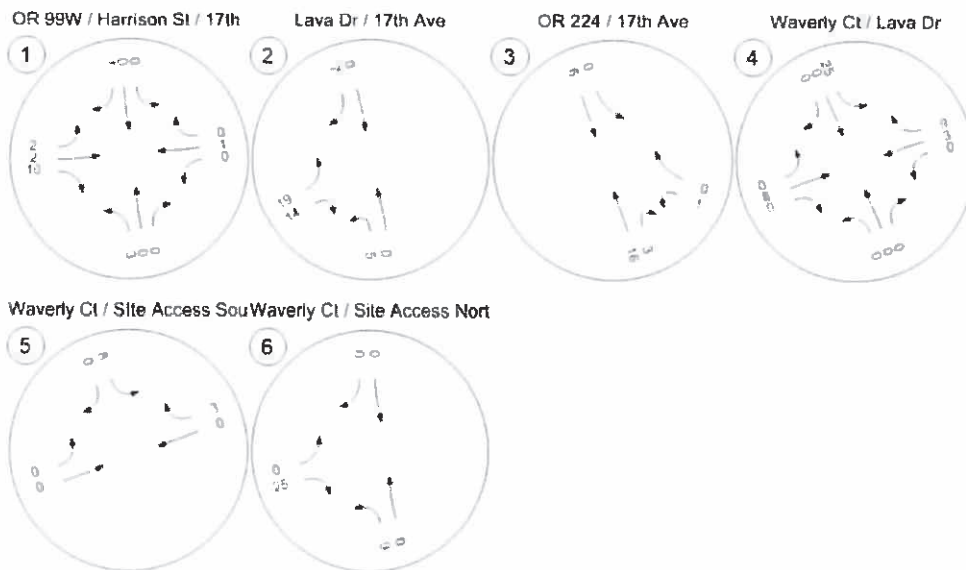


## Appendix D In-Process Data

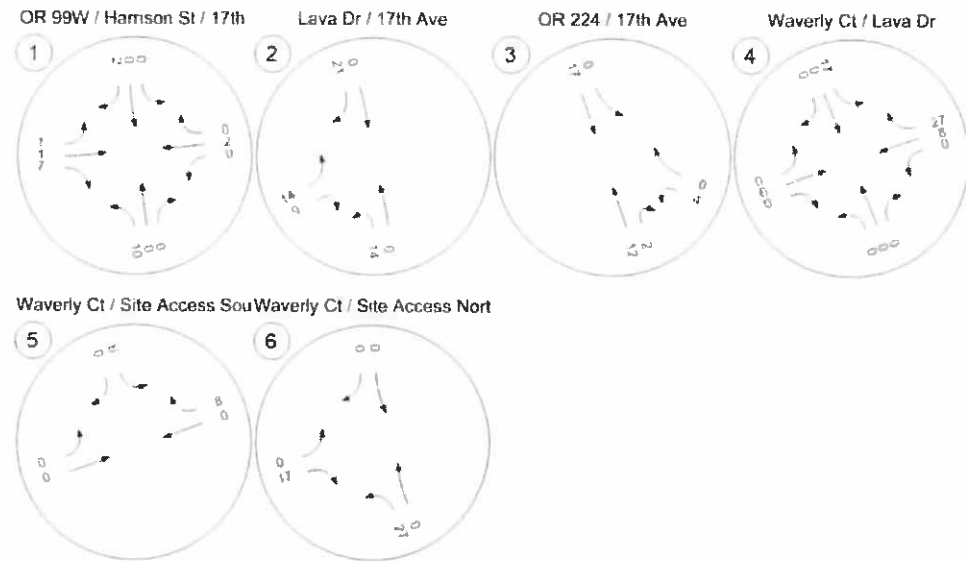
**Exhibit 4. Site Generated Trip Distribution Pattern and Site Trip Assignments**



WEEKDAY AM PEAK HOUR  
TRIP ASSIGNMENT



WEEKDAY PM PEAK HOUR  
TRIP ASSIGNMENT

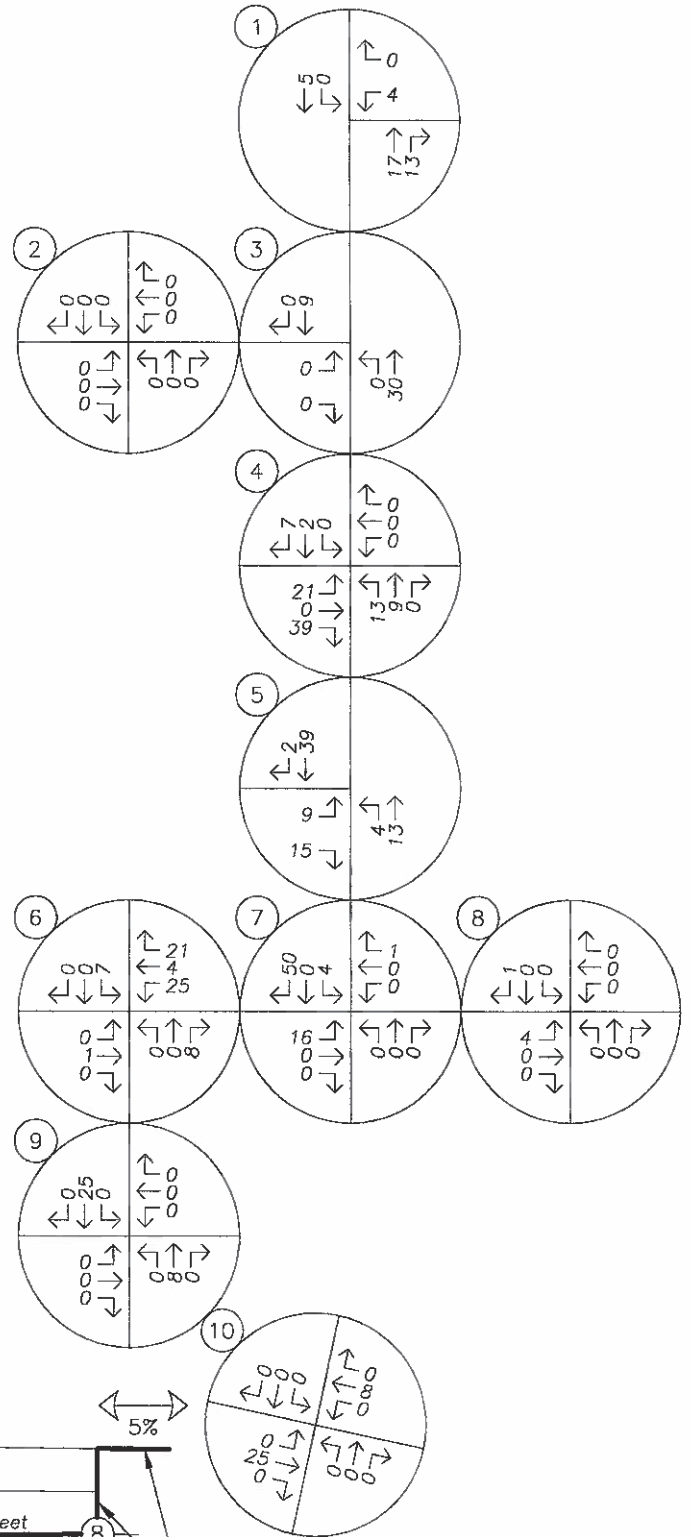
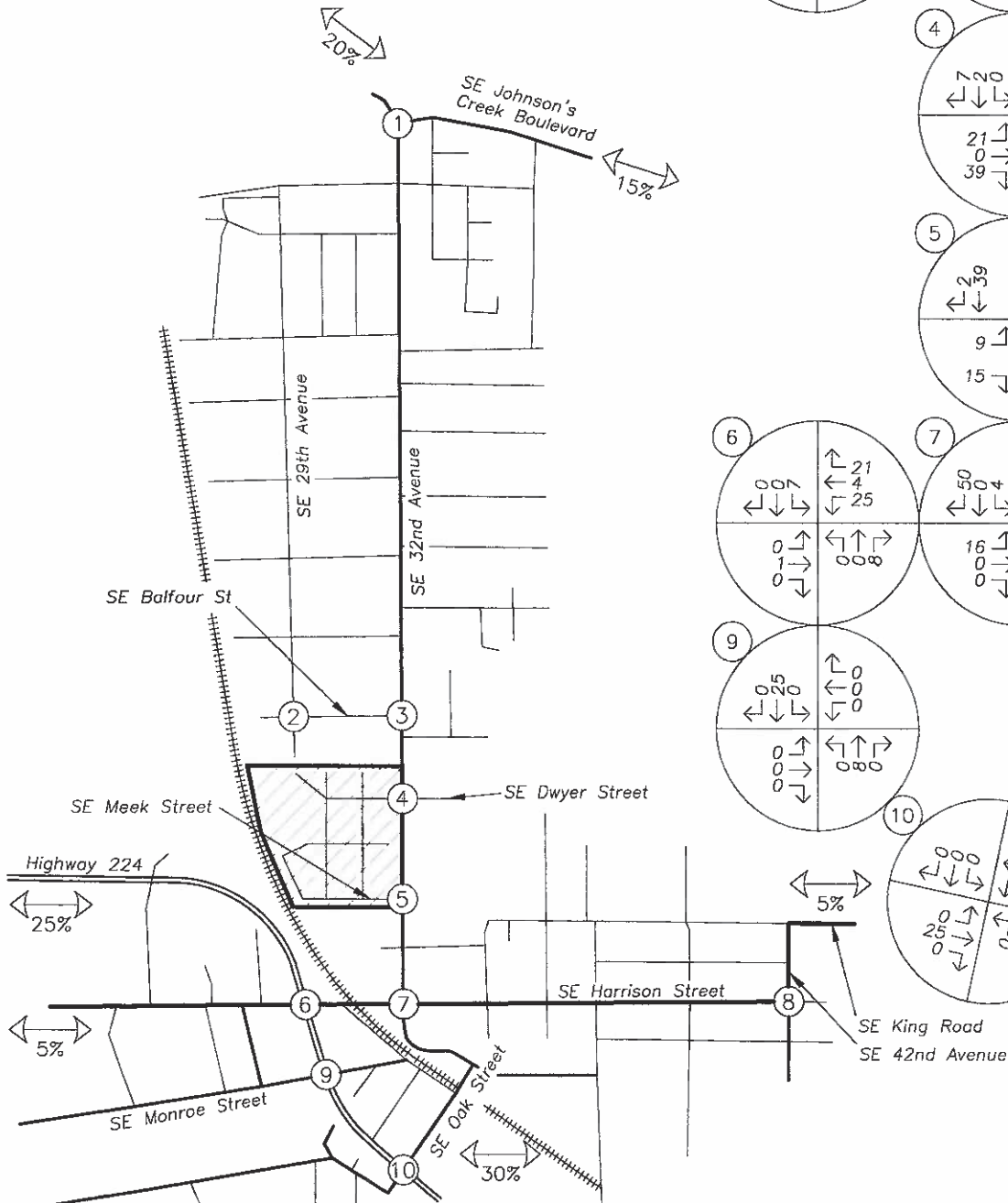


**LEGEND**

XX% PERCENT OF PRIMARY TRIPS

PRIMARY TRIP GENERATION			
	IN	OUT	TOTAL
AM	26	84	110

\*70% OF SITE TRIPS ENTER/EXIT VIA SE DWYER STREET  
 \*30% OF SITE TRIPS ENTER/EXIT VIA SE MEEK STREET



Plotted 8/24/2020



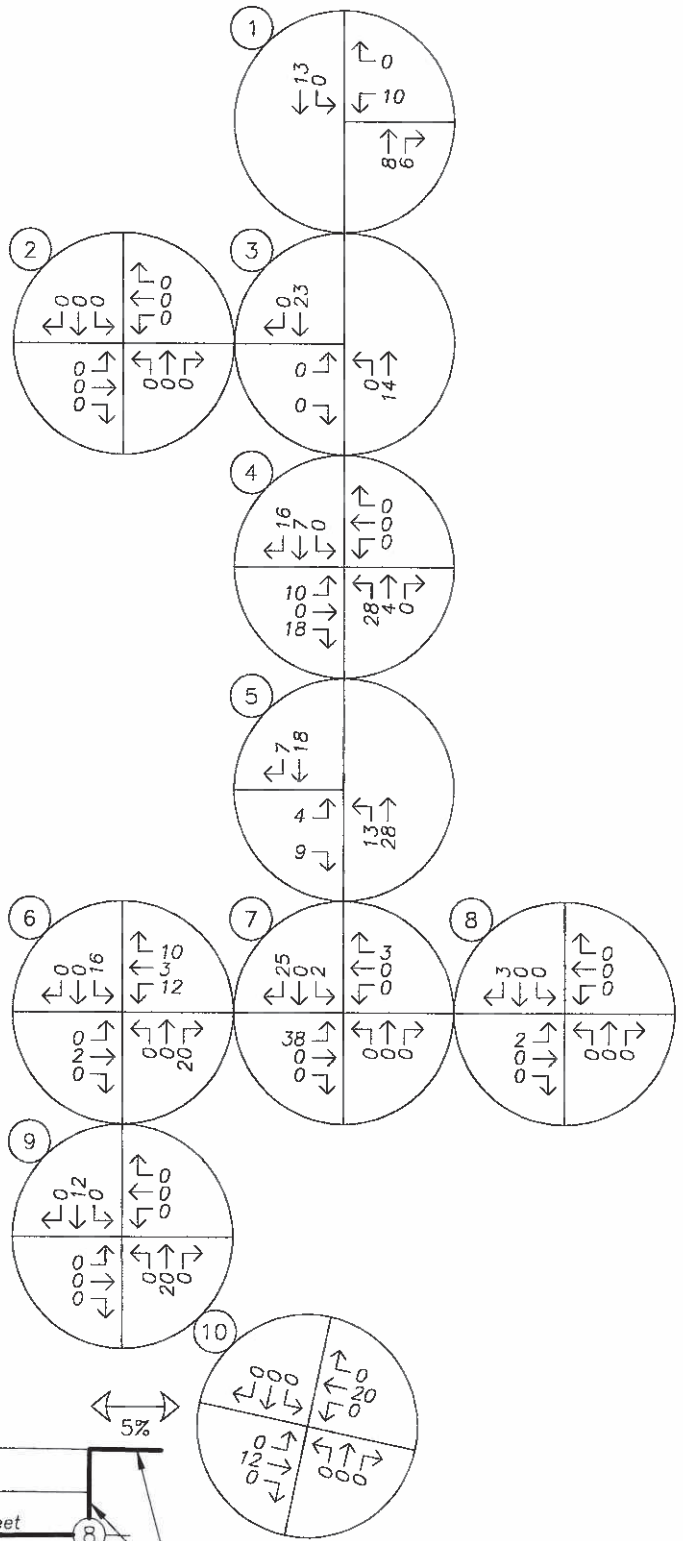
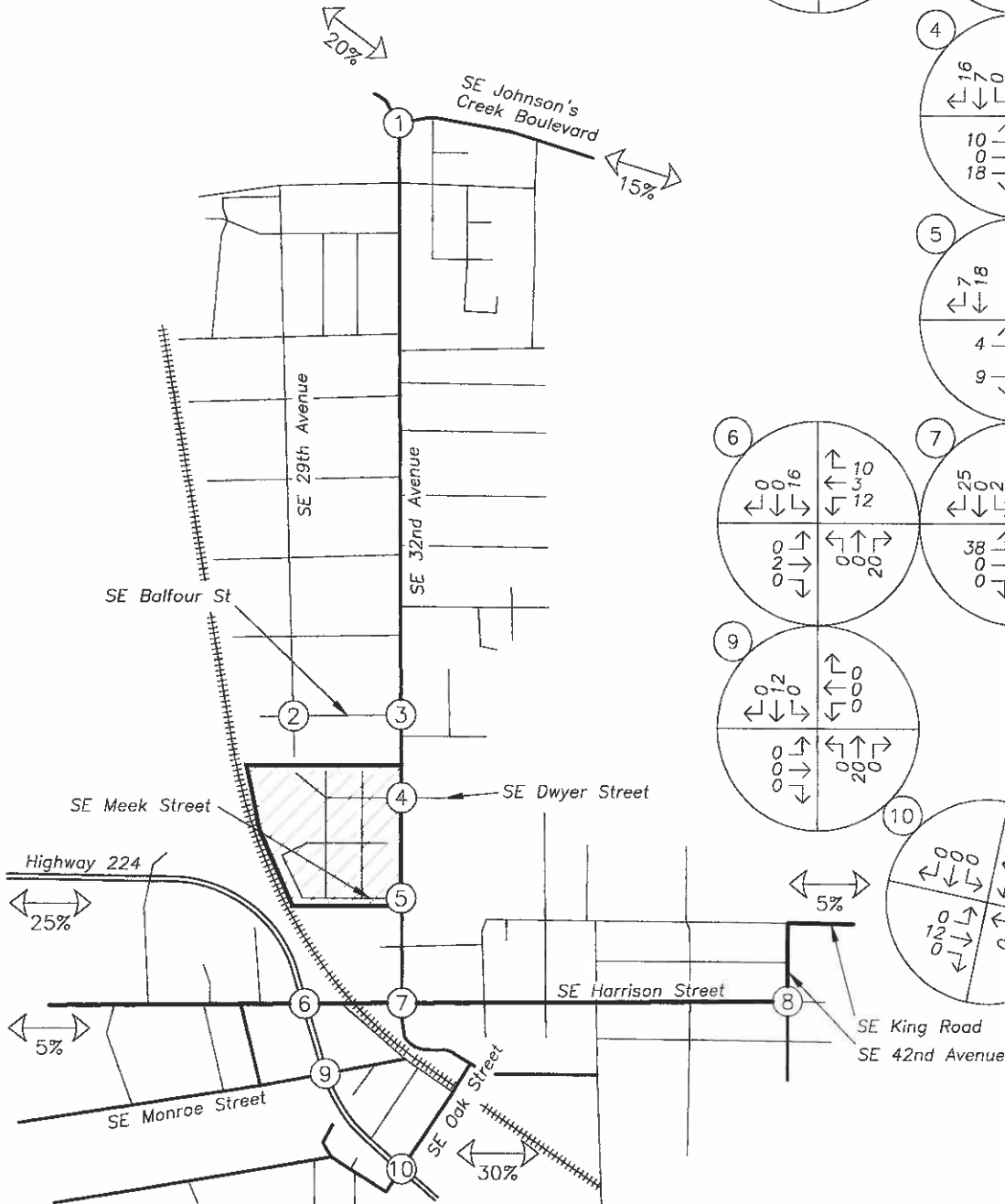
Figure 2  
 Hillside Master Plan

**LEGEND**

XX% PERCENT OF PRIMARY TRIPS

PRIMARY TRIP GENERATION			
	IN	OUT	TOTAL
PM	64	41	105

\*70% OF SITE TRIPS ENTER/EXIT VIA SE DWYER STREET  
 \*30% OF SITE TRIPS ENTER/EXIT VIA SE MEEK STREET



Plotted 8/24/2020



no scale



Appendix E Year 2022 Background Traffic  
Conditions Analysis  
Worksheets



**Intersection Level Of Service Report**

**Intersection 1: OR 99E (SE McLoughlin Blvd)/SE Milport Rd**

Control Type:	Signalized	Delay (sec / veh):	5.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

**Intersection Setup**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑↑↑			↑↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Base Volume Input [veh/h]	0	2362	0	0	1330	0	37	71	11	16	7	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	4.00	2.00	2.00	7.00	2.00	20.00	21.00	33.00	56.00	0.00	18.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2362	0	0	1330	0	37	71	11	16	7	31
Peak Hour Factor	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	656	0	0	369	0	10	20	3	4	2	9
Total Analysis Volume [veh/h]	0	2624	0	0	1478	0	41	79	12	18	8	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		1			0				0			0
v_di, Inbound Pedestrian Volume crossing major street [		0			0				1			0
v_co, Outbound Pedestrian Volume crossing minor street		0			0				0			0
v_ci, Inbound Pedestrian Volume crossing minor street [		0			0				0			0
v_ab, Corner Pedestrian Volume [ped/h]		0			0				0			0
Bicycle Volume [bicycles/h]		0			0				0			0

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	25	0	0	25	0
Amber [s]	0.0	4.7	0.0	0.0	4.7	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	0.7	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	98	0	0	98	0	0	22	0	0	22	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	0	0	0	12	0	0	9	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	14	0	0	38	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.4	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	5.40	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	97	97	12	12	12	12
g / C, Green / Cycle	0.81	0.81	0.10	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.39	0.30	0.08	0.01	0.02	0.02
s, saturation flow rate [veh/h]	6683	4889	1472	1190	1153	1385
c, Capacity [veh/h]	5429	3972	189	120	167	140
d1, Uniform Delay [s]	3.47	3.02	52.58	48.93	49.20	49.65
k, delay calibration	0.50	0.50	0.15	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	0.27	4.97	0.51	0.61	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.37	0.64	0.10	0.16	0.24
d, Delay for Lane Group [s/veh]	3.78	3.29	57.54	49.44	49.81	50.92
Lane Group LOS	A	A	E	D	D	D
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.02	1.99	3.76	0.34	0.74	0.98
50th-Percentile Queue Length [ft/ln]	75.39	49.85	94.07	8.56	18.46	24.62
95th-Percentile Queue Length [veh/ln]	5.43	3.59	6.77	0.62	1.33	1.77
95th-Percentile Queue Length [ft/ln]	135.71	89.72	169.32	15.41	33.23	44.32

**Movement, Approach, & Intersection Results**

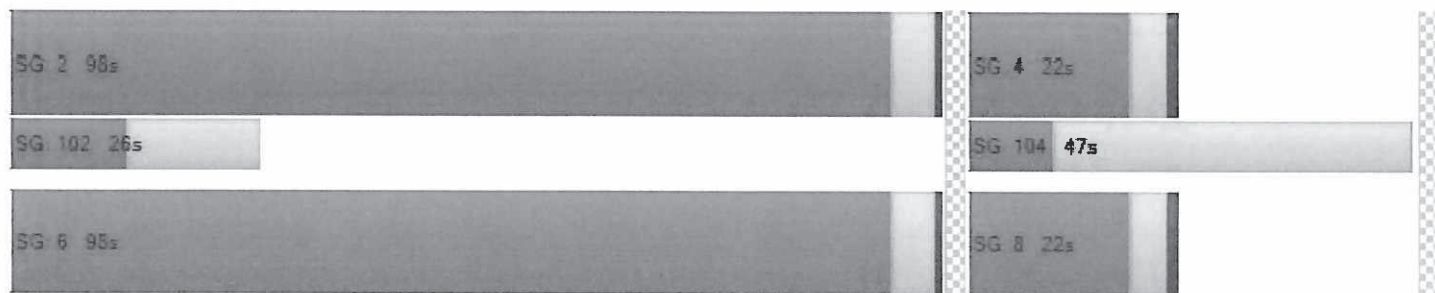
d_M, Delay for Movement [s/veh]	0.00	3.78	0.00	0.00	3.29	0.00	57.54	57.54	49.44	49.81	49.81	50.92
Movement LOS		A			A		E	E	D	D	D	D
d_A, Approach Delay [s/veh]	3.78		3.29		56.81			50.44				
Approach LOS	A		A		E			D				
d_I, Intersection Delay [s/veh]	5.90											
Intersection LOS	A											
Intersection V/C	0.499											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	0.0	16.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	12323.74	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.70	0.00	45.07	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.495	0.000	2.003	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1543	1543	283	283
d_b, Bicycle Delay [s]	3.13	3.13	44.20	44.20
I_b,int, Bicycle LOS Score for Intersection	2.642	2.373	1.777	1.659
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: SE Main St/OR 99E**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.6  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.079

**Intersection Setup**

Name	SE Main St		SE Main St		OR 99E	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑		↑		↔↗	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	SE Main St		SE Main St		OR 99E	
Base Volume Input [veh/h]	0	85	44	0	57	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	11.00	35.00	0.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	85	44	0	57	2
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	24	13	0	16	1
Total Analysis Volume [veh/h]	0	98	51	0	66	2
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	9.65	8.53
Movement LOS		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.25	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	6.37	0.15
d_A, Approach Delay [s/veh]	0.00		0.00		9.61	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.01					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 3: SE Main St/Site Access**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.5  
Level Of Service: A  
Volume to Capacity (v/c): 0.005

**Intersection Setup**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+						+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			10.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Base Volume Input [veh/h]	2	53	0	2	26	0	0	0	0	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	10.00	0.00	0.00	29.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	53	0	2	26	0	0	0	0	2	0	0
Peak Hour Factor	0.5700	0.5700	0.5700	0.5700	0.5700	0.5700	1.0000	1.0000	1.0000	0.5700	0.5700	0.5700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	23	0	1	11	0	0	0	0	1	0	0
Total Analysis Volume [veh/h]	4	93	0	4	46	0	0	0	0	4	0	0
Pedestrian Volume [ped/h]	0			0			0			4		



**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.29	0.00	0.00	7.40	0.00	0.00	0.00	0.00	0.00	9.50	9.95	8.77
Movement LOS	A	A	A	A	A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.19	0.19	0.19	0.20	0.20	0.20	0.00	0.00	0.00	0.38	0.38	0.38
d_A, Approach Delay [s/veh]	0.30			0.59			0.00			9.50		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.64											
Intersection LOS	A											

**Intersection Level Of Service Report**

**Intersection 4: OR 99E (SE McLoughlin Blvd)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

**Intersection Setup**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	370.00	100.00	100.00	375.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			Yes		

**Volumes**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	419	1477	97	86	602	21	21	52	177	72	54	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	5.00	11.00	7.00	2.00	6.00	10.00	4.00	7.00	11.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	89	0	0	0
Total Hourly Volume [veh/h]	419	1477	97	86	602	21	21	52	88	72	54	24
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	377	25	22	154	5	5	13	22	18	14	6
Total Analysis Volume [veh/h]	428	1507	99	88	614	21	21	53	90	73	55	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	15		0			15			0			
v_di, Inbound Pedestrian Volume crossing major street [	15		0			15			0			
v_co, Outbound Pedestrian Volume crossing minor street	1		0			0			1			
v_ci, Inbound Pedestrian Volume crossing minor street [	1		0			0			1			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	10		0			13			8			

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	93.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Split	Split	Overla	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	1	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	6	10	0	0	6	4	0	6	0
Maximum Green [s]	30	63	0	16	49	0	0	11	30	0	14	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	3.5	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	34	56	0	20	42	0	0	26	34	0	18	0
Vehicle Extension [s]	2.3	6.1	0.0	2.3	6.1	0.0	0.0	2.3	2.3	0.0	2.3	0.0
Walk [s]	0	7	0	0	11	0	0	8	0	0	0	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	21	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.50	2.50
g_i, Effective Green Time [s]	30	71	71	8	49	49	16	63	9	9
g / C, Green / Cycle	0.25	0.59	0.59	0.07	0.41	0.41	0.13	0.53	0.07	0.07
(v / s)_j Volume / Saturation Flow Rate	0.24	0.44	0.45	0.05	0.18	0.18	0.04	0.06	0.04	0.06
s, saturation flow rate [veh/h]	1752	1840	1793	1652	1795	1774	1725	1549	1360	1600
c, Capacity [veh/h]	438	1086	1059	110	730	722	225	816	144	155
d1, Uniform Delay [s]	39.66	8.08	8.26	55.20	25.67	25.67	47.42	14.28	55.29	54.38
k, delay calibration	0.43	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.45	4.53	5.10	7.85	1.90	1.92	0.52	0.04	1.18	2.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.74	0.76	0.80	0.44	0.44	0.33	0.11	0.42	0.59
d, Delay for Lane Group [s/veh]	74.12	12.61	13.37	63.05	27.57	27.60	47.93	14.32	56.47	56.60
Lane Group LOS	E	B	B	E	C	C	D	B	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.86	7.55	7.92	2.87	6.94	6.87	2.03	1.22	1.87	2.86
50th-Percentile Queue Length [ft/ln]	396.42	188.84	197.99	71.63	173.42	171.68	50.81	30.50	46.65	71.53
95th-Percentile Queue Length [veh/ln]	22.39	12.06	12.53	5.16	11.26	11.17	3.66	2.20	3.36	5.15
95th-Percentile Queue Length [ft/ln]	559.68	301.52	313.37	128.94	281.41	279.13	91.46	54.89	83.97	128.75

**Movement, Approach, & Intersection Results**

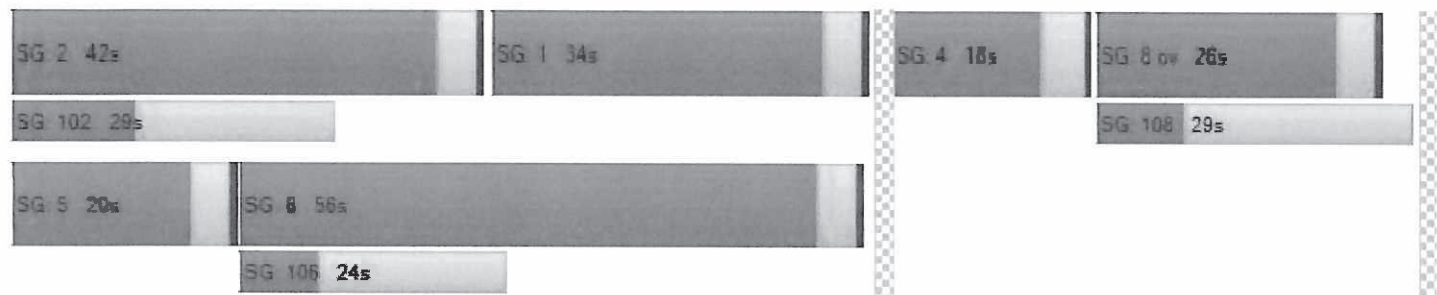
d_M, Delay for Movement [s/veh]	74.12	12.96	13.37	63.05	27.58	27.60	47.93	47.93	14.32	56.47	56.60	56.60
Movement LOS	E	B	B	E	C	C	D	D	B	E	E	E
d_A, Approach Delay [s/veh]	25.85			31.90			29.49			56.55		
Approach LOS	C			C			C			E		
d_I, Intersection Delay [s/veh]	28.99											
Intersection LOS	C											
Intersection V/C	0.694											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	15.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	277.18	0.00	0.00	3943.13
d_p, Pedestrian Delay [s]	48.60	0.00	45.94	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.000	0.000	2.365	2.039
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	633	367	225
d_b, Bicycle Delay [s]	19.36	28.02	40.28	47.45
l_b,int, Bicycle LOS Score for Intersection	3.238	2.156	1.977	1.810
Bicycle LOS	C	B	A	A

**Sequence**

Ring 1	2	1	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SE Main St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

**Intersection Setup**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	4	16	27	30	16	22	51	114	49	29	121	60
Base Volume Input [veh/h]	4	16	27	30	16	22	51	114	49	29	121	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	22.00	64.00	19.00	22.00	0.00	0.00	2.00	11.00	44.00	16.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	27	30	16	22	51	114	49	29	121	60
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	8	9	5	6	15	33	14	8	35	17
Total Analysis Volume [veh/h]	5	18	31	34	18	25	59	131	56	33	139	69
Pedestrian Volume [ped/h]	7			1			12			13		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	643	684	795	766
Degree of Utilization, x	0.08	0.11	0.31	0.31

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.27	0.38	1.32	1.35
95th-Percentile Queue Length [ft]	6.85	9.46	32.99	33.72
Approach Delay [s/veh]	9.11	8.93	9.55	9.84
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.55			
Intersection LOS	A			



**Intersection Level Of Service Report**  
**Intersection 6: SE 21st St/SE Harrison St**

Control Type: All-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.4  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.333

**Intersection Setup**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	22	2	16	4	4	7	4	151	16	42	182	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	45.00	0.00	33.00	0.00	0.00	25.00	0.00	14.00	11.00	27.00	14.00	50.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	2	16	4	4	7	4	151	16	42	182	4
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	5	1	1	2	1	43	5	12	52	1
Total Analysis Volume [veh/h]	25	2	18	5	5	8	5	172	18	48	207	5
Pedestrian Volume [ped/h]	12			13			8			4		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	653	717	792	781
Degree of Utilization, x	0.07	0.03	0.25	0.33

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.22	0.08	0.97	1.46
95th-Percentile Queue Length [ft]	5.54	1.93	24.18	36.61
Approach Delay [s/veh]	8.93	8.15	9.02	9.89
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.42			
Intersection LOS	A			

**Intersection Level Of Service Report**  
**Intersection 7: SE 23rd St/SE Harrison St**

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

**Intersection Setup**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↷		↶		↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Base Volume Input [veh/h]	7	164	7	5	222	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	16.00	0.00	33.00	17.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	164	7	5	222	13
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	47	2	1	64	4
Total Analysis Volume [veh/h]	8	189	8	6	255	15
Pedestrian Volume [ped/h]	0		5		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	7.78	0.00	11.64	11.30	0.00	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh/ln]	0.53	0.53	0.08	0.08	0.00	0.00
95th-Percentile Queue Length [ft/ln]	13.32	13.32	1.89	1.89	0.00	0.00
d_A, Approach Delay [s/veh]	0.32		11.49		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.46					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 8: OR 224 (Milwaukie Expy)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	50.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

**Intersection Setup**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↘			↵ ↑ ↘			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	160.00	100.00	160.00	615.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	59	1862	65	101	917	14	19	128	41	65	191	329
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	5.00	4.00	1.00	6.00	0.00	0.00	16.00	18.00	3.00	8.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	1862	65	101	917	14	19	128	41	65	191	329
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	501	17	27	247	4	5	34	11	17	51	88
Total Analysis Volume [veh/h]	63	2002	70	109	986	15	20	138	44	70	205	354
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	10	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			2			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			2		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	2.0	0.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	15	77	0	15	77	0	0	28	0	0	28	0
Vehicle Extension [s]	2.3	3.9	0.0	2.3	3.9	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	5	10	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	18	0	10	22	0	0	29	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	2.00	5.00	5.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	67	67	9	70	70	28	28	28	28
g / C, Green / Cycle	0.05	0.56	0.56	0.07	0.58	0.58	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.58	0.04	0.06	0.29	0.01	10000.00	0.13	0.28	0.27
s, saturation flow rate [veh/h]	1609	3475	1564	1795	3446	1615	0	1391	945	1381
c, Capacity [veh/h]	78	1940	873	134	2014	944	60	325	259	323
d1, Uniform Delay [s]	55.53	15.32	6.95	54.69	14.52	10.46	59.98	40.53	49.80	45.97
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.17	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.08	29.10	0.18	7.16	0.85	0.03	2.38	2.33	58.03	93.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	1.03	0.08	0.81	0.49	0.02	0.33	0.56	1.01	1.14
d, Delay for Lane Group [s/veh]	66.61	44.42	7.13	61.85	15.37	10.49	62.37	42.87	107.83	139.84
Lane Group LOS	E	F	A	E	B	B	E	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.07	23.36	0.52	3.46	7.51	0.17	0.65	5.00	12.11	18.04
50th-Percentile Queue Length [ft/ln]	51.70	584.02	12.95	86.45	187.81	4.19	16.33	124.97	302.65	451.10
95th-Percentile Queue Length [veh/ln]	3.72	32.09	0.93	6.22	12.01	0.30	1.18	8.67	17.89	26.86
95th-Percentile Queue Length [ft/ln]	93.07	802.22	23.31	155.62	300.19	7.54	29.39	216.64	447.34	671.60



**Movement, Approach, & Intersection Results**

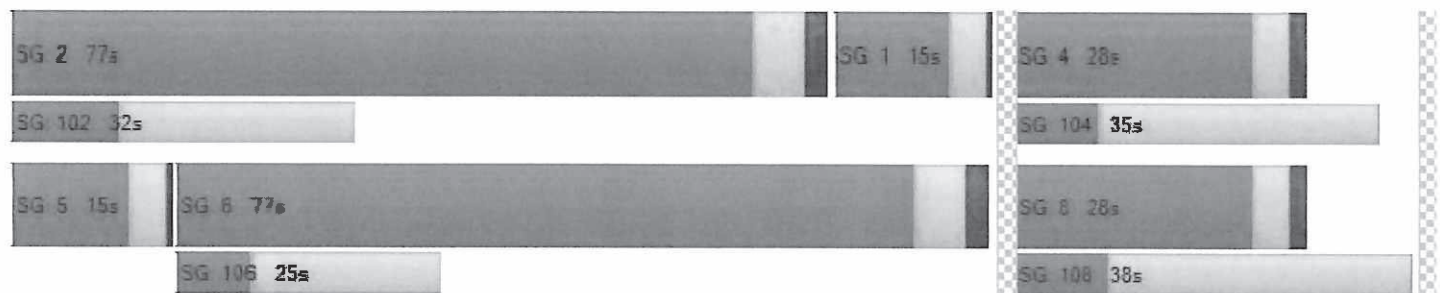
d_M, Delay for Movement [s/veh]	66.61	44.42	7.13	61.85	15.37	10.49	62.37	42.87	42.87	107.83	110.04	139.84
Movement LOS	E	F	A	E	B	B	E	D	D	F	F	F
d_A, Approach Delay [s/veh]	43.85			19.87			44.80			126.57		
Approach LOS	D			B			D			F		
d_I, Intersection Delay [s/veh]	50.13											
Intersection LOS	D											
Intersection V/C	0.978											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	14.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	3413.25	0.00	0.00
d_p, Pedestrian Delay [s]	47.70	48.60	46.82	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.266	3.250	2.241	2.337
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	1167	383	383
d_b, Bicycle Delay [s]	10.42	10.42	39.20	39.20
I_b,int, Bicycle LOS Score for Intersection	3.321	2.475	1.726	2.079
Bicycle LOS	C	B	A	B

**Sequence**

Ring 1	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 1: OR 99E (SE McLoughlin Blvd)/SE Milport Rd**

Control Type:	Signalized	Delay (sec / veh):	3.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

**Intersection Setup**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑↑↑			↑↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Base Volume Input [veh/h]	0	1786	0	0	3187	0	50	19	39	34	10	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	9.00	8.00	0.00	12.00	0.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1786	0	0	3187	0	50	19	39	34	10	40
Peak Hour Factor	1.0000	0.9600	1.0000	1.0000	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	465	0	0	830	0	13	5	10	9	3	10
Total Analysis Volume [veh/h]	0	1860	0	0	3320	0	52	20	41	35	10	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	86.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	25	0	0	25	0
Amber [s]	0.0	4.7	0.0	0.0	4.7	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	0.7	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	98	0	0	98	0	0	22	0	0	22	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	0	0	0	12	0	0	9	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	14	0	0	38	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.4	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	5.40	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	101	101	8	8	8	8
g / C, Green / Cycle	0.85	0.85	0.07	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.27	0.65	0.05	0.03	0.03	0.03
s, saturation flow rate [veh/h]	6792	5094	1532	1608	1479	1540
c, Capacity [veh/h]	5754	4316	153	106	151	101
d1, Uniform Delay [s]	1.92	0.00	54.66	53.57	53.74	53.65
k, delay calibration	0.50	0.50	0.15	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	1.37	3.20	3.27	1.55	3.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.77	0.47	0.39	0.30	0.41
d, Delay for Lane Group [s/veh]	2.07	1.37	57.86	56.84	55.29	57.46
Lane Group LOS	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.04	0.55	2.24	1.27	1.36	1.31
50th-Percentile Queue Length [ft/ln]	26.09	13.71	56.10	31.81	34.04	32.85
95th-Percentile Queue Length [veh/ln]	1.88	0.99	4.04	2.29	2.45	2.37
95th-Percentile Queue Length [ft/ln]	46.96	24.68	100.98	57.26	61.28	59.14

**Movement, Approach, & Intersection Results**

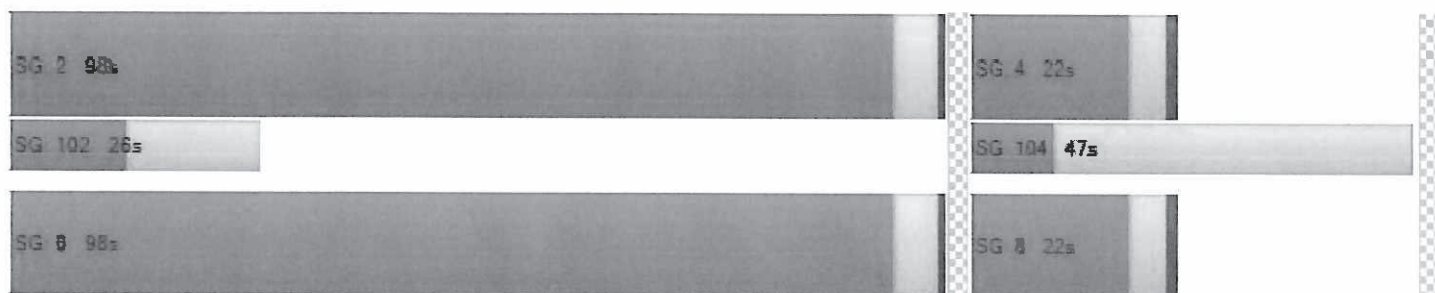
d_M, Delay for Movement [s/veh]	0.00	2.07	0.00	0.00	1.37	0.00	57.86	57.86	56.84	55.29	55.29	57.46
Movement LOS		A			A		E	E	E	E	E	E
d_A, Approach Delay [s/veh]	2.07		1.37		57.49		56.34					
Approach LOS	A		A		E		E					
d_I, Intersection Delay [s/veh]	3.68											
Intersection LOS	A											
Intersection V/C	0.736											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	0.0	16.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	11886.32	0.00	13719.37	0.00
d_p, Pedestrian Delay [s]	47.70	0.00	45.07	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.754	0.000	1.997	0.000
Crosswalk LOS	D	F	A	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1543	1543	283	283
d_b, Bicycle Delay [s]	3.13	3.13	44.20	44.23
I_b,int, Bicycle LOS Score for Intersection	2.327	3.386	1.746	1.703
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: SE Main St/OR 99E**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.4  
Level Of Service: A  
Volume to Capacity (v/c): 0.008

**Intersection Setup**

Name	SE Main St		SE Main St		OR 99E	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑		↑		↗↘	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	SE Main St		SE Main St		OR 99E	
Base Volume Input [veh/h]	0	44	93	0	6	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	13.00	8.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	44	93	0	6	10
Peak Hour Factor	1.0000	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	14	29	0	2	3
Total Analysis Volume [veh/h]	0	54	115	0	7	12
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	9.40	8.87
Movement LOS		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.64	0.97
d_A, Approach Delay [s/veh]	0.00		0.00		9.06	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	A					



**Intersection Level Of Service Report**  
**Intersection 3: SE Main St/Site Access**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 10.5  
Level Of Service: B  
Volume to Capacity (v/c): 0.038

**Intersection Setup**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+						+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			10.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Base Volume Input [veh/h]	3	49	10	6	121	1	0	0	0	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	15.00	0.00	0.00	4.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	49	10	6	121	1	0	0	0	19	0	3
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	1.0000	1.0000	1.0000	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	3	2	41	0	0	0	0	6	0	1
Total Analysis Volume [veh/h]	4	66	14	8	164	1	0	0	0	26	0	4
Pedestrian Volume [ped/h]	0			0			0			6		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	7.39	0.00	0.00	0.00	0.00	0.00	10.52	10.92	8.89
Movement LOS	A	A	A	A	A	A				B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.13	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	0.40	0.40	0.40	0.00	0.00	0.00	3.31	3.31	3.31
d_A, Approach Delay [s/veh]	0.36			0.34			0.00			10.31		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	1.39											
Intersection LOS	B											

**Intersection Level Of Service Report**

**Intersection 4: OR 99E (SE McLoughlin Blvd)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	44.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.965

**Intersection Setup**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	370.00	100.00	100.00	375.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			Yes		

**Volumes**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	272	835	169	105	1707	15	30	82	492	219	51	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	4.00	4.00	1.00	2.00	2.00	0.00	6.00	1.00	2.00	9.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	0	0	0	246	0	0	22
Total Hourly Volume [veh/h]	272	835	161	105	1707	15	30	82	246	219	51	13
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	211	41	27	431	4	8	21	62	55	13	3
Total Analysis Volume [veh/h]	275	843	163	106	1724	15	30	83	248	221	52	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		12			0			12			0	
v_di, Inbound Pedestrian Volume crossing major street		12			0			12			0	
v_co, Outbound Pedestrian Volume crossing minor street		0			0			0			1	
v_ci, Inbound Pedestrian Volume crossing minor street		1			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			13			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Split	Split	Overla	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	1	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	6	10	0	0	6	4	0	6	0
Maximum Green [s]	19	66	0	15	62	0	0	10	19	0	15	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	3.5	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	23	60	0	19	56	0	0	26	23	0	15	0
Vehicle Extension [s]	2.3	6.1	0.0	2.3	6.1	0.0	0.0	2.3	2.3	0.0	2.3	0.0
Walk [s]	0	7	0	0	11	0	0	8	0	0	0	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	21	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.50	2.50
g_i, Effective Green Time [s]	19	68	68	9	58	58	16	39	11	11
g / C, Green / Cycle	0.16	0.57	0.57	0.07	0.48	0.48	0.13	0.32	0.09	0.09
(v / s)_j Volume / Saturation Flow Rate	0.15	0.28	0.28	0.06	0.47	0.47	0.06	0.16	0.08	0.08
s, saturation flow rate [veh/h]	1781	1840	1724	1795	1870	1864	1786	1571	1781	1692
c, Capacity [veh/h]	282	1043	978	134	904	901	237	508	158	150
d1, Uniform Delay [s]	47.14	7.94	7.97	54.66	29.97	30.03	48.24	32.46	54.35	54.34
k, delay calibration	0.40	0.50	0.50	0.07	0.50	0.50	0.07	0.42	0.12	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.16	1.68	1.84	6.39	22.11	22.57	0.91	2.78	21.90	22.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.49	0.50	0.79	0.96	0.96	0.48	0.49	0.93	0.93
d, Delay for Lane Group [s/veh]	89.30	9.61	9.81	61.05	52.08	52.61	49.15	35.24	76.25	76.84
Lane Group LOS	F	A	A	E	D	D	D	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	11.08	4.46	4.28	3.39	28.89	29.02	3.17	6.09	5.43	5.18
50th-Percentile Queue Length [ft/ln]	276.96	111.46	107.05	84.79	722.20	725.58	79.29	152.14	135.85	129.55
95th-Percentile Queue Length [veh/ln]	16.54	7.92	7.68	6.10	37.70	37.86	5.71	10.13	9.26	8.92
95th-Percentile Queue Length [ft/ln]	413.43	198.03	191.89	152.62	942.56	946.46	142.73	253.28	231.42	222.88

**Movement, Approach, & Intersection Results**

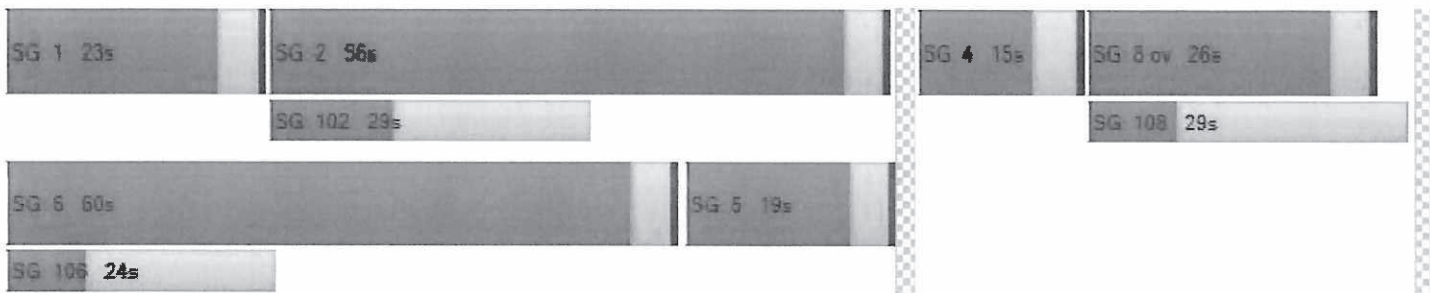
d_M, Delay for Movement [s/veh]	89.30	9.69	9.81	61.05	52.34	52.61	49.15	49.15	35.24	76.45	76.84	76.84
Movement LOS	F	A	A	E	D	D	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	26.80			52.84			39.59			76.54		
Approach LOS	C			D			D			E		
d_I, Intersection Delay [s/veh]	44.53											
Intersection LOS	D											
Intersection V/C	0.965											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	15.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	300.78	0.00	0.00	6662.70
d_p, Pedestrian Delay [s]	48.60	0.00	45.94	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.051	0.000	2.661	2.130
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	867	367	175
d_b, Bicycle Delay [s]	17.08	19.27	40.28	50.11
I_b,int, Bicycle LOS Score for Intersection	2.623	3.082	2.561	2.068
Bicycle LOS	B	C	B	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SE Main St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

**Intersection Setup**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	13	40	48	68	63	46	39	161	56	39	149	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	25.00	2.00	5.00	3.00	4.00	2.00	10.00	22.00	5.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	40	48	68	63	46	39	161	56	39	149	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	11	13	18	17	13	11	44	15	11	40	9
Total Analysis Volume [veh/h]	14	43	52	74	68	50	42	175	61	42	162	37
Pedestrian Volume [ped/h]	6			0			12			26		



**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	642	662	706	684
Degree of Utilization, x	0.17	0.29	0.39	0.35

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.61	1.20	1.88	1.59
95th-Percentile Queue Length [ft]	15.20	30.06	47.05	39.66
Approach Delay [s/veh]	9.75	10.65	11.37	11.10
Approach LOS	A	B	B	B
Intersection Delay [s/veh]	10.91			
Intersection LOS	B			

**Intersection Level Of Service Report**  
**Intersection 6: SE 21st St/SE Harrison St**

Control Type: All-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 10.6  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.426

**Intersection Setup**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	17	9	43	21	6	21	11	253	13	39	184	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	25.00	0.00	10.00	0.00	0.00	0.00	0.00	6.00	0.00	19.00	7.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	9	43	21	6	21	11	253	13	39	184	19
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	3	13	6	2	6	3	74	4	11	54	6
Total Analysis Volume [veh/h]	20	11	51	25	7	25	13	298	15	46	216	22
Pedestrian Volume [ped/h]	7			10			8			5		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	675	676	765	749
Degree of Utilization, x	0.12	0.08	0.43	0.38




**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.41	0.28	2.15	1.78
95th-Percentile Queue Length [ft]	10.32	6.88	53.63	44.44
Approach Delay [s/veh]	9.07	8.81	11.16	10.71
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	10.58			
Intersection LOS	B			

**Intersection Level Of Service Report**  
**Intersection 7: SE 23rd St/SE Harrison St**

Control Type:	Two-way stop	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Base Volume Input [veh/h]	10	307	6	9	232	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	6.00	0.00	17.00	8.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	307	6	9	232	9
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	87	2	3	66	3
Total Analysis Volume [veh/h]	11	349	7	10	264	10
Pedestrian Volume [ped/h]	0		3		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	7.97	0.00	13.31	11.14	0.00	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh/ln]	1.24	1.24	0.10	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	30.98	30.98	2.49	2.49	0.00	0.00
d_A, Approach Delay [s/veh]	0.24		12.04		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 8: OR 224 (Milwaukie Expy)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	40.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

**Intersection Setup**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	160.00	100.00	160.00	615.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	65	1520	89	312	1815	32	5	271	58	69	194	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	2.00	3.00	1.00	3.00	0.00	0.00	5.00	6.00	4.00	6.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	1520	89	312	1815	32	5	271	58	69	194	172
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	392	23	80	468	8	1	70	15	18	50	44
Total Analysis Volume [veh/h]	67	1567	92	322	1871	33	5	279	60	71	200	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	10	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	4			6			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			4			6		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing minor street	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	72.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	2.0	0.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	15	70	0	30	85	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	3.9	0.0	2.3	3.9	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	5	10	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	18	0	10	22	0	0	29	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	2.00	5.00	5.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	59	59	25	78	78	30	30	30	30
g / C, Green / Cycle	0.05	0.46	0.46	0.19	0.60	0.60	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.44	0.06	0.18	0.53	0.02	0.12	0.12	0.22	0.19
s, saturation flow rate [veh/h]	1709	3560	1555	1795	3532	1614	1366	1496	727	1478
c, Capacity [veh/h]	84	1631	713	345	2122	970	338	339	205	335
d1, Uniform Delay [s]	60.05	24.18	14.32	51.68	22.00	10.56	42.87	44.25	53.86	48.25
k, delay calibration	0.07	0.50	0.50	0.35	0.50	0.50	0.12	0.13	0.40	0.31
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.87	14.70	0.37	27.27	5.70	0.07	1.19	1.64	20.91	16.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.96	0.13	0.93	0.88	0.03	0.48	0.54	0.78	0.86
d, Delay for Lane Group [s/veh]	69.92	38.88	14.69	78.95	27.70	10.63	44.06	45.89	74.76	64.49
Lane Group LOS	E	D	B	E	C	B	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.35	21.59	1.20	12.74	23.74	0.39	4.60	5.39	6.47	10.53
50th-Percentile Queue Length [ft/ln]	58.82	539.72	29.89	318.62	593.42	9.78	114.95	134.70	161.71	263.17
95th-Percentile Queue Length [veh/ln]	4.24	29.21	2.15	18.60	31.73	0.70	8.11	9.19	10.64	15.85
95th-Percentile Queue Length [ft/ln]	105.88	730.22	53.80	465.00	793.18	17.60	202.86	229.87	265.99	396.19

**Movement, Approach, & Intersection Results**

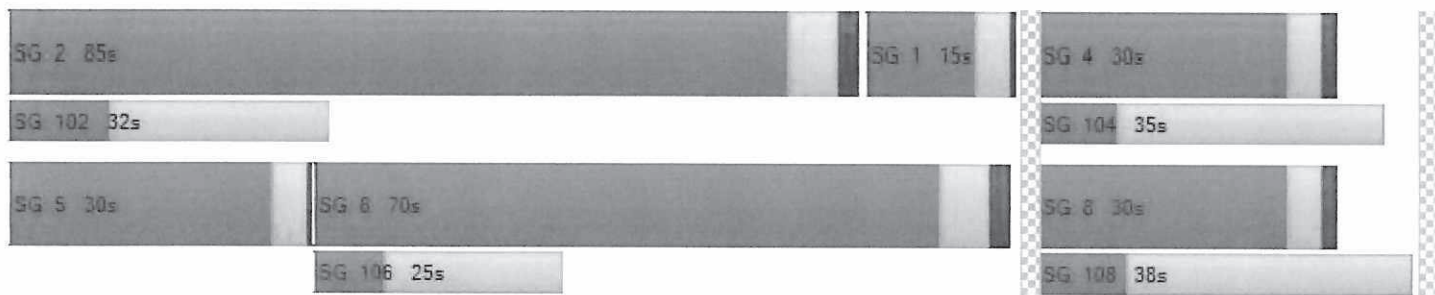
d_M, Delay for Movement [s/veh]	69.92	38.88	14.69	78.95	27.70	10.63	44.06	44.86	45.89	74.76	69.08	64.49
Movement LOS	E	D	B	E	C	B	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	38.79			34.86			45.03			68.16		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	40.17											
Intersection LOS	D											
Intersection V/C	0.895											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	14.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2461.06	1379.14	11526.78	7524.62
d_p, Pedestrian Delay [s]	52.65	53.55	51.75	54.47
l_p,int, Pedestrian LOS Score for Intersection	3.378	3.338	2.277	2.380
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	969	1200	385	385
d_b, Bicycle Delay [s]	17.28	10.40	42.45	42.40
l_b,int, Bicycle LOS Score for Intersection	2.984	3.396	1.843	1.929
Bicycle LOS	C	C	A	A

**Sequence**

Ring 1	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix F Year 2022 Total Traffic  
Conditions Analysis  
Worksheets

**Intersection Level Of Service Report**

**Intersection 1: OR 99E (SE McLoughlin Blvd)/SE Milport Rd**

Control Type:	Signalized	Delay (sec / veh):	6.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

**Intersection Setup**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑↑↑			↑↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	OR 99E		OR 99E		SE Milport Rd			SE Milport Rd				
Base Volume Input [veh/h]	0	2362	0	0	1338	0	37	71	11	16	7	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	4.00	2.00	2.00	7.00	2.00	20.00	21.00	33.00	56.00	0.00	18.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2362	0	0	1338	0	37	71	11	16	7	52
Peak Hour Factor	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	656	0	0	372	0	10	20	3	4	2	14
Total Analysis Volume [veh/h]	0	2624	0	0	1487	0	41	79	12	18	8	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		1			0				0			0
v_di, Inbound Pedestrian Volume crossing major street [		0			0				1			0
v_co, Outbound Pedestrian Volume crossing minor street		0			0				0			0
v_ci, Inbound Pedestrian Volume crossing minor street [		0			0				0			0
v_ab, Corner Pedestrian Volume [ped/h]		0			0				0			0
Bicycle Volume [bicycles/h]		0			0				0			0

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	25	0	0	25	0
Amber [s]	0.0	4.7	0.0	0.0	4.7	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	0.7	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	98	0	0	98	0	0	22	0	0	22	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Walk [s]	0	0	0	0	12	0	0	9	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	14	0	0	38	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.4	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	5.40	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	97	97	12	12	12	12
g / C, Green / Cycle	0.81	0.81	0.10	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.39	0.30	0.08	0.01	0.02	0.04
s, saturation flow rate [veh/h]	6683	4889	1472	1190	1153	1385
c, Capacity [veh/h]	5429	3972	189	120	167	140
d1, Uniform Delay [s]	3.47	3.03	52.58	48.93	49.20	50.55
k, delay calibration	0.50	0.50	0.15	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	0.27	4.97	0.51	0.61	2.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.37	0.64	0.10	0.16	0.42
d, Delay for Lane Group [s/veh]	3.78	3.30	57.54	49.44	49.81	53.34
Lane Group LOS	A	A	E	D	D	D
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.02	2.01	3.76	0.34	0.74	1.73
50th-Percentile Queue Length [ft/ln]	75.39	50.28	94.07	8.56	18.46	43.32
95th-Percentile Queue Length [veh/ln]	5.43	3.62	6.77	0.62	1.33	3.12
95th-Percentile Queue Length [ft/ln]	135.71	90.51	169.32	15.41	33.23	77.97

**Movement, Approach, & Intersection Results**

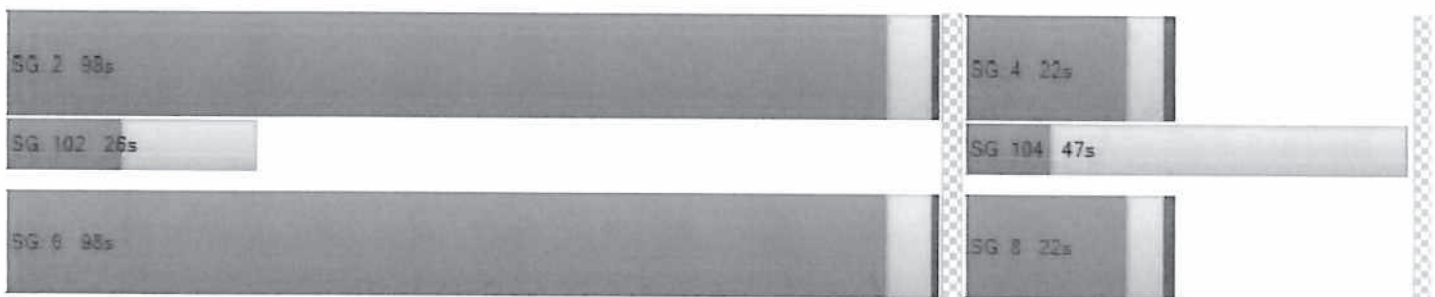
d_M, Delay for Movement [s/veh]	0.00	3.78	0.00	0.00	3.30	0.00	57.54	57.54	49.44	49.81	49.81	53.34
Movement LOS		A			A		E	E	D	D	D	D
d_A, Approach Delay [s/veh]		3.78			3.30			56.81				52.24
Approach LOS		A			A			E				D
d_I, Intersection Delay [s/veh]							6.18					
Intersection LOS							A					
Intersection V/C							0.499					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]		13.0			0.0			16.0			0.0	
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]		0.00			0.00			0.00			0.00	
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]		12323.74			0.00			0.00			0.00	
d_p, Pedestrian Delay [s]		47.70			0.00			45.07			0.00	
I_p,int, Pedestrian LOS Score for Intersection		3.497			0.000			2.003			0.000	
Crosswalk LOS		C			F			B			F	
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]		2000			2000			2000			2000	
c_b, Capacity of the bicycle lane [bicycles/h]		1543			1543			283			283	
d_b, Bicycle Delay [s]		3.13			3.13			44.20			44.20	
I_b,int, Bicycle LOS Score for Intersection		2.642			2.377			1.777			1.698	
Bicycle LOS		B			B			A			A	

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 2: SE Main St/OR 99E**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.8  
Level Of Service: A  
Volume to Capacity (v/c): 0.081

**Intersection Setup**

Name	SE Main St		SE Main St		OR 99E	
	Northbound		Southbound		Eastbound	
Lane Configuration	↑		↑		↗ ↘	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	SE Main St		SE Main St		OR 99E	
Base Volume Input [veh/h]	0	106	44	0	57	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	11.00	35.00	0.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	106	44	0	57	6
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	30	13	0	16	2
Total Analysis Volume [veh/h]	0	122	51	0	66	7
Pedestrian Volume [ped/h]	0	0	0	0	0	0

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.08	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	9.81	8.54
Movement LOS		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.26	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	6.59	0.52
d_A, Approach Delay [s/veh]	0.00		0.00		9.69	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.87					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 3: SE Main St/Site Access**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 10.2  
Level Of Service: B  
Volume to Capacity (v/c): 0.064

**Intersection Setup**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+						+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			35.00			10.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	2	53	13	6	26	0	0	0	0	28	0	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	10.00	0.00	0.00	29.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	53	13	6	26	0	0	0	0	28	0	21
Peak Hour Factor	0.5700	0.5700	0.5700	0.5700	0.5700	0.5700	1.0000	1.0000	1.0000	0.5700	0.5700	0.5700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	23	6	3	11	0	0	0	0	12	0	9
Total Analysis Volume [veh/h]	4	93	23	11	46	0	0	0	0	49	0	37
Pedestrian Volume [ped/h]	0			0			0			4		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.04
d_M, Delay for Movement [s/veh]	7.29	0.00	0.00	7.46	0.00	0.00	0.00	0.00	0.00	0.00	10.17	0.00	9.29
Movement LOS	A	A	A	A	A	A					B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.34	0.34	0.34
95th-Percentile Queue Length [ft/ln]	0.19	0.19	0.19	0.56	0.56	0.56	0.00	0.00	0.00	0.00	8.55	8.55	8.55
d_A, Approach Delay [s/veh]	0.24			1.44			0.00			9.79			
Approach LOS	A			A			A			A			
d_I, Intersection Delay [s/veh]	3.62												
Intersection LOS	B												

**Intersection Level Of Service Report**

**Intersection 4: OR 99E (SE McLoughlin Blvd)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

**Intersection Setup**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	370.00	100.00	100.00	375.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			Yes		

**Volumes**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	419	1481	97	94	602	21	21	53	177	84	56	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	5.00	11.00	7.00	2.00	6.00	10.00	4.00	7.00	11.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	89	0	0	0
Total Hourly Volume [veh/h]	419	1481	97	94	602	21	21	53	88	84	56	24
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	378	25	24	154	5	5	14	22	21	14	6
Total Analysis Volume [veh/h]	428	1511	99	96	614	21	21	54	90	86	57	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		15			0			15			0	
v_di, Inbound Pedestrian Volume crossing major street [		15			0			15			0	
v_co, Outbound Pedestrian Volume crossing minor street		1			0			0			1	
v_ci, Inbound Pedestrian Volume crossing minor street [		1			0			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		10			0			13			8	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	93.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Split	Split	Overla	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	1	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	6	10	0	0	6	4	0	6	0
Maximum Green [s]	30	63	0	16	49	0	0	11	30	0	14	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	3.5	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	34	56	0	20	42	0	0	26	34	0	18	0
Vehicle Extension [s]	2.3	6.1	0.0	2.3	6.1	0.0	0.0	2.3	2.3	0.0	2.3	0.0
Walk [s]	0	7	0	0	11	0	0	8	0	0	0	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	21	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.50	2.50
g_i, Effective Green Time [s]	30	69	69	9	48	48	16	64	10	10
g / C, Green / Cycle	0.25	0.58	0.58	0.07	0.40	0.40	0.13	0.53	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.24	0.44	0.45	0.06	0.18	0.18	0.04	0.06	0.05	0.06
s, saturation flow rate [veh/h]	1752	1840	1794	1652	1795	1774	1726	1549	1360	1591
c, Capacity [veh/h]	438	1063	1036	118	717	708	226	828	151	166
d1, Uniform Delay [s]	39.66	9.15	9.36	54.92	26.34	26.35	47.37	13.82	54.95	53.82
k, delay calibration	0.43	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.44	5.05	5.73	7.95	2.00	2.03	0.52	0.03	1.27	2.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.76	0.78	0.81	0.45	0.45	0.33	0.11	0.45	0.60
d, Delay for Lane Group [s/veh]	74.10	14.20	15.09	62.87	28.34	28.37	47.89	13.85	56.22	55.89
Lane Group LOS	E	B	B	E	C	C	D	B	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.85	8.81	9.24	3.12	7.05	6.98	2.06	1.20	2.11	3.07
50th-Percentile Queue Length [ft/ln]	396.37	220.16	230.94	78.04	176.20	174.43	51.49	29.89	52.66	76.72
95th-Percentile Queue Length [veh/ln]	22.39	13.67	14.22	5.62	11.40	11.31	3.71	2.15	3.79	5.52
95th-Percentile Queue Length [ft/ln]	559.63	341.83	355.55	140.48	285.05	282.73	92.69	53.80	94.78	138.09



**Movement, Approach, & Intersection Results**

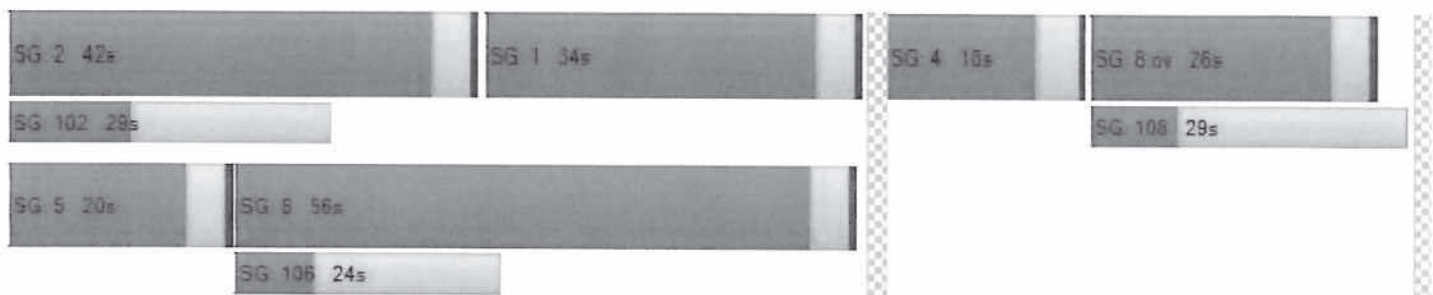
d_M, Delay for Movement [s/veh]	74.10	14.61	15.09	62.87	28.36	28.37	47.89	47.89	13.85	56.20	55.89	55.89
Movement LOS	E	B	B	E	C	C	D	D	B	E	E	E
d_A, Approach Delay [s/veh]	27.13			32.89			29.32			56.02		
Approach LOS	C			C			C			E		
d_I, Intersection Delay [s/veh]	30.16											
Intersection LOS	C											
Intersection V/C	0.707											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	15.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	269.18	0.00	0.00	3943.13
d_p, Pedestrian Delay [s]	48.60	0.00	45.94	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.026	0.000	2.366	2.044
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	633	367	225
d_b, Bicycle Delay [s]	19.36	28.02	40.28	47.45
I_b,int, Bicycle LOS Score for Intersection	3.241	2.163	1.979	1.835
Bicycle LOS	C	B	A	A

**Sequence**

Ring 1	2	1	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SE Main St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.330

**Intersection Setup**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	4	16	27	42	16	36	60	114	49	29	121	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	22.00	64.00	19.00	22.00	0.00	0.00	2.00	11.00	44.00	16.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	16	27	42	16	36	60	114	49	29	121	64
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	8	12	5	10	17	33	14	8	35	18
Total Analysis Volume [veh/h]	5	18	31	48	18	41	69	131	56	33	139	74
Pedestrian Volume [ped/h]	7			1			12			13		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	630	684	775	751
Degree of Utilization, x	0.09	0.16	0.33	0.33

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.28	0.55	1.45	1.43
95th-Percentile Queue Length [ft]	7.00	13.80	36.15	35.74
Approach Delay [s/veh]	9.24	9.24	9.91	10.11
Approach LOS	A	A	A	B
Intersection Delay [s/veh]	9.82			
Intersection LOS	A			

**Intersection Level Of Service Report**  
**Intersection 6: SE 21st St/SE Harrison St**

Control Type: All-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.5  
Level Of Service: A  
Volume to Capacity (v/c): 0.339

**Intersection Setup**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	22	2	16	4	4	7	4	163	16	42	186	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	45.00	0.00	33.00	0.00	0.00	25.00	0.00	14.00	11.00	27.00	14.00	50.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	2	16	4	4	7	4	163	16	42	186	4
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	5	1	1	2	1	46	5	12	53	1
Total Analysis Volume [veh/h]	25	2	18	5	5	8	5	185	18	48	211	5
Pedestrian Volume [ped/h]	12			13			8			4		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	648	711	790	779
Degree of Utilization, x	0.07	0.03	0.26	0.34

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.22	0.08	1.06	1.50
95th-Percentile Queue Length [ft]	5.58	1.95	26.41	37.61
Approach Delay [s/veh]	8.97	8.19	9.18	9.98
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.52			
Intersection LOS	A			

**Intersection Level Of Service Report**  
**Intersection 7: SE 23rd St/SE Harrison St**

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

**Intersection Setup**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↗		↘		↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Base Volume Input [veh/h]	7	176	7	5	226	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	16.00	0.00	33.00	17.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	176	7	5	226	13
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	51	2	1	65	4
Total Analysis Volume [veh/h]	8	202	8	6	260	15
Pedestrian Volume [ped/h]	0		5		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	7.79	0.00	11.80	11.35	0.00	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh/ln]	0.58	0.58	0.08	0.08	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.44	14.44	1.92	1.92	0.00	0.00
d_A, Approach Delay [s/veh]	0.30		11.61		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	B					

**Intersection Level Of Service Report**

**Intersection 8: OR 224 (Milwaukie Expy)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

**Intersection Setup**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	160.00	100.00	160.00	615.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	62	1862	65	101	917	14	19	130	51	65	192	329
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	5.00	4.00	1.00	6.00	0.00	0.00	16.00	18.00	3.00	8.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1862	65	101	917	14	19	130	51	65	192	329
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	501	17	27	247	4	5	35	14	17	52	88
Total Analysis Volume [veh/h]	67	2002	70	109	986	15	20	140	55	70	206	354
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	10	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		2		0		0		0			
v_di, Inbound Pedestrian Volume crossing major street	0		0		0		2		0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0		0		0		0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0		0		0		0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		0		0			
Bicycle Volume [bicycles/h]	0		0		0		0		0			

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	2.0	0.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	15	77	0	15	77	0	0	28	0	0	28	0
Vehicle Extension [s]	2.3	3.9	0.0	2.3	3.9	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	5	10	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	18	0	10	22	0	0	29	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	2.00	5.00	5.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	67	67	9	70	70	28	28	28	28
g / C, Green / Cycle	0.05	0.56	0.56	0.07	0.58	0.58	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.58	0.04	0.06	0.29	0.01	10000.00	0.14	0.29	0.27
s, saturation flow rate [veh/h]	1609	3475	1564	1795	3446	1615	0	1381	876	1387
c, Capacity [veh/h]	83	1950	878	134	2013	943	60	319	241	320
d1, Uniform Delay [s]	55.26	15.09	6.80	54.69	14.53	10.47	59.98	41.33	50.02	46.14
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.21	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.57	27.46	0.18	7.16	0.86	0.03	2.38	3.61	68.91	110.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	1.03	0.08	0.81	0.49	0.02	0.33	0.61	1.04	1.19
d, Delay for Lane Group [s/veh]	65.83	42.55	6.98	61.85	15.38	10.50	62.37	44.94	118.93	156.89
Lane Group LOS	E	F	A	E	B	B	E	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.18	22.77	0.51	3.46	7.51	0.17	0.65	5.53	11.98	19.41
50th-Percentile Queue Length [ft/ln]	54.58	569.21	12.74	86.45	187.86	4.19	16.33	138.35	299.61	485.24
95th-Percentile Queue Length [veh/ln]	3.93	31.25	0.92	6.22	12.01	0.30	1.18	9.39	18.05	29.15
95th-Percentile Queue Length [ft/ln]	98.24	781.25	22.93	155.62	300.25	7.54	29.39	234.80	451.20	728.67

**Movement, Approach, & Intersection Results**

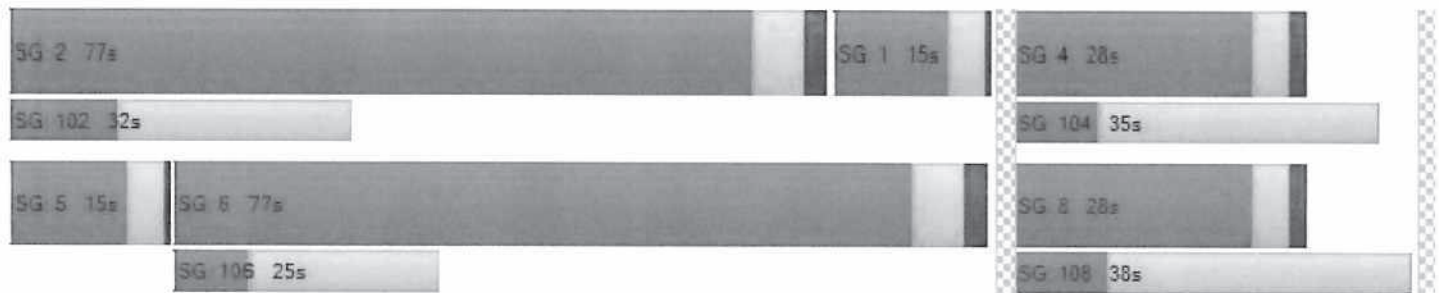
d_M, Delay for Movement [s/veh]	65.83	42.55	6.98	61.85	15.38	10.50	62.37	44.94	44.94	118.93	123.68	156.89
Movement LOS	E	F	A	E	B	B	E	D	D	F	F	F
d_A, Approach Delay [s/veh]	42.11			19.88			46.56			141.81		
Approach LOS	D			B			D			F		
d_I, Intersection Delay [s/veh]	51.66											
Intersection LOS	D											
Intersection V/C	0.988											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	14.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	3413.25	0.00	0.00
d_p, Pedestrian Delay [s]	47.70	48.60	46.82	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.269	3.250	2.245	2.338
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	1167	383	383
d_b, Bicycle Delay [s]	10.42	10.42	39.20	39.20
I_b,int, Bicycle LOS Score for Intersection	3.324	2.475	1.737	2.079
Bicycle LOS	C	B	A	B

**Sequence**

Ring 1	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 1: OR 99E (SE McLoughlin Blvd)/SE Milport Rd**

Control Type:	Signalized	Delay (sec / veh):	3.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

**Intersection Setup**

Name	OR 99E			OR 99E			SE Milport Rd			SE Milport Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑↑↑			↑↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	OR 99E		OR 99E		SE Milport Rd			SE Milport Rd				
Base Volume Input [veh/h]	0	1786	0	0	3209	0	50	19	39	34	10	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	9.00	8.00	0.00	12.00	0.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1786	0	0	3209	0	50	19	39	34	10	54
Peak Hour Factor	1.0000	0.9600	1.0000	1.0000	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	465	0	0	836	0	13	5	10	9	3	14
Total Analysis Volume [veh/h]	0	1860	0	0	3343	0	52	20	41	35	10	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street		1			0				0			0
v_di, Inbound Pedestrian Volume crossing major street		0			0				1			0
v_co, Outbound Pedestrian Volume crossing minor street		0			0				1			0
v_ci, Inbound Pedestrian Volume crossing minor street		0			1				0			0
v_ab, Corner Pedestrian Volume [ped/h]		0			0				0			0
Bicycle Volume [bicycles/h]		0			0				0			1

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	86.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	2	0	0	4	0	0	8	0	
Auxiliary Signal Groups													
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	6	0	0	6	0	
Maximum Green [s]	0	40	0	0	40	0	0	25	0	0	25	0	
Amber [s]	0.0	4.7	0.0	0.0	4.7	0.0	0.0	4.0	0.0	0.0	4.0	0.0	
All red [s]	0.0	0.7	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	1.0	0.0	
Split [s]	0	98	0	0	98	0	0	22	0	0	22	0	
Vehicle Extension [s]	0.0	4.5	0.0	0.0	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0	
Walk [s]	0	0	0	0	12	0	0	9	0	0	0	0	
Pedestrian Clearance [s]	0	0	0	0	14	0	0	38	0	0	0	0	
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Rest In Walk		No			No			No			No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	
I2, Clearance Lost Time [s]	0.0	3.4	0.0	0.0	3.4	0.0	0.0	3.0	0.0	0.0	3.0	0.0	
Minimum Recall		Yes			Yes			No			No		
Maximum Recall		No			No			No			No		
Pedestrian Recall		No			No			No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering 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	

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	5.40	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	101	101	8	8	8	8
g / C, Green / Cycle	0.84	0.84	0.07	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.27	0.66	0.05	0.03	0.03	0.04
s, saturation flow rate [veh/h]	6792	5094	1467	1608	1400	1540
c, Capacity [veh/h]	5736	4302	152	110	150	106
d1, Uniform Delay [s]	2.00	0.00	54.63	53.37	53.61	53.95
k, delay calibration	0.50	0.50	0.15	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	1.44	3.21	2.93	1.59	5.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.78	0.47	0.37	0.30	0.53
d, Delay for Lane Group [s/veh]	2.15	1.44	57.84	56.30	55.20	59.68
Lane Group LOS	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.11	0.57	2.25	1.26	1.36	1.79
50th-Percentile Queue Length [ft/ln]	27.70	14.32	56.19	31.59	34.05	44.73
95th-Percentile Queue Length [veh/ln]	1.99	1.03	4.05	2.27	2.45	3.22
95th-Percentile Queue Length [ft/ln]	49.86	25.77	101.14	56.87	61.29	80.51



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	2.15	0.00	0.00	1.44	0.00	57.84	57.84	56.30	55.20	55.20	59.68
Movement LOS		A			A		E	E	E	E	E	E
d_A, Approach Delay [s/veh]		2.15			1.44			57.28				57.68
Approach LOS		A			A			E				E
d_I, Intersection Delay [s/veh]							3.89					
Intersection LOS							A					
Intersection V/C							0.743					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0		0.0		16.0		0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	11886.32		0.00		13719.37		0.00
d_p, Pedestrian Delay [s]	47.70		0.00		45.07		0.00
I_p,int, Pedestrian LOS Score for Intersection	3.759		0.000		1.997		0.000
Crosswalk LOS	D		F		A		F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	1543		1543		283		283
d_b, Bicycle Delay [s]	3.13		3.13		44.20		44.23
I_b,int, Bicycle LOS Score for Intersection	2.327		3.398		1.746		1.726
Bicycle LOS	B		C		A		A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: SE Main St/OR 99E**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.5  
Level Of Service: A  
Volume to Capacity (v/c): 0.009

**Intersection Setup**

Name	SE Main St		SE Main St		OR 99E	
	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration	↑		↑		↗ ↘	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	SE Main St		SE Main St		OR 99E	
Base Volume Input [veh/h]	0	58	93	0	6	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	13.00	8.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	58	93	0	6	22
Peak Hour Factor	1.0000	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	29	0	2	7
Total Analysis Volume [veh/h]	0	72	115	0	7	27
Pedestrian Volume [ped/h]	0	0	0	0	0	0

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	9.50	8.93
Movement LOS		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.66	2.21
d_A, Approach Delay [s/veh]	0.00		0.00		9.05	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.39					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 3: SE Main St/Site Access**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 11.4  
Level Of Service: B  
Volume to Capacity (v/c): 0.076

**Intersection Setup**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+						+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			30.00			10.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	SE Main St			SE Main St			Key Bank Access			Site Access		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	3	49	46	18	121	1	0	0	0	35	0	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	15.00	0.00	0.00	4.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	49	46	18	121	1	0	0	0	35	0	17
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	1.0000	1.0000	1.0000	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	16	6	41	0	0	0	0	12	0	6
Total Analysis Volume [veh/h]	4	66	62	24	164	1	0	0	0	47	0	23
Pedestrian Volume [ped/h]	0			0			0			6		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.02
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	7.52	0.00	0.00	0.00	0.00	0.00	0.00	11.42	11.77	9.36
Movement LOS	A	A	A	A	A	A					B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.33	0.33	0.33
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	1.26	1.26	1.26	0.00	0.00	0.00	0.00	8.34	8.34	8.34
d_A, Approach Delay [s/veh]	0.23			0.95			0.00			10.74			
Approach LOS	A			A			A			B			
d_I, Intersection Delay [s/veh]	2.46												
Intersection LOS	B												

**Intersection Level Of Service Report**

**Intersection 4: OR 99E (SE McLoughlin Blvd)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

**Intersection Setup**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	370.00	100.00	100.00	375.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			No			Yes			Yes		

**Volumes**

Name	OR 99E			OR 99E			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	272	847	169	127	1707	15	30	84	492	225	53	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	4.00	4.00	1.00	2.00	2.00	0.00	6.00	1.00	2.00	9.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	0	0	0	246	0	0	22
Total Hourly Volume [veh/h]	272	847	161	127	1707	15	30	84	246	225	53	13
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	214	41	32	431	4	8	21	62	57	13	3
Total Analysis Volume [veh/h]	275	856	163	128	1724	15	30	85	248	227	54	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	12		0			12			0			
v_di, Inbound Pedestrian Volume crossing major street [	12		0			12			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			1			
v_ci, Inbound Pedestrian Volume crossing minor street [	1		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		0			13			6			

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Split	Split	Overla	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	1	0	4	0
Auxiliary Signal Groups									1,8			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	6	10	0	0	6	4	0	6	0
Maximum Green [s]	19	66	0	15	62	0	0	10	19	0	15	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	3.5	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	23	60	0	19	56	0	0	26	23	0	15	0
Vehicle Extension [s]	2.3	6.1	0.0	2.3	6.1	0.0	0.0	2.3	2.3	0.0	2.3	0.0
Walk [s]	0	7	0	0	11	0	0	8	0	0	0	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	21	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.50	2.50
g_i, Effective Green Time [s]	19	67	67	10	58	58	16	39	11	11
g / C, Green / Cycle	0.16	0.55	0.55	0.09	0.48	0.48	0.13	0.33	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.15	0.28	0.29	0.07	0.47	0.47	0.06	0.16	0.08	0.08
s, saturation flow rate [veh/h]	1781	1840	1725	1795	1870	1864	1787	1571	1781	1693
c, Capacity [veh/h]	282	1019	955	156	902	900	238	509	158	150
d1, Uniform Delay [s]	47.14	8.89	8.93	53.88	30.05	30.12	48.22	32.39	54.48	54.48
k, delay calibration	0.40	0.50	0.50	0.07	0.50	0.50	0.07	0.42	0.14	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.16	1.84	2.02	6.65	22.36	22.85	0.93	2.76	27.92	28.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.51	0.52	0.82	0.96	0.97	0.48	0.49	0.96	0.95
d, Delay for Lane Group [s/veh]	89.30	10.73	10.95	60.53	52.41	52.97	49.15	35.15	82.40	83.05
Lane Group LOS	F	B	B	E	D	D	D	D	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	11.08	4.92	4.73	4.09	28.98	29.13	3.23	6.08	5.83	5.57
50th-Percentile Queue Length [ft/ln]	276.96	122.99	118.26	102.23	724.46	728.15	80.73	151.93	145.83	139.16
95th-Percentile Queue Length [veh/ln]	16.54	8.56	8.30	7.36	37.81	37.98	5.81	10.12	9.79	9.44
95th-Percentile Queue Length [ft/ln]	413.43	213.93	207.44	184.01	945.17	949.42	145.31	253.01	244.85	235.89

**Movement, Approach, & Intersection Results**

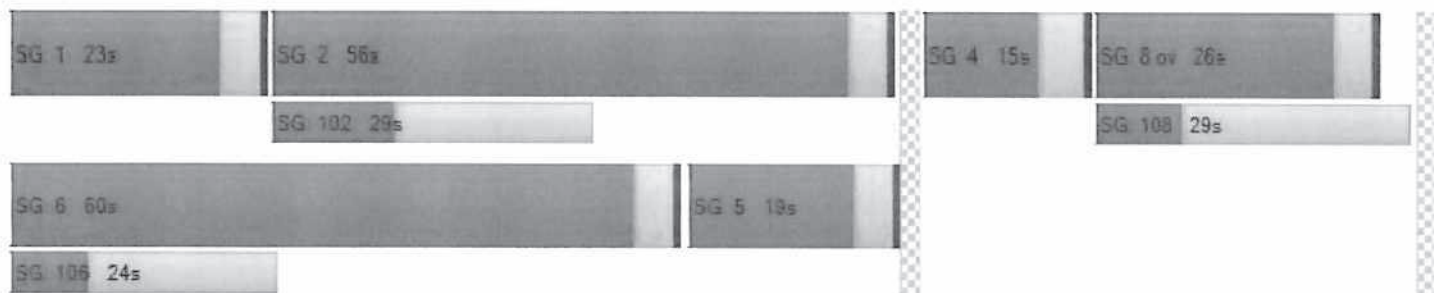
d_M, Delay for Movement [s/veh]	89.30	10.82	10.95	60.53	52.69	52.97	49.15	49.15	35.15	82.62	83.05	83.05
Movement LOS	F	B	B	E	D	D	D	D	D	F	F	F
d_A, Approach Delay [s/veh]	27.51			53.23			39.59			82.72		
Approach LOS	C			D			D			F		
d_I, Intersection Delay [s/veh]	45.49											
Intersection LOS	D											
Intersection V/C	0.968											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	15.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	300.78	0.00	0.00	6662.70
d_p, Pedestrian Delay [s]	48.60	0.00	45.94	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.055	0.000	2.662	2.137
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	867	367	175
d_b, Bicycle Delay [s]	17.08	19.27	40.28	50.11
I_b,int, Bicycle LOS Score for Intersection	2.634	3.100	2.564	2.081
Bicycle LOS	B	C	B	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: SE Main St/SE Harrison St**

Control Type:	All-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.442

**Intersection Setup**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE Main St			SE Main St			SE Harrison St			SE Harrison St		
	Base Volume Input [veh/h]	13	40	48	76	63	54	63	161	56	39	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	25.00	2.00	5.00	3.00	4.00	2.00	10.00	22.00	5.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	40	48	76	63	54	63	161	56	39	149	46
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	11	13	21	17	15	17	44	15	11	40	13
Total Analysis Volume [veh/h]	14	43	52	83	68	59	68	175	61	42	162	50
Pedestrian Volume [ped/h]	6			0			12			26		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	621	647	688	670
Degree of Utilization, x	0.18	0.32	0.44	0.38

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.63	1.41	2.27	1.77
95th-Percentile Queue Length [ft]	15.81	35.20	56.71	44.22
Approach Delay [s/veh]	10.03	11.23	12.31	11.60
Approach LOS	B	B	B	B
Intersection Delay [s/veh]	11.56			
Intersection LOS	B			

**Intersection Level Of Service Report**  
**Intersection 6: SE 21st St/SE Harrison St**

Control Type: All-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 10.8  
Level Of Service: B  
Volume to Capacity (v/c): 0.440

**Intersection Setup**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	SE 21st St			SE 21st St			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	17	9	43	21	6	21	11	261	13	39	196	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	25.00	0.00	10.00	0.00	0.00	0.00	0.00	6.00	0.00	19.00	7.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	9	43	21	6	21	11	261	13	39	196	19
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	3	13	6	2	6	3	77	4	11	58	6
Total Analysis Volume [veh/h]	20	11	51	25	7	25	13	307	15	46	231	22
Pedestrian Volume [ped/h]	7			10			8			5		

**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	667	669	760	746
Degree of Utilization, x	0.12	0.09	0.44	0.40

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.42	0.28	2.26	1.94
95th-Percentile Queue Length [ft]	10.45	6.97	56.61	48.44
Approach Delay [s/veh]	9.15	8.89	11.40	11.01
Approach LOS	A	A	B	B
Intersection Delay [s/veh]	10.83			
Intersection LOS	B			

**Intersection Level Of Service Report**  
**Intersection 7: SE 23rd St/SE Harrison St**

Control Type:	Two-way stop	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		20.00		20.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	SE Harrison St		SE 23rd St		SE Harrison St	
Base Volume Input [veh/h]	10	315	6	9	244	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	6.00	0.00	17.00	8.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	315	6	9	244	9
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	89	2	3	69	3
Total Analysis Volume [veh/h]	11	358	7	10	277	10
Pedestrian Volume [ped/h]	0		3		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	8.01	0.00	13.57	11.26	0.00	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh/ln]	1.30	1.30	0.10	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	32.58	32.58	2.55	2.55	0.00	0.00
d_A, Approach Delay [s/veh]	0.24		12.21		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.44					
Intersection LOS	B					



**Intersection Level Of Service Report**  
**Intersection 8: OR 224 (Milwaukie Expy)/SE Harrison St**

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

**Intersection Setup**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	160.00	100.00	160.00	615.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	OR 224			OR 224			SE Harrison St			SE Harrison St		
Base Volume Input [veh/h]	75	1520	89	312	1815	32	5	273	64	69	196	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	2.00	3.00	1.00	3.00	0.00	0.00	5.00	6.00	4.00	6.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	1520	89	312	1815	32	5	273	64	69	196	172
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	392	23	80	468	8	1	70	16	18	51	44
Total Analysis Volume [veh/h]	77	1567	92	322	1871	33	5	281	66	71	202	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	10	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	4		6				0			0		
v_di, Inbound Pedestrian Volume crossing major street	0		0				4			6		
v_co, Outbound Pedestrian Volume crossing minor street	0		0				1			1		
v_ci, Inbound Pedestrian Volume crossing minor street	1		1				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0				0			0		
Bicycle Volume [bicycles/h]	2		0				2			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	72.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag			Lead								
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	2.0	0.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	15	70	0	30	85	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	3.9	0.0	2.3	3.9	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	5	10	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	18	0	10	22	0	0	29	0	0	27	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	2.00	5.00	5.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	7	60	60	25	78	78	29	29	29	29
g / C, Green / Cycle	0.06	0.46	0.46	0.19	0.60	0.60	0.22	0.22	0.22	0.22
(v / s)_j Volume / Saturation Flow Rate	0.05	0.44	0.06	0.18	0.53	0.02	0.13	0.13	0.24	0.20
s, saturation flow rate [veh/h]	1709	3560	1555	1795	3532	1614	1253	1493	635	1484
c, Capacity [veh/h]	96	1657	724	344	2123	970	304	328	180	326
d1, Uniform Delay [s]	59.38	23.13	13.77	51.69	21.97	10.55	43.63	45.45	55.49	49.57
k, delay calibration	0.07	0.50	0.50	0.35	0.50	0.50	0.15	0.17	0.47	0.36
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.17	12.50	0.36	27.52	5.69	0.07	1.95	2.60	32.57	26.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	0.95	0.13	0.94	0.88	0.03	0.52	0.59	0.83	0.92
d, Delay for Lane Group [s/veh]	68.55	35.64	14.13	79.21	27.66	10.61	45.57	48.05	88.05	75.77
Lane Group LOS	E	D	B	E	C	B	D	D	F	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.67	20.49	1.16	12.76	23.72	0.39	4.58	5.91	6.64	11.95
50th-Percentile Queue Length [ft/ln]	66.77	512.28	29.09	319.12	593.07	9.77	114.49	147.80	166.03	298.86
95th-Percentile Queue Length [veh/ln]	4.81	27.92	2.09	18.62	31.71	0.70	8.09	9.90	10.87	17.62
95th-Percentile Queue Length [ft/ln]	120.19	697.88	52.37	465.60	792.77	17.59	202.23	247.49	271.69	440.62

**Movement, Approach, & Intersection Results**

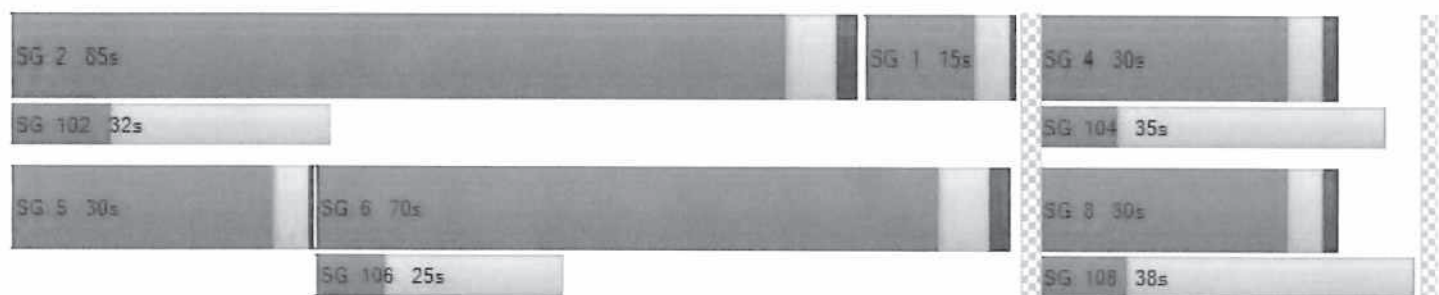
d_M, Delay for Movement [s/veh]	68.55	35.64	14.13	79.21	27.66	10.61	45.57	46.70	48.05	88.05	80.58	75.77
Movement LOS	E	D	B	E	C	B	D	D	D	F	F	E
d_A, Approach Delay [s/veh]	35.96			34.87			46.94			79.87		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	40.41											
Intersection LOS	D											
Intersection V/C	0.912											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	14.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2443.32	1379.14	11526.78	7524.62
d_p, Pedestrian Delay [s]	52.65	53.55	51.75	54.47
l_p,int, Pedestrian LOS Score for Intersection	3.381	3.338	2.282	2.381
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	969	1200	385	385
d_b, Bicycle Delay [s]	17.28	10.40	42.45	42.40
l_b,int, Bicycle LOS Score for Intersection	2.992	3.396	1.850	1.931
Bicycle LOS	C	C	A	A

**Sequence**

Ring 1	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix G 95<sup>th</sup> Percentile Queuing  
Analysis Summary

# Appendix G: 95th Percentile Queuing Analysis Summary

Henley Place

February 2021  
Project #: 25641

Intersection	Movement	Queue Storage (feet)	95th Percentile Queues						Queue Storage Adequate?
			AM Peak Hour			PM Peak Hour			
			Existing	Background	Total	Existing	Background	Total	
1 OR 99E/SE Millport Road	NB	>2,000	150	150	150	50	50	50	Yes
	SB	2,050	100	100	100	25	25	50	Yes
	EB LT/TH	>300	175	175	175	100	125	125	Yes
	WB LT/TH	50	50	50	75	75	75	75	Yes
2 SE Main Street/OR 99E	EB LT	25	25	25	25	25	25	25	Yes
	EB RT	25	25	25	25	25	25	25	Yes
3 SE Main Street/Site Access	WB	75	25	25	25	25	25	25	Yes
	NB LT	370	525	575	575	375	425	425	No
4 OR 99E/SE Harrison Street	NB TH/RT	470	300	325	375	200	200	225	Yes
	SB LT	375	150	150	150	150	175	200	Yes
	SB TH/RT	>2,000	275	300	300	900	950	950	Yes
	EB LT/TH	700	100	100	100	150	150	150	Yes
	EB RT	150	75	75	75	250	275	275	No
	WB LT	200	100	100	100	225	250	250	No
5 SE Main Street/SE Harrison Street	WB LT/TH/RT	200	125	150	150	225	225	250	No
	NB	190	25	25	25	25	25	25	Yes
	SB	>200	25	25	25	50	50	50	Yes
	EB	200	50	50	50	50	50	75	Yes
	WB	200	50	50	50	50	50	50	Yes
	NB	190	25	25	25	25	25	25	Yes
6 SE 21st Street/SE Harrison Street	SB	100	25	25	25	25	25	25	Yes
	EB	200	25	25	50	75	75	75	Yes
	WB	>200	50	50	50	50	50	50	Yes
	SB	>100	25	25	25	25	25	25	Yes
7 SE 23rd Street/SE Harrison Street	NB LT	160	100	100	100	125	125	125	Yes
	NB TH	425	725	825	800	600	750	700	No
	NB RT	150	25	25	25	50	75	75	Yes
	SB LT	615	150	175	175	450	475	475	Yes
	SB TH	>1,500	300	325	325	750	800	800	Yes
	SB RT	160	25	25	25	25	25	25	Yes
	EB TH/LT	200	50	50	50	225	225	225	No
	EB TH/RT	>300	225	225	250	225	250	250	Yes
8 OR 224/SE Harrison Street	WB TH/LT	225	310	450	450	250	275	275	No
	WB TH/RT	500	525	675	725	350	400	450	No

Queues are rounded up to the nearest vehicle length (approximately 25 feet).

Shaded cells indicate 95th percentile queue exceeds available storage

Bold and red text/shaded cells indicate 95th percentile queue exceeds available storage and site development increases queue length

**Notes**

Approximately 70 feet storage available to frontage road west of OR 99E  
SE Main Street 3-way intersection has additional storage

Storage reflects distance to SE Main Street, 1 car length added with site trips  
Storage reflects distance to SE Main Street

Storage reflects distance to SE Monroe Street, no increase with site trips

Storage reflects striped lane length to SE 29th Avenue, no change with site trips

Storage reflects approximate striped lane length to railroad crossing

Storage reflects approximate distance to SE 32nd Avenue less railroad crossing area

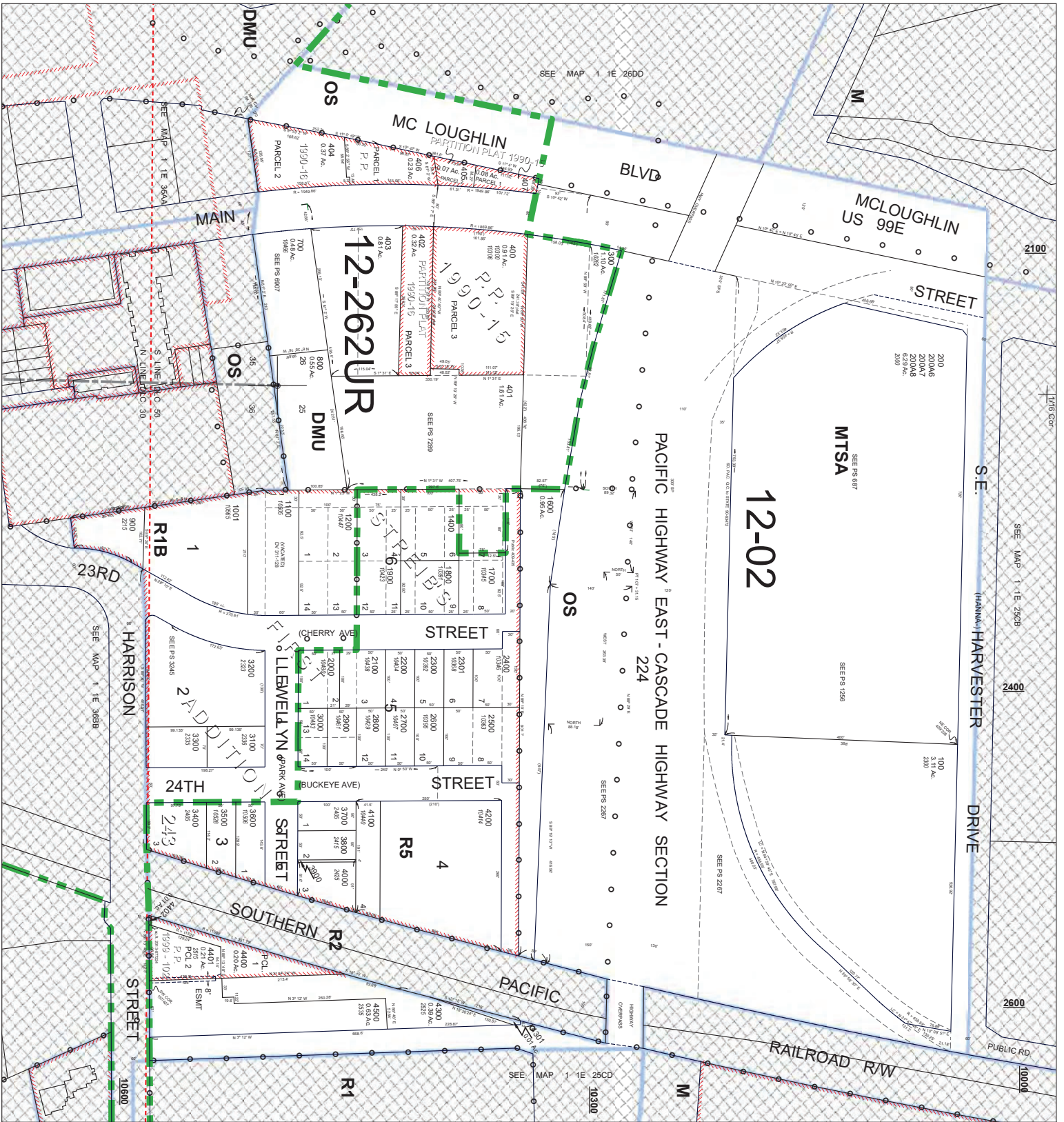


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## **Exhibit E: Clackamas County Assessor's Map**

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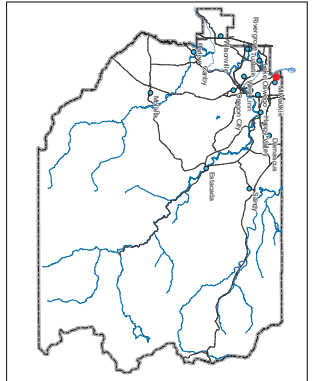


S.W.1/4 S.W.1/4 SEC.25 T.1S. R.1E. W.M.  
 CLACKAMAS COUNTY  
 1" = 100'

Cancelled Taxlots

- 100A1
- 100A2
- 200A1
- 200A2
- 200A3
- 200A4
- 200A5
- 200E1
- 200E2
- 201A1
- 400A1
- 400A2
- 400A3
- 400A4
- 400A5
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- 400A47
- 400A48
- 400A49
- 400A50

- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- Map Index
- Waterlines
- Land Use Zoning
- Pits
- Water
- Center
- Center Corner
- 1/16th Line
- Govt Lot Line
- DLC Line
- Meander Line
- R-SS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



THIS MAP IS FOR ASSESSMENT PURPOSES ONLY



## **Exhibit F: Property Deeds**

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30  
100

Clackamas County Official Records  
Sherry Hall, County Clerk

2020-042482

**Grantor's Name:**  
Champ A. Husted



\$103.00

02337509202000424820030030

06/09/2020 10:34:16 AM

**Grantee's Name:**  
Champ A. Husted, Trustee of the  
Champ Husted Revocable Trust

D-D Cnt=1 Stn=73 LESLIE  
\$15.00 \$16.00 \$62.00 \$10.00

**AFTER RECORDING, RETURN TO:**

Mitchell C. Wall  
Wall & Wall, P.C.  
PO Box 68306  
Portland, OR 97268-0306

**SEND TAX STATEMENTS TO:**

Kellogg Bowl  
10306 SE Main Street  
Milwaukie, OR 97222

APN: 00009742; 00009751  
Maps: 11E25CC00401; 11E25CC00402  
Situs Address: 10306 SE Main Street  
Milwaukie, OR 97222

**BARGAIN AND SALE DEED**

Grantor: **Champ A. Husted, surviving spouse**  
conveys to

Grantee: **Champ A. Husted, Trustee of the Champ Husted Revocable Trust**  
**U/A/D February 23, 1999**  
13460 SE Beech  
Milwaukie, OR 97222

the real property located in Clackamas County, Oregon and legally described as:

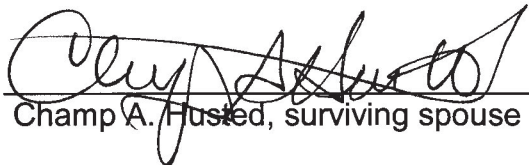
See Exhibit "A" attached hereto and incorporated herein as if set forth in full

The true consideration for this conveyance is None; this is a contribution to a Revocable Trust.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE

LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated the 2 day of June, 2020.

  
\_\_\_\_\_  
Champ A. Husted, surviving spouse

STATE OF OREGON        }  
County of Clackamas    }

The foregoing deed was acknowledged before me on June 2, 2020 by Champ A. Husted.


  
Notary Public for Oregon  
My Commission Expires: May 4, 2021



EXHIBIT A  
DESCRIPTION

PARCEL I:

Land in the William Meek D.L.C. in Sections 25 and 26, Township 1 South, Range 1 East of the Willamette Meridian, in Clackamas County, Oregon, described as follows:

BEGINNING at a point marking the Northwest corner of the intersection of the Westerly right of way of Main Street and the Northerly right of way of Scott Street, City of Milwaukie, Clackamas County, Oregon; thence along the Westerly right of way of said Main Street North 8° 58' West 170 feet; thence North 81° 02' East 40.0 feet to the center line of Main Street; thence North 8° 58' West 150 feet to a point; thence North 81° 07' 18" East 44.23 feet to the Easterly right of way of Main Street; thence North 81° 07' 18" East 452.61 feet to the point of beginning of the herein described parcel of land; thence North 1° 17' 41" West 297.38 feet to a brass plug in concrete; thence North 89° 19' 26" West 195.21 feet; thence South 1° 17' 41" East 111.07 feet; thence North 89° 19' 26" West 10.38 feet; thence South 00° 16' 00" West 49.03 feet; thence South 89° 40' 49" East 11.72 feet; thence South 1° 17' 41" East 170.00 feet to a point in the South boundary of the Davis property; thence North 81° 07' 18" East 196.82 feet to the place of beginning.

PARCEL II:

A parcel of land in Section 25, Township 1 South, Range 1 East of the Willamette Meridian, in the City of Milwaukie, County of Clackamas and State of Oregon, more particularly described as follows:

The West 80 feet of Lot 7 and the West 80 feet of the North one-half of Lot 6, in Block 6, STREIB'S FIRST ADDITION TO MILWAUKIE, also a 30 foot strip lying West from and contiguous to the West boundary of Lot 7 and the North one-half of Lot 6 of said Block 6; also a 5.0 foot strip lying North of an adjacent to the Westerly 80 feet of Lot 7, Block 6, STREIB'S FIRST ADDITION; also a 5.0 foot strip, 30 feet in length, due West of the last named 5.0 foot parcel.

PARCEL III:

Parcel 3 of Partition Plat No. 1990-16, Clackamas County, Oregon, recorded April 25, 1990, Recorder's Fee No. 90-18635, Clackamas County Records.

# Henley Place Milwaukie, Oregon Natural Resource Management Plan

---

**Date:** May 27, 2021

**Prepared for:** Pahlisch Commercial, Inc.  
15333 SW Sequoia Parkway, Suite 190  
Portland, OR 97224

**Prepared By:** Stacey Reed, PWS, Senior Wetland Scientist  
AKS Engineering & Forestry, LLC

**Site Information:** Clackamas County Assessor's Map 1 1 E 25CC;  
Tax Lots 401 and 402



12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151

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- Figure 6.** Summer 2019 Aerial Photograph
- Figure 7.** Existing Conditions Exhibit
- Figure 8.** Site Plan Overview

**Appendices**

- Appendix A:** Historical Aerial Photographs
- Appendix B:** Representative Site Photographs

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## **Introduction and Background**

This report describes the results of a natural resource assessment for the Henley Place project located at 10306 SE Main Street in Milwaukie, Clackamas County, Oregon (Figure 1). This project consists of a six-story apartment building, referred to as Henley Place, and associated parking, pedestrian walkways, and landscaping. The project site consists of Tax Lots 401 and 402 of Clackamas County Assessor's Map 1 1 E 25CC (Figure 2) and is approximately 1.94 acres in size. It is within Downtown Mixed Use (DMU) Zone. The project site consists of the former Kellogg Bowl bowling alley. This report has been prepared to meet Chapter 19.402 of the City of Milwaukie's Municipal Code (MCC).

An off-site intermittent stream was documented near the northwest corner of the site and an off-site pond was documented adjacent to the southern property line. Both off-site features are mapped on the City of Milwaukie's Natural Resource (NR) Administrative Map as Water Quality Resources (WQR). Per Section 19.402.15 of MCC, these features are considered Primary Protected Water Features. Slopes adjacent to the off-site Primary Protected Water Features are less than 25 percent, requiring 50-foot vegetated corridor (VC) buffers. According to the City's NR map, Habitat Conservation Area (HCA) is not mapped extending onto the site.

The VC associated with the off-site stream northeast of the project site is outside of the planned limit of work on 23<sup>rd</sup> Avenue.

Along the southern boundary of the site, the 50-foot VC associated with the off-site pond is devoid of vegetation. The entire on-site VC consists of paved parking established in the early 1960s for the former Kellogg Bowl Bowling Alley. The project will require replacement of existing paved parking within VC with apartment building and associated amenities. Due to site constraints, re-establishment of parking area in VC at this location was determined to be not practical; therefore, these development activities require a Type III Discretionary Review in accordance with MMC Section 19.402.12. Due to existing development within the WQR, the project itself will not have a detrimental impact to the ecological functions of the adjacent Primary Protected Water Feature. The site plan accommodates removing a 10-foot-wide segment of existing pavement immediately adjacent to the off-site pond and replacing it with a native tree/shrub landscape area, providing an overall net ecological benefit to the WQR over existing conditions.

No potentially-jurisdictional wetlands and waters have been identified on the site; therefore, permit authorizations from Oregon Department of State Lands (DSL) or the US Army Corps of Engineers (USACE) are not required for the project.

### **Existing Site Conditions**

The project area consists generally of impervious area, including the former Kellogg Bowl building associated paved parking, and vehicular access driveway off of Main Street. This access driveway is also used by the adjacent Pietro's Pizza to the north and a veterinary clinic to the south as a shared driveway with angled parking along the north and south boundaries of the lot.

According to the Natural Resources Conservation Service (NRCS) Clackamas County Area Soil Survey Map, non-hydric Woodburn silt loam with 3 to 8 percent slopes (Unit 91B) and non-hydric Urban Land (Unit 82) soils are mapped throughout the site (Figure 3).



---

The City of Milwaukie does not have a DSL-approved Local Wetland Inventory (LWI) Map. According to the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Map, a linear riverine feature is mapped to represent the off-site pond south of the project (Figure 4).

According to the City's Natural Resource (NR) Administrative Map, two on-site VCs associated with off-site WQRs extend onto the project site: one in the northeast corner of the site and the other one along the southern portion of the site (Figure 5). Our site visit generally agrees with the City's NR mapping of the southern WQR. On-site VC associated with an off-site intermittent stream and pond extend onto the project site. As to the northeastern WQR, the field verification has confirmed that the VC is off-site and outside the planned off-site limit of disturbance associated with the project on SE 23<sup>rd</sup> Avenue.

### **Protected Water Features**

A site visit was conducted by AKS Natural Resource staff in January 2021 to confirm site conditions. A pond (Primary Protected Water Feature) is located immediately off-site to the south. Due to existing disturbance, the edge of water/retaining wall was delineated as the extent of Protected Water Feature.

The top of bank associated with the portion of the intermittent stream closest to the project site was delineated off-site to the northeast. According to background mapping, the intermittent stream may drain more than 100 acres, meeting the definition for a Primary Protected Water Feature.

According to historical aerial images dating from 1936 through 1996 obtained from the USACE, the retaining wall adjacent to the pond was installed sometime between 1961 and 1969 (historical aerials provided in Appendix A). Prior to 1961, this area contained a perennial drainage which extended off-site to the north.

### **Extent and Condition of On-Site Vegetated Corridor (VC)**

The slopes adjacent to off-site the Primary Protected Water Features are less than 25 percent; therefore, in accordance with the process for delineating WQR listed on Table 19.402.15 of the MMC, the Primary Protected Water Features require 50-foot-wide VC. The extent of on-site VC is shown on Figure 7.

The condition of the on-site VC consists entirely of impervious pavement associated with parking for the former Kellogg Bowl and 23<sup>rd</sup> Avenue improved right-of-way. According to historical aerials, native vegetation and soils were removed since the early 1960s. Therefore, the condition of the on-site VC can be described as being in "poor" condition. Representative site photographs illustrating the on-site "poor condition" WQR are included in Appendix B.

---

## **Project**

The site plan, included as Figure 8, includes a six-story apartment building with structured ground-floor parking and associated site improvements, including surface parking, pedestrian walkways, shared outdoor recreational space, and landscaping. To accommodate the project, unavoidable encroachment into the VC along the southern site boundary is necessary. The project will not require impacts into Primary Protected Water Feature.

## **Discretionary Impact Evaluation and Alternatives Analysis**

### **1. Existing Ecological Functions and Vegetation**

The existing condition of the VC consists 100 percent of pavement lacking vegetation. There are no trees or shrubs providing canopy within the WQR. Per Table 19.402.11.C of MMC, the existing condition of the

---

on-site VC can be described as being in Class C “Poor” condition. In addition, the on-site VC is located approximately 5 feet above the pond and is functionally severed by an existing concrete retaining wall. Due to these existing disturbed features, the existing on-site VC does not provide any riparian ecological functions to the pond (Primary Protected Water Feature).

The existing retaining wall severs the riparian corridor, eliminating a wildlife corridor. According to StreamNet (a database maintained by the Pacific States Marine Fisheries Commission [PSMFC]), there are no documented occurrences of native fish in the off-site pond. The removal of existing pavement to plant a 10-foot-wide landscape strip with native trees will provide increased habitat benefit.

## **2. Assessment of the Water Quality Impacts**

The project requires removal of paved parking to accommodate an apartment building sufficient to meet the City’s multi-family housing demand. The project will reduce the amount of impervious area in the VC by installing a 10-foot-wide vegetation strip along the southern property boundary, adjacent to the off-site pond.

Stormwater for the project will be treated with filtration cartridges and underground detention and then routed into the City’s existing storm system. Stormwater generated from this project will not enter the Primary Protected Water Feature. Untreated runoff from the existing parking area likely currently drains into the off-site pond; therefore, the project will provide a direct water quality benefit. The project will not generate additional sediments, increased temperature, or other conditions with the potential to cause the off-site pond to be listed on DEQ’s 303(d) list.

There will be no in-water work; therefore, no hydrologic impacts to the pond area expected. The pond is a natural perennial water source not reliant on stormwater input from the site.

## **3. Alternatives Analysis**

There are no practical site plan alternatives that avoid encroachment into the VC. Layout alternatives explored to determine if VC avoidance was possible are described below.

Alternative #1: This alternative layout reduced the size of the apartment building and removed associated amenities to avoid development within the on-site VC. This alternative layout would require the reduction of 30 feet of building space, plus removal of all associated outdoor common area, which includes:

1. 25 dwelling units (18,000 square feet of net rentable area)
2. 14 parking stalls
3. 2,500 square feet of indoor common space (fitness room and lounge)
4. 2,600 square feet of outdoor common space (ground floor terrace and roof terrace area)
5. 600 square feet of private outdoor terraces

The loss of 25 dwelling units makes the project economically not viable. The loss of the associated parking, open space and common amenities prevents the project from meeting the residential code requirements of MCCs 19.304 Downtown Zones, 19.508 Downtown Design and Building Design Standards, 19.600 Off-Street Parking and Loading, and 19.907 Downtown Design Review. In order to meet the above standards, a further reduction in dwelling units would be necessary in the remaining building footprint to accommodate the open space and parking requirements. The project would not proceed which would be a public loss of needed housing for the City.

---

**Alternative #2:** This alternative assumes expanding the building footprint to the south (0-foot setback), yielding additional rentable area but avoiding encroachment into the VC. The subject property does not have a required minimum lot setback, per MCC Section 19.304.4. The maximum floor area ratio (FAR) for the project site allows a building with 354,774 square feet of floor area to be constructed, which includes a base calculation of a 4:1 FAR, allowing 338,024 square feet, in addition to a bonus of 16,750 square feet allowed due to the provision of structured parking. The proposed area of this multifamily building is 196,471 square feet, well below the maximum allowable. This alternative would preclude the project from providing any landscape buffer along the pond. This alternative has a greater environmental impact than the proposed project and was not selected.

**Alternative #3:** This site layout would maintain the existing parking use within the VC. Under this scenario, the project would qualify for an exemption from Natural Resource Review under code section 19.402.4.A.10. In order to pull the building from within the VC and to provide vehicular access to the surface lot on the south through the structured parking, the interior and outdoor amenities would be placed on the east and north sides of the building, facing the adjacent commercial development. This alternative would also require a reduced building footprint, resulting in the loss of residential units, which is a public loss of needed housing for the City. This alternative would also not provide the opportunity for revegetating the southern edge of the site with native landscaping, as proposed by the current project.

The preferred site plan provides the minimum required rentable area to provide a return on investment and provides affordable desired housing to the community. This layout allows the removal of a 10-foot wide strip of existing pavement to plant with native trees and shrubs adjacent to the pond, which not only provides separation for the Protected Water Feature from development, but will provide a functional benefit. The proposed building façade is set back between 40 and 17 feet from the southern property line/boundary of the pond, and the common outdoor terrace is set back between 10 and 9 feet. Building lighting locations have been designed to avoid the WQR area. As shown on the lighting plan on sheet P-12, the lighting level decrease to 0.0 lumens at the property line.

#### **4. Mitigate**

As demonstrated in sections above, there are no practical alternatives that avoid encroachment into the VC. The project avoids encroachment into the Primary Protected Water Features. VC impacts have been minimized by reducing the amount of impervious area that currently exists within the VC, allowing for vegetative enhancement of a 10-foot wide strip adjacent to the pond, thus providing an ecological benefit.

The project does not result in adverse impacts to the WQR, instead it provides increased ecological benefit; therefore, compensatory mitigation is not required. The off-site pond (Primary Protected Water Feature) is functionally severed from the riparian buffer and from the project site by the existing concrete retaining wall. The applicant does not have the authority to remove the off-site retaining wall to restore a natural riparian corridor; the retaining wall is a fixed feature of the site. Therefore, removal of all existing pavement within the on-site 50 foot VC to plant with native trees and shrubs would provide limited functional benefit to the off-site resource.

The construction of a building within the outer portion of the 50 foot wide VC is not expected to have an adverse ecological effect on the pond. The pond is surrounded by existing buildings within the VC. The addition of trees and shrubs along the edges of the pond will provide a natural buffer to wildlife utilizing the pond and provide screening from the development and the resource. Artificial lighting has been located away from the pond, to avoid light pollution that may deter birds that hunt at night or amphibians.

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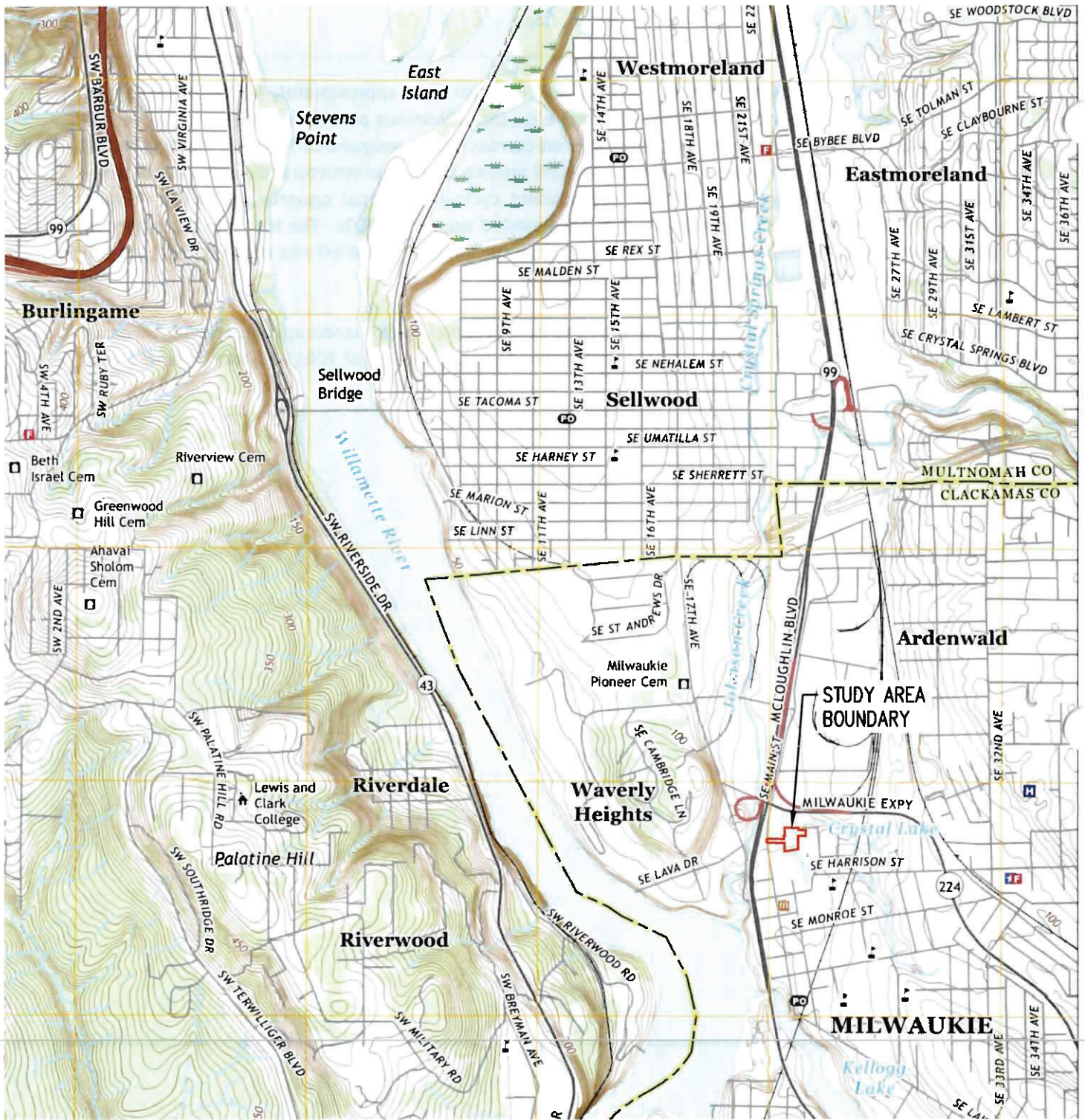
The landscape plan (included as Sheet P-11) includes removal of an approximately 10-foot-wide strip of existing pavement that will be planted with native cascara (*Rhamnus purshiana*) trees and native dull Oregon grape (*Mahonia nervosa*) and flowering red currant (*Ribes sanguineum*) shrubs. Planting native trees and shrubs adjacent to the off-site resource will provide vegetative structural diversity, significantly improving the thermoregulation (shade) and nutrient cycling functional opportunity to the Primary Protected Water Feature over conditions that have existed since the 1960s. The tree and shrub species selected are not expected to have a long term effect on the integrity of the off-site retaining wall, yet will provide shade to the Primary Protected Water Feature.

The removal of existing pavement followed by the installation of native landscape vegetation will occur consistent with site development, which is anticipated to begin summer of 2021 and take at least 1 year to complete.

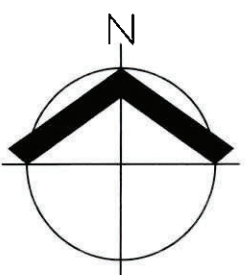
### List of Preparers



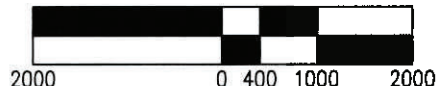
Stacey Reed, PWS  
Senior Biologist/Wetland Scientist



USGS 7.5' TOPOGRAPHIC SERIES  
 QUADRANGLE: LAKE OSWEGO, OR (2020)



SCALE: 1" = 2000 FEET

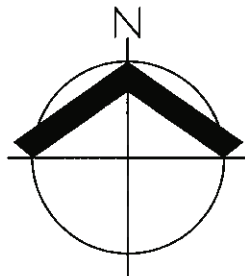
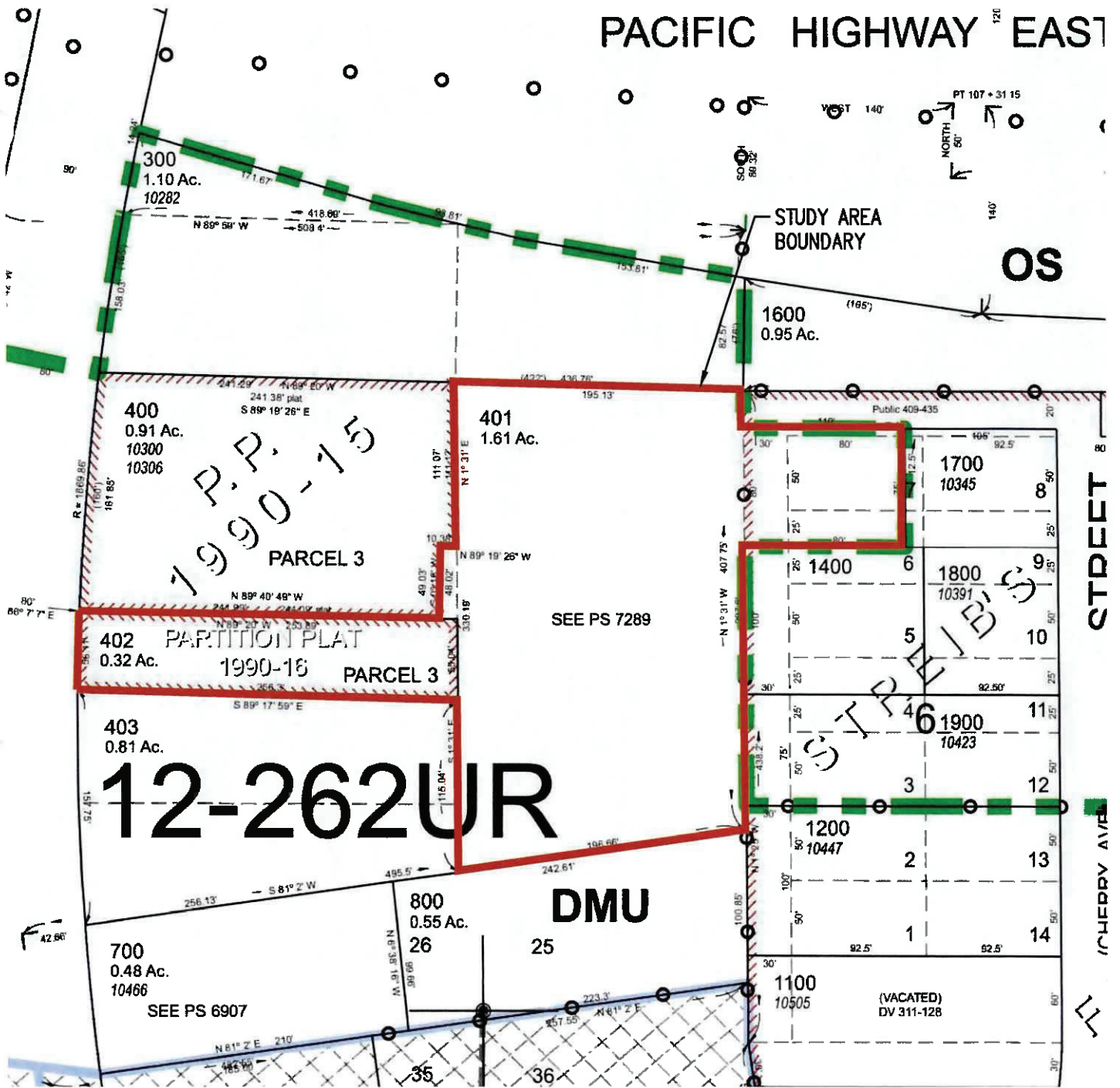


ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/03/2021

<b>USGS VICINITY MAP</b>		<b>FIGURE 1</b>
<b>HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN</b>		
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.565.2151		DRWN: SKT CHKD: SAR AKS JOB: <b>8145</b>
		

# PACIFIC HIGHWAY EAST



SCALE: 1" = 100 FEET

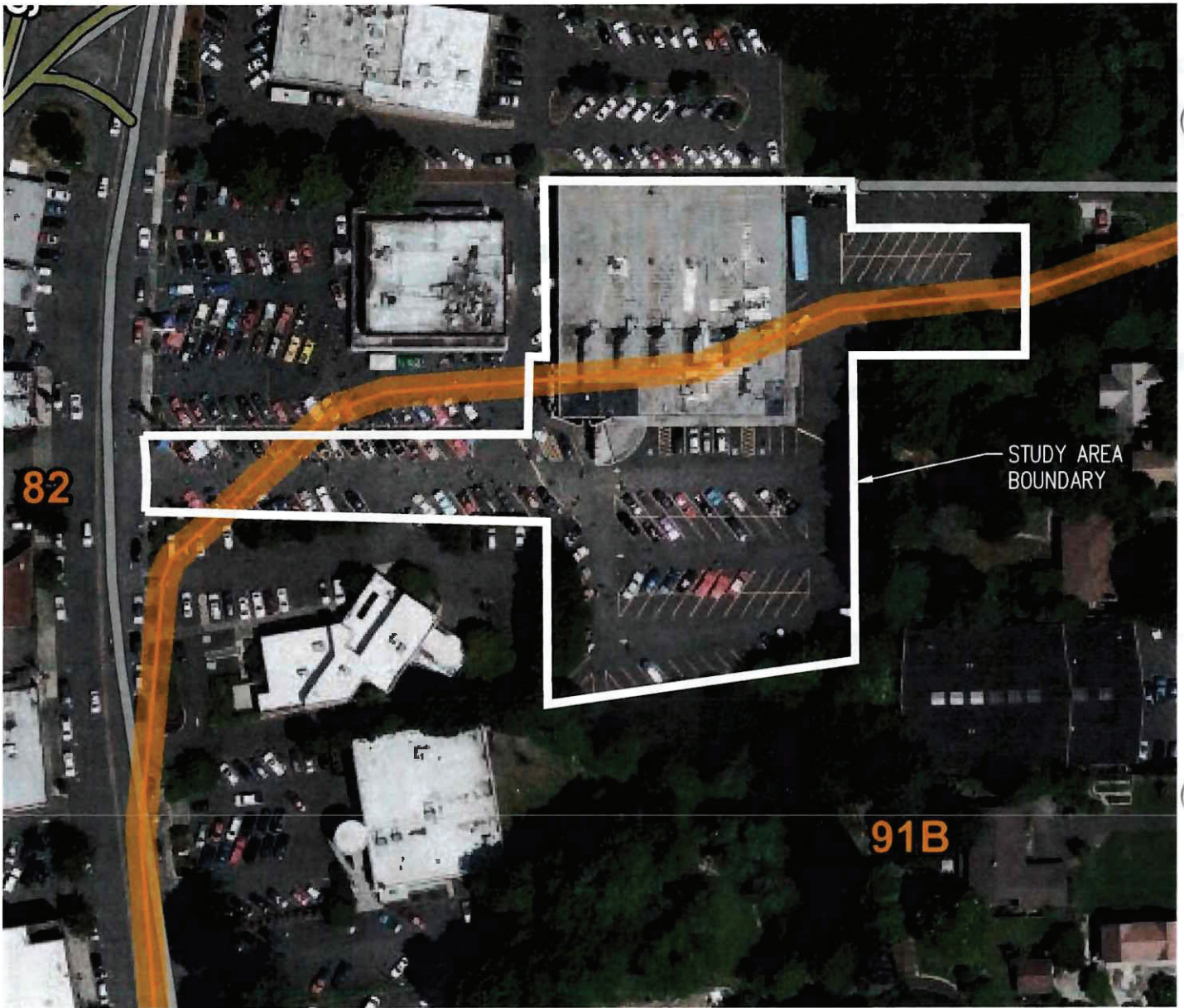


CLACKAMAS COUNTY  
TAX LOTS 401 AND 402  
TAX MAP 1 E 25CC

DATE: 05/03/2021

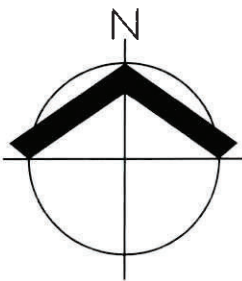
<b>TAX MAP (MAP 1 E 25CC)</b> <b>HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN</b>		<b>FIGURE</b> <b>2</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151   www.aks-eng.com		DRWN: SKT CHKD: SAR AKS JOB: <b>8145</b>



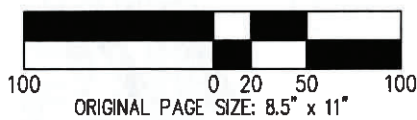


MAP UNIT SYMBOL	MAP UNIT NAME
82	URBAN LAND; NON-HYDRIC
91B	WOODBURN SILT LOAM, 3% TO 8% SLOPES; NON-HYDRIC

NRCS WEB SOIL SURVEY FOR  
CLACKAMAS COUNTY



SCALE: 1" = 100 FEET



DATE: 05/03/2021

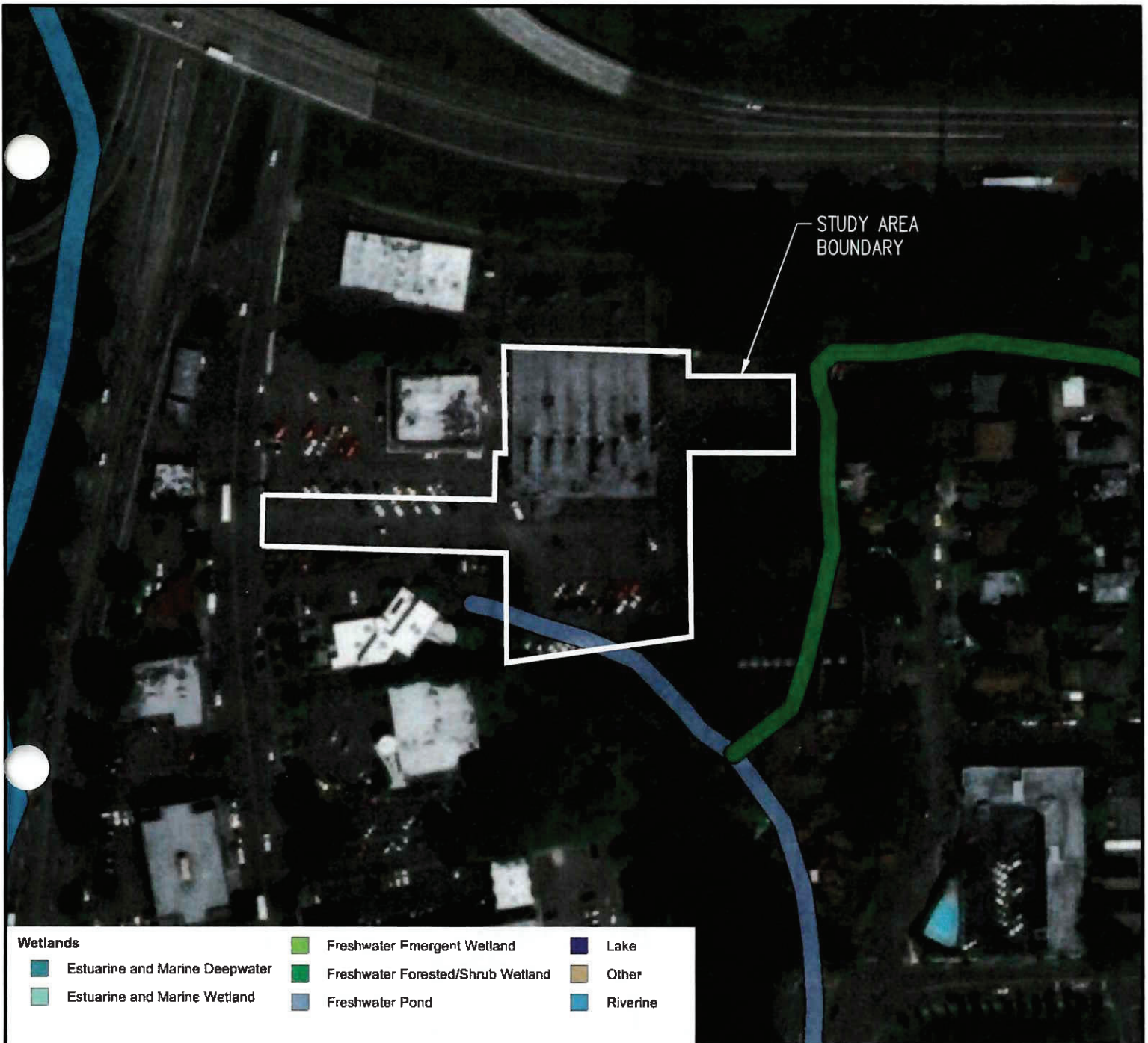
**NRCS SOIL SURVEY MAP**  
**HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN**

FIGURE  
**3**

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.565.6255 Page 483 AKS-ENG.COM

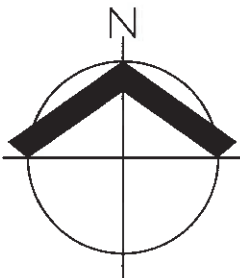


DRWN: SKT  
CHKD: SAR  
AKS JOB:  
8145



STUDY AREA BOUNDARY

Wetlands		
	Estuarine and Marine Deepwater	
	Estuarine and Marine Wetland	
	Freshwater Emergent Wetland	
	Freshwater Forested/Shrub Wetland	
	Freshwater Pond	
	Lake	
	Other	
	Riverine	



SCALE: 1" = 150 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"

US FISH & WILDLIFE SERVICE  
NATIONAL WETLANDS INVENTORY

DATE: 05/03/2021

**NATIONAL WETLANDS INVENTORY MAP  
HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN**

FIGURE  
**4**

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.563.8151 | WWW.AKS-ENG.COM

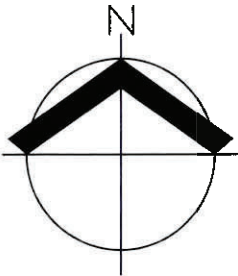


DRWN: SKT  
CHKD: SAR  
AKS JOB:  
**8145**

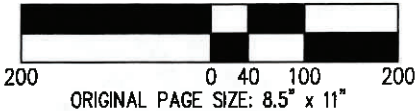




CITY OF MILWAUKIE  
 NATURAL RESOURCE ADMINISTRATIVE  
 MAP (2011)



SCALE: 1" = 200 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/03/2021

**NATURAL RESOURCE ADMINISTRATIVE MAP  
 HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN**

FIGURE  
**5**

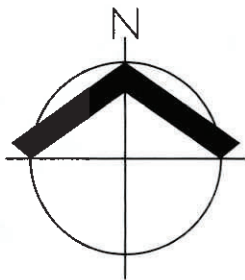
AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 503.565.2119 Page 485 AKS-ENG.COM



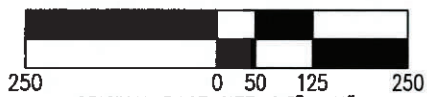
DRWN: SKT  
 CHKD: SAR  
 AKS JOB:  
**8145**



SATELLITE AERIAL (2019)



SCALE: 1" = 250 FEET

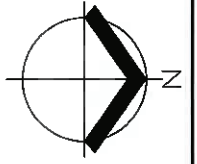


ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/06/2021

<b>SUMMER 2019 AERIAL</b> <b>HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN</b>		<b>FIGURE</b> <b>6</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.8151 <a href="http://WWW.AKS-ENG.COM">WWW.AKS-ENG.COM</a>		DRWN: ODV CHKD: SAR AKS JOB: 8145



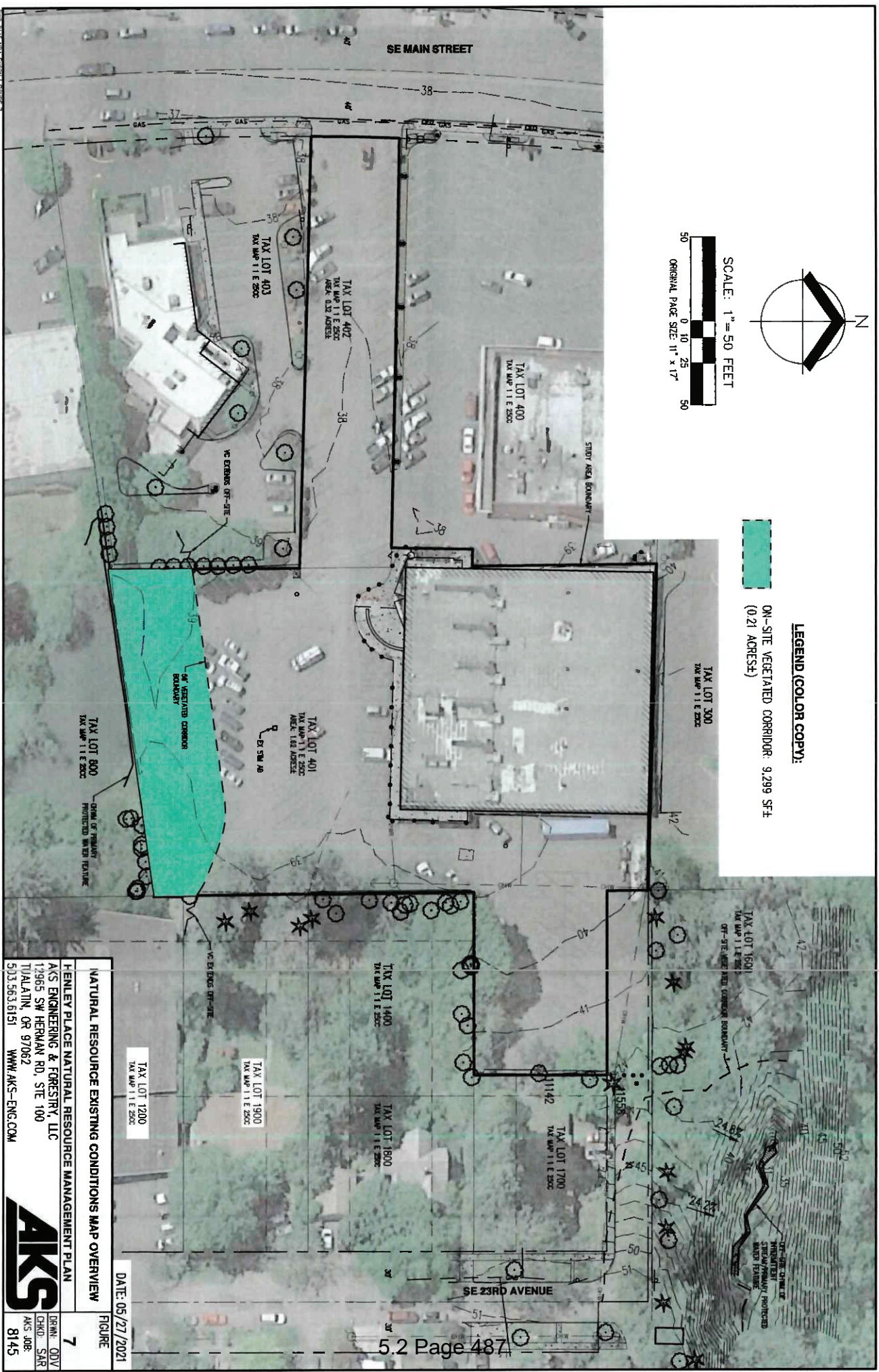


SCALE: 1" = 50 FEET  
 ORIGINAL PAGE SIZE: 11" x 17"

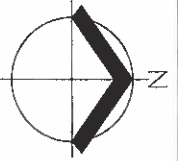


ON-SITE VEGETATED CORRIDOR: 9,299 SF (0.21 ACRES)

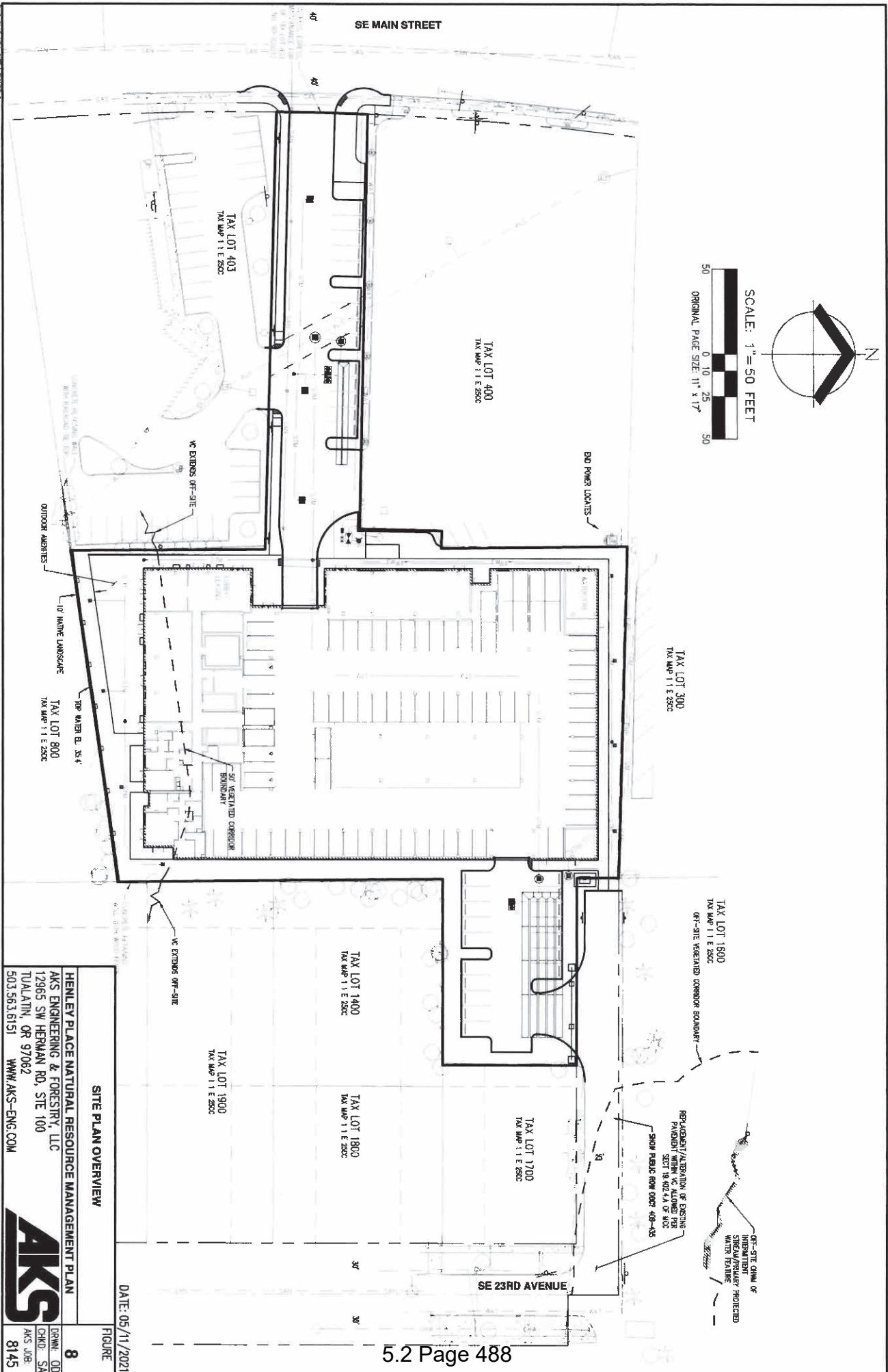
LEGEND (COLOR COPY):



<b>NATURAL RESOURCE EXISTING CONDITIONS MAP OVERVIEW</b>	
HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN	
AKS ENGINEERING & FORESTRY, LLC	
12965 SW HERMAN RD, STE 100	
TUALATIN, OR 97062	
503.563.6151 WWW.AKS-ENG.COM	
DATE: 05/27/2021	FIGURE 7
DRWN: DJV	CHKD: SAR
AKS JOB: 8145	



SCALE: 1" = 50 FEET  
 ORIGINAL PAGE SIZE: 11" x 17"



<b>SITE PLAN OVERVIEW</b>	
<b>HENLEY PLACE NATURAL RESOURCE MANAGEMENT PLAN</b>	
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97082 503.563.6151 WWW.AKS-ENG.COM	
DRAWN: ODV CHECK: SAR AKS JOB#: <b>8145</b>	DATE: 05/11/2021 FIGURE <b>8</b>

## **Appendix A: Representative Site Photographs**

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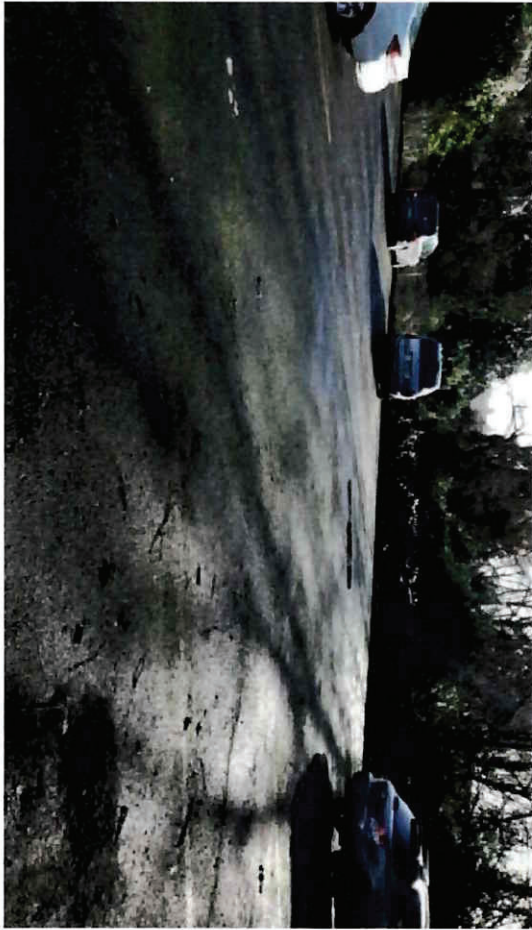
**Photo A.** View facing southerly of the on-site paved VC and the off-site Primary Protected Water Feature (pond) in the background.



**Photo B.** View of existing "poor" condition VC to be enhanced with trees and shrubs to provide improved ecological functions.



**Photo C.** View of existing paved on-site VC associated with off-site pond.



**Photo D.** View facing southerly of "poor" condition VC to be impacted for the project. Existing conditions provide no functional benefit to off-site Primary Protected Water Feature. On-site VC has been cleared of vegetation since early 1960's.

## **Appendix B: Historic Aerials**

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May 1936





May 1944



September 1948



May 1957



March 1961



February 1969



March 1975



December 1977



September 1983





June 1989



February 1996



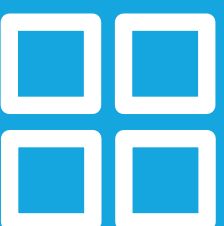


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## **Exhibit H: Mechanical Parking System Specifications**

**city** lift

**PUZZLE**



**SPECIFICATION SHEET**

# PUZZLE



**33 SECONDS**

AVERAGE RETRIEVAL TIME

**UP TO 7 LEVELS**

2 - 7 LEVEL CONFIGURATIONS

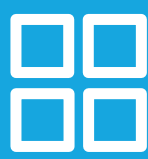
**40,000**

SPACES INSTALLED

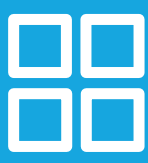
Our most popular and versatile mechanical parking solution is the Puzzle. It comes in 2, 3, 4, 5, 6, and 7-level configurations; with or without pits and is ideal for new construction or retrofits. This mechanical parking lift also works in a tandem configuration without impacting retrieval time. They are widely used in residential, mixed use, and public garages in impacted urban areas. Replacing traditional stackers with the Puzzle can drastically reduce valet costs since each space is independently accessed. The Puzzle can be used indoors or outdoors and requires a minimum clear height of 11' 7 3/4" beginning with the 2 level system.



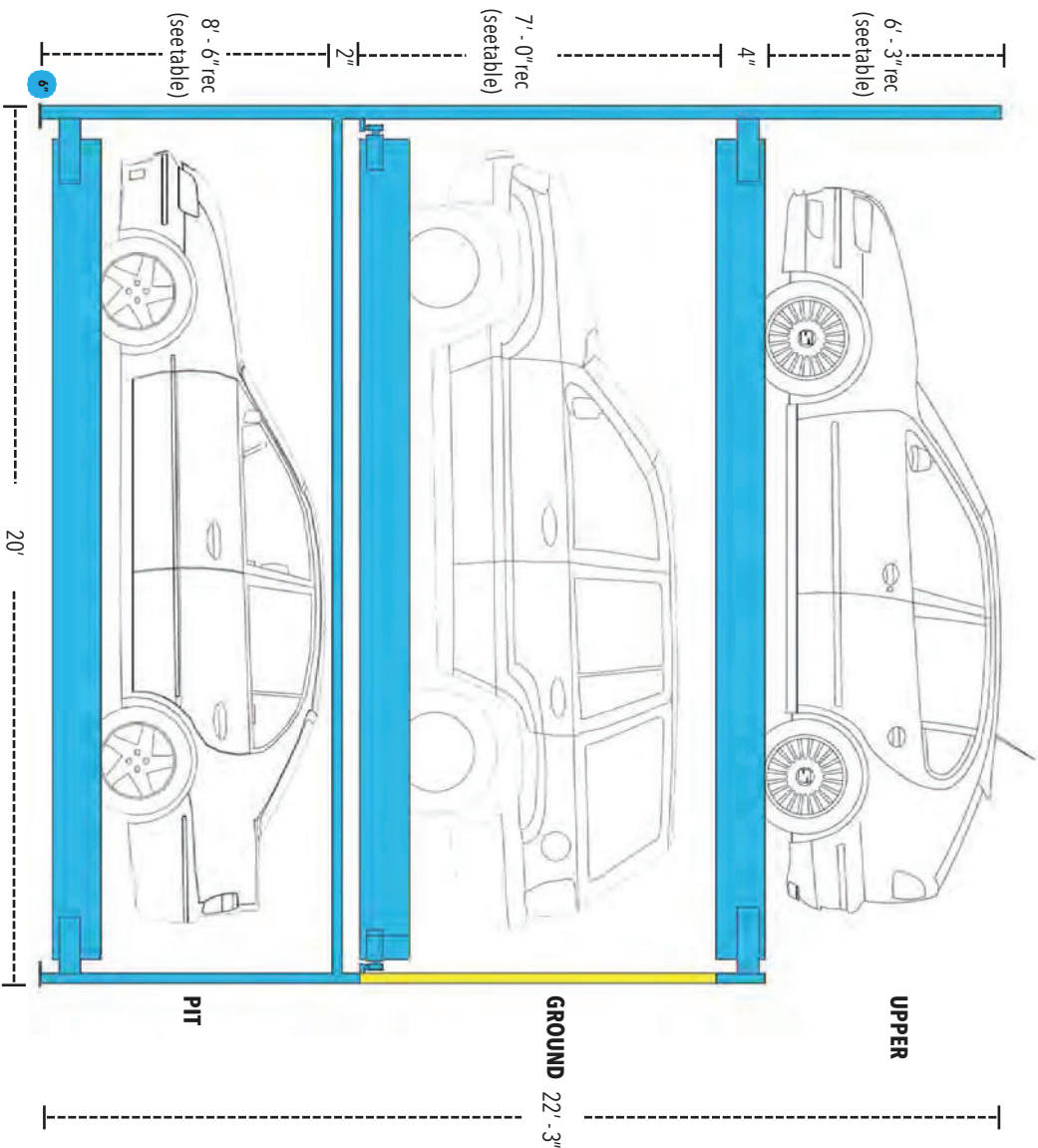
# PUZZLE



# THREE-LEVEL W/PIT



## MODEL NO 3LPWP



### CAR SIZES

	LENGTH	WIDTH
UPPER	17' - 0 <sup>3/4</sup> "	6' - 10"
GROUND	17' - 0 <sup>3/4</sup> "	6' - 6 <sup>3/4</sup> "
PIT	17' - 0 <sup>3/4</sup> "	6' - 6 <sup>3/4</sup> "

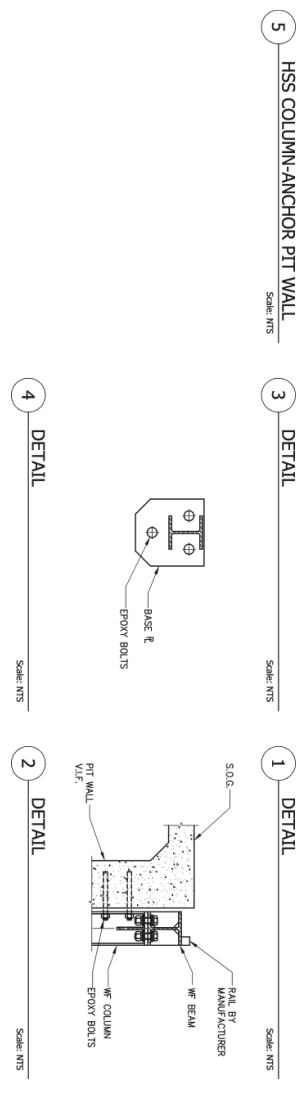
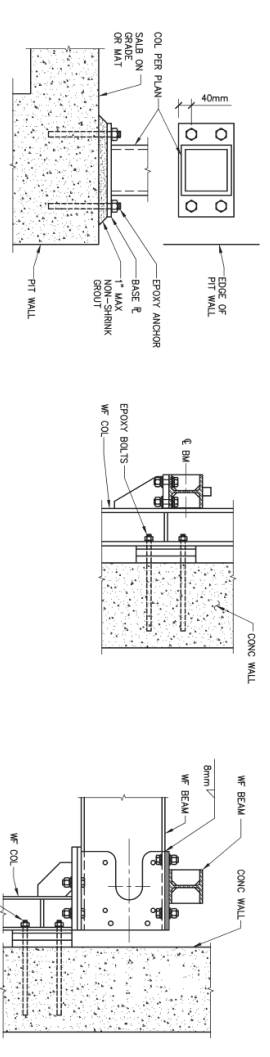
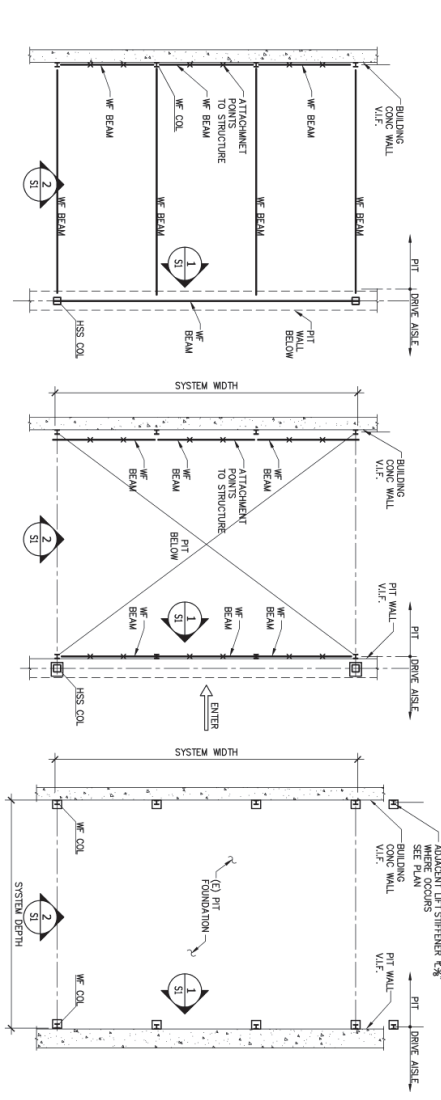
### HEIGHT OPTIONS

	RECOMMENDED	MINIMUM
UPPER	6' - 3"	5' - 5"
GROUND	7' - 0"	6' - 3"
PIT	8' - 6"	7' - 0"

### NOTES:

- Recommended and minimum car heights:
  - SUV: 6' - 3"
  - Sedan: 5' - 5"
- Additional sizes can be customized. See Car Sizes page.
- Each dimension has a tolerance of:
  - 6" for length, 6" for width, and 3" for height
- Recommend 4" depressed slab if doing ground level installation for flat driving onto platform
- Usable space dimensions will not change for flat pallets
- 6" needed from back of rear column to face of wall

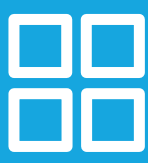
# THREE-LEVEL W/PIT



- NOTES:**
- Rod imbedment and size varies on structural wall design



# TECHNICAL SPECS



Average Retrieval Time	Ranges from 30-90 seconds depending on system
Maximum Vehicle Weight	5,200 pounds (6,000 pounds optional)
Electrical Requirement	480 3-Phase or 208 3-Phase
Lifting Motor	4.0KW-4P or 2.2 KW-4P (5.5KW for +5 Systems)
Traverse Motor	0.37 KW-4P
Control Method	PLC control
Circuit Breaker	ABB S204-C40
Operation Method	Button type or touch panel control
Emergency Stop Switch	XB2-BSS42C
Optoelectronic Switch	LA31/K31/25/31/115
Remote Monitoring	Primitive Logic / AMI
Drive System/Motor	SEW-Germany
PLC/Sensor	Rockwell
Applicable Code	CA Building Code, 2016 edition
Seismic Loads	Ch. 15 ASCE 7-10: Steel ordinary moment frame
Machine Bolts	Min tensile strength = 900 MP
Anchor Bolts/Rods	ASTM F1554, GR.55
Welding Electrodes	480 MP (E-70 KSI) MIN



5.2 Page 509



# CAR SIZES



LARGE		MEDIUM		SMALL	
LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
17' - 0 <sup>3</sup> / <sub>4</sub> "	6' - 10"	16' - 5"	6' - 10"	15' - 9"	6' - 10"
17' - 0 <sup>3</sup> / <sub>4</sub> "	6' - 6 <sup>3</sup> / <sub>4</sub> "	16' - 5"	6' - 6 <sup>3</sup> / <sub>4</sub> "	15' - 9"	6' - 6 <sup>3</sup> / <sub>4</sub> "
NOTAVAILABLE	NOTAVAILABLE	NOTAVAILABLE	NOTAVAILABLE	15' - 9"	6' - 4 <sup>3</sup> / <sub>4</sub> "

**NOTES:**

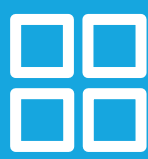
- Recommended car sizes are listed above
- Additional sizes can be customized
- Each dimension has a tolerance of:
  - 6" for length, 6" for width, and 3" for height
  - Recommend 4" depressed slab if doing ground level installation for flat driving onto platform
  - Usable space dimensions will not change for flat pallets

**SAMPLE CAR LIST**

LARGE					
BMW 5-Series		Audi Q5		Tesla Model S	Volvo XC60
MEDIUM					
Audi A6		BMW X5		Dodge Durango	Jeep Grand Cherokee
SMALL					
Acura ILX		BMW 3-Series		Honda Civic	Lexus IS

*Note: Standard load is 5,200 lbs per vehicle. Heavier loads available. Individual cars should be measured for size fit. Above is a sample list of 2016 model cars that can fit on the different platform sizes given a 6' horizontal clear height. This list is not meant to be comprehensive or exhaustive.*

# EQUIPMENT SIZES

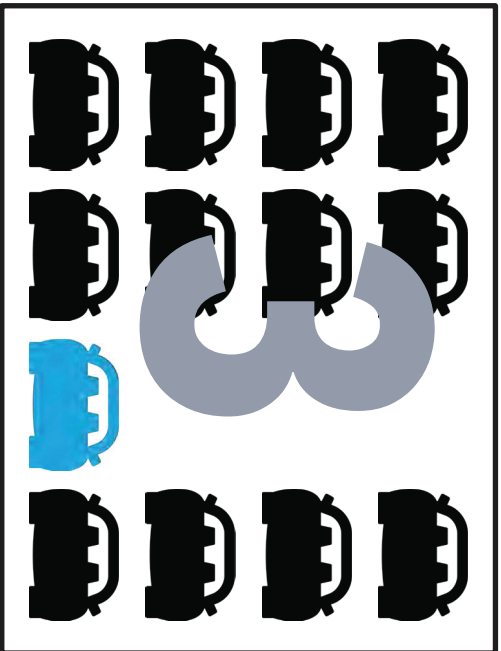
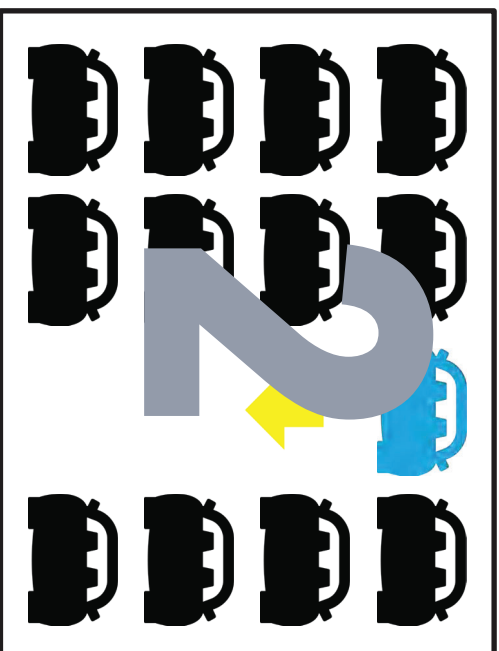
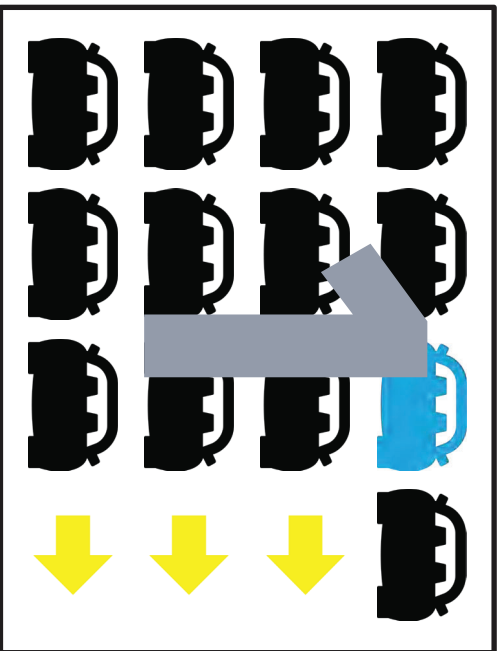


3LPWP	LENGTH	RECOMMENDED WIDTH		MINIMUM WIDTH	
		2 BAYS	3 BAYS	2 BAYS	3 BAYS
<b>S</b>	18'-8 3/4"	16'-11 7/8"	25'-2 3/8"	16'-1/8"	23'-8 5/8"
<b>M</b>	19'-6"	16'-11 7/8"	25'-2 3/8"	16'-1/8"	23'-8 5/8"
<b>L</b>	20'-3 1/4"	16'-11 7/8"	25'-2 3/8"	16'-1/8"	23'-8 5/8"

**NOTES:**

- Equipment Length: 6" back clearance needed for cable tray and installation
- Equipment Width: 6" clearance needed at two sides for vehicle door opening
- Length and Width are measured from edge of base plate to edge of base plate
- 6LP and 7LP configurations are high-rise custom-made Puzzle systems. Column and sizes are subject to change per project based on site condition/roofing/skin/etc.

# CAR RETRIEVAL



1. Except for the top level, one space will be missing from each level. This allows for each car to be independently accessible via kiosk or remote key fob. For the blue car to be retrieved, 3 cars from levels 1-3 will move to the right.
2. This allows for the blue car to drop to ground level.
3. Blue car is ready to be retrieved.

ATTACHMENT 4  
ATTACHMENT 4 Exhibit A



June 28, 2021

Brett Kolver  
City of Milwaukie  
Community Development  
6101 SE Johnson Creek Boulevard  
Milwaukie, OR 97206

**RE: File No. DR-2021-003; 10306 SE Main St (Kellogg Bowl site)**

Dear Brett:

Thank you for your review of the Henley Place multifamily project and deeming the application complete. This letter is in response to the “approvability items” noted in your letter dated June 15, 2021. The comments are shown in *italics*, with the Applicant’s response directly below.

1. *MMC Section 19.508 Downtown Site and Building Design Standards*

*Note that, for purposes of the downtown design review aspect of this application, the proposed building is considered to have two street-facing façades—the west elevation faces Main Street and the east elevation faces 23rd Avenue.*

a. *MMC Subsection 19.508.4.A Building Façade Details*

*For stand-alone multifamily residential buildings (like the proposed development), the objective standards of MMC Subsection 19.505.3.D.6 are applicable.*

- (1) *Glazing—The 25% glazing standard applies to both the west and east elevations. The west elevation appears to meet the standard, but staff’s measure of glazing was closer to the 25% minimum than the 35% figure noted in the narrative. The east elevation does not appear to meet the 25% standard. It would be helpful to see the figures/math for both calculations. If the standard cannot be met, discuss how the design is substantially consistent with the purpose statement of this design element and any applicable downtown design guidelines.*

**Response:** The preliminary architectural plans have been updated with additional detail showing glazing calculations. Please refer to the window schedule on sheets C25 and C26. Both east and west elevations exceed the minimum glazing percentage requirement.

- (2) *Exterior wall off-sets—It is not clear from the plan sheets that horizontal off-sets are provided at 40-ft intervals along the entire length of the primary façade (west elevation) on the ground-floor level. Please confirm whether the aluminum storefront windows along the 80-plus-ft façade of the live/workunits are intended to serve the offset function.*

**Response:** A partial cross section of the west building façade at the ground floor has been added below the elevation view on sheet C33, which demonstrates that the architectural design provides the required exterior wall off-sets.

b. *MMC Subsection 19.508.4.C Weather Protection*

- (1) *As per MMC Subsection 19.508.4.C.2.a(1), weather protection is required for all ground-floor building entries. Looking at Sheet C-24, it appears there are some entries on or near the south side of the building that are not covered. This includes the entries into the two-bedroom unit at the southeast corner of the building, on both the south and east elevations.*

*Please note that the ground-floor entries are not shown consistently on the various plan sheets. Sheets C-10 and C-24 appear to show different entries for the apartment in the southeast corner of the building as well as for the water/fire space in the northwest corner. Please confirm which sheet(s) are the guiding ones and be sure the various elevation sheets reflect the intended design layout.*

**Response:** The plan sheets have been checked and updated for consistency. Weather protection canopies are provided over the public building entries on the west, south and east sides of the building. Some weather canopies are provided over private residential units for aesthetic purposes. Canopies are not provided over all private unit patio doors. Sheet C24 entitled “MMC 19.508.4.C.2 Weather Protection” is the guiding sheet for weather canopy information.

- (2) *There is a pedestrian accessway along the north side of the building, and the narrative indicates that it is covered (page 26). However, no weather protection appears on Sheet C-24 for this northside sidewalk. Please explain this discrepancy and address the purpose statement of this design element and any applicable downtown design guidelines if necessary.*

**Response:** There is no public building entry on the north side of the building. The accessway along the north façade will be used as an emergency exit route from the exit-only stairwell and by maintenance personnel to access the utility rooms. The narrative response has been updated.

c. *MMC Subsection 19.508.4.E Windows and Doors*

*As noted above, the eastern façade (facing 23rd Avenue) is considered street-facing and is therefore subject to the standard for 40% ground-floor windows, which it appears to meet. However, it is not clear that the eastern façade meets the 30% glazing standard for upper floors. Please provide additional information sufficient to demonstrate that this standard is met or discuss how the design is substantially consistent with the purpose statement of this design element and any applicable downtown design guidelines.*

**Response:** The plans have been updated to provide wall openings and glazing area calculations for the west and east facing façades. Please refer to plan sheets C25 and C26.

d. *MMC Subsection 19.508.4.G Open Space*

- (1) *(1) As noted in the applicant’s narrative, the proposal provides far more than the minimum required private and common open space. Please be advised, however, that the presentation of information in Table 2 (page 33) is confusing, as the table is titled as showing indoor common space but includes a sum of all common open space (indoor and outdoor). The inclusion in Table 2 of the common outdoor space from Table 1 (page 32) adds some confusion, especially by not providing a specific*



*line with the amount of outdoor common space being tallied. This should not be a problem for approvability but may confuse the parties evaluating the application.*

**Response:** The table provides the sum of the project's total common open space area, including interior and exterior amenities, in response to Subsection 19.508.G.2.b. Common Open Space. The table and its title have been updated for clarity.

- (2) *The narrative indicates that common outdoor space is abutted on two sides by residential units or nonresidential uses with windows and entrances fronting the space as required (page 33). However, this does not appear to be the case for the common outdoor space provided at the ground level at the south side of the building. It may be necessary to address the purpose statement for this design element as well as any applicable downtown design guidelines.*

**Response:** The project exceeds its minimum 8,900-square foot outdoor space requirement by providing private balconies and a common roof top terrace, which add up to ±9,423 square feet. The roof top terrace meets the code requirement and is abutted on three sides by windows and entrances from the common amenity room and residential units. The ground floor terrace and the public plaza at Main Street, which do not meet the above requirement, are not counted towards meeting the project's outdoor space obligation. Even though those spaces are not required to meet the minimum standard, they are still shown on the plans and are listed in the narrative as open space amenities that provide a benefit to the project. The narrative response has been updated accordingly.

- (3) *As a point of information, be advised that the subject property is not adjacent to Scott Park. The adjacent property to the south (with the pond) is a parcel owned by Mil Athletic, LLC, and is not part of the Scott Park property. As noted in the narrative, the applicant is not requesting credit for open space, but this would not be an option anyway since the subject property is not directly adjacent to an improved public park.*

**Response:** The reference to Scott Park has been removed from the response in the narrative.

## 2. MMC Section 19.609 Bicycle Parking

*The language in MMC 19.609 does not explicitly state that the required bike spaces cannot be located within individual dwelling units. However, staff's interpretation of this code section is that most of the bike parking provided must be generally accessible, such as in a designated secure room. By placing almost all of the proposed bike parking within the individual dwelling units, the applicant's most recent proposal does not meet this intent. If it is not possible to locate a significant number of bike parking spaces in a more generally accessible location(s), it may be necessary to request a variance from the standards of MMC 19.609 or else accept a condition of approval to ensure that the standards are met.*

**Response:** The Applicant has added several common bicycle storage areas in multiple locations throughout the building. Bike parking requirement is satisfied through a combination of a ground-floor bike lounge accessed from the parking garage, a bike storage room on each floor accessed from the common hallway, some in-unit bike storage in larger residential units, and outside the main building entrance. Please refer to the updated narrative response to MMC Section 19.609. The preliminary architectural plans have



been updated with bike parking locations. Sheet 32 provides the dimensions of bike parking areas and the cut sheet of a typical in-unit built-in rack.

3. *MMC Section 19.911 Variances*

*The four requested variances all relate to detailed development standards established in MMC Subsection 19.304.5—maximum building setback, frontage occupancy, provision of open space in the setback area, and off-street parking between the street and the building. Understandably, much of the applicant’s justification for the variances is based on the flag- lot shape of the subject property, and the arguments for each of the four variance requests are linked. The requests to provide off-street parking between the building and Main Street and to vary from the open space requirements are particularly intertwined.*

*Staff has a few questions or suggestions for consideration of the requested variances:*

- *The 900-sq-ft open space area proposed between Main Street and the first parking space in the accessway represents only approximately 6% of the nearly 14,000-sq-ft area of the accessway, well under the 50% minimum standard. Can the applicant explain more about how that gap of 44 percentage points represents the minimum amount of off-street parking that can be provided in favor of establishing more open space?*
- *Although the proposed development would provide almost 11,000 sq ft of common open space (page 33 of the narrative), most of that open space is intended for use by the residents of the new building. The rooftop common areas, interior fitness and amenity rooms, and even the ground-level open space near the pond are not spaces that the general public is particularly invited to use. What aspects of the proposed 900-sq-ft open space are designed or intended to serve as an amenity for downtown visitors and residents, promote livability, and help soften the effects of built and paved areas, meeting the stated intent of MMC Subsection 19.304.5.H?*
- *The narrative asserts that the allowed parking reduction (25% for properties within the Downtown Mixed Use zone) is not desirable for this project (page 54). At the same time, the narrative describes the project’s “reduced parking quantity” as contributing to an environment that is more conducive for bicycles, pedestrians, and transit (page 55). The proposed parking quantity (173 spaces for 178 units) is only a three-percent (3%) reduction of the minimum requirement. How does such a minor parking reduction help to promote biking and transit? And is there truly no opportunity to further reduce parking in the accessway, which would provide open space and therefore reduce the need for both of those two variances?*

*With these questions and notes in mind, consider ways to bolster the argument(s) that the requested variances related to parking and open space do in fact represent the minimum variances necessary, particularly given the allowed parking reduction and the opportunity to further engage with Main Street through the open space area between the building and the street.*



**Response:** The variance responses in the narrative have been updated with additional information to further substantiate the need for the variances. In the latest site layout, one parking space in the garage was removed from the preliminary plans to accommodate access to the shared bicycle lounge. As stated therein, it is no feasible for to reduce parking further without jeopardizing the viability of the project.

Thank you for reviewing this information and please let us know if you have further questions.

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**



Chris Goodell, AICP, LEED<sup>AP</sup>, Associate  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
503-563-6151 | chrisg@aks-eng.com

**Enclosures**

1. Completeness Letter dated June 15, 2021
2. Updated Narrative
3. Updated Preliminary Plans



# Land Use Application for Henley Place: A Multifamily Residential Community

---

**Date:** Updated June 2021

**Submitted to:** City of Milwaukie  
Planning Department  
6101 SE Johnson Creek Boulevard  
Milwaukie, OR 97206

**Applicant:** Pahlisch Commercial, Inc.  
15333 SW Sequoia Parkway, Suite 190  
Portland, OR 97224

**AKS Job Number:** 8145



12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151

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### **Exhibits**

- Exhibit A:** Land Use Application Forms
- Exhibit B:** Preliminary Plans and Architectural Drawings
- Exhibit C:** Preliminary Stormwater Report
- Exhibit D:** Transportation Impact Study
- Exhibit E:** Clackamas County Assessor's Map
- Exhibit F:** Property Deeds
- Exhibit G:** Natural Resource Management Plan
- Exhibit H:** Mechanical Parking System Specifications

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# Land Use Application for Henley Place: A Multifamily Residential Community

<b>Submitted to:</b>	City of Milwaukie Planning Department 6101 SE Johnson Creek Boulevard Milwaukie, OR 97206
<b>Applicant:</b>	Pahlisch Commercial, Inc. 15333 SW Sequoia Parkway, Suite 190 Portland, OR 97224
<b>Property Owners:</b>	(Tax Lot 401) William & Marilyn Oetkin 10306 SE Main Street Milwaukie, OR 97222  (Tax Lot 402) David Husted 13460 SE Beech Street Milwaukie, OR 97222
<b>Applicant's Consultant:</b>	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062  Contact: Chris Goodell, AICP, LEED <sup>AP</sup> Email: chrisg@aks-eng.com Phone: (503) 563-6151
<b>Applicant's Architect:</b>	SERA Architects, Inc. 338 NW 5 <sup>th</sup> Avenue Portland, OR 97209  Contact Kurt Schultz AIA, NCARB, LEED <sup>AP</sup> Email: kurts@seradesign.com Phone: (503) 445-7312
<b>Site Location:</b>	10306 SE Main Street Milwaukie, OR 97222
<b>Clackamas County Assessor's Map:</b>	11E25CC; Tax Lots 401 and 402
<b>Site Size:</b>	±1.62 acres (Lot 401) and ±0.32 acres (Lot 402)
<b>Land Use Districts:</b>	Downtown Mixed Use (DMU); Single-Family Residential (R-5) zone



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## I. Executive Summary

The Henley Place Residential Community by Pahlisch Commercial, Inc. is a new multifamily community planned at 10306 SE Main Street in the City of Milwaukie. This application for Henley Place provides needed multifamily housing and revitalization of the north Main Street area in downtown Milwaukie. Consistent with the property's Downtown Mixed Use (DMU) Zoning, the project involves improvement of the ±1.94-acre site with 178 market-rate dwelling units. The project features include:

- A mix of studios and loft-style apartment units, traditional one- and two-bedroom units, as well as ground-floor live/work area within a new, single six-story building
- Architecturally prominent front entryway and ground floor residential lobby
- Occupied rooftop areas with residential patios and outdoor terraces
- Upper story building transitions that step back from the existing neighborhood to the east
- Northwest-style architecture with a tripartite façade division of base, middle, and top with an overhanging cornice
- Exterior building materials that present permanence and quality with a brick base and fiber cement cladding of contrasting colors
- Earth tone color palette
- Structured parking garage, including a mechanical vehicle stacker
- Complementary site landscaping and open space

The necessary land use applications for this project include:

- A Zoning Map Amendment for a portion of the site (to unify the property zoning and implement Subarea 1 of the Town Center Master Plan and align with the Comprehensive Plan goals for projects in this area)
- Type III Downtown Design Review for the site plan and building design
- Type III Natural Resource Review due to the proximity of a Water Quality Resource overlay
- Transportation Facilities Review
- Variances due the site's irregular geometry and lack of substantial frontage on SE Main Street.

The variances seek to:

- exceed the maximum setback along SE Main Street
- waive SE Main Street frontage occupancy requirement
- allow off-street parking between SE Main Street and the building
- reduce the amount of open space within the setback along SE Main Street.

This application includes preliminary site plans and architectural materials, a transportation impact study, preliminary stormwater report, a natural resources technical report, and other information which, together with this written narrative, provide the necessary factual basis for the City of Milwaukie's approval of the application.

This application involves the development of land for housing. ORS 197.307(4) states that a local government may apply only clear and objective standards, conditions, and procedures regulating the

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provision of housing, and that such standards, conditions, and procedures cannot have the effect, either in themselves or cumulatively, of discouraging housing through unreasonable cost or delay.

Oregon Courts and the Land Use Board of Appeals (LUBA) have generally held that an approval standard is not clear and objective if it imposes on an applicant “subjective, value-laden analyses that are designed to balance or mitigate impacts of the development” (Rogue Valley Association of Realtors v. City of Ashland, 35 Or LUBA 139, 158 [1998] aff’d, 158 Or App 1 [1999]). ORS 197.831 places the burden on local governments to demonstrate that the standards and conditions placed on housing applications can be imposed only in a clear and objective manner. While this application addresses all standards and conditions, the Applicant reserves the right to object to the enforcement of standards or conditions that are not clear and objective and does not waive its right to assert that the housing statutes apply to this application. [The exceptions in ORS 197.307(4)(a) and 197.307(5) do not apply to this application. ORS 197.307(7)(a) is controlled by ORS 197.307(4)].

ORS 197.195(1) describes how certain standards can be applied to a limited land use application. The applicable land use regulations for this multifamily application are found in the City of Milwaukie Development Code. Pursuant to ORS 197.195(1) Comprehensive Plan provisions (as well as goals, policies, etc. from within the adopted elements of the Comprehensive Plan) may not be used as a basis for a decision or an appeal of a decision unless they are specifically incorporated into the City of Milwaukie Development Code.

While this application addresses all applicable standards and criteria, the Applicant reserves the right to object to the enforcement of standards or conditions that are not clear and objective and does not waive its right to assert that the attempted enforcement of Comprehensive Plan provisions that are not specifically listed in the City of Milwaukie Municipal Code.

## **II. Site Description/Setting**

The subject property is ±1.94 acres and is comprised of two tax lots generally located at the northern end of Milwaukie’s downtown district, east of SE Main Street. Tax Lot 401 is ±1.62 acres and contains one building (the former Kellogg Bowl, which is permanently closed), with the majority of the property improved as paved parking. Tax Lot 402 is ±0.32 acres, a ±55-foot-wide by ±256-foot-long property. It serves as vehicular access from SE Main Street to the Kellogg Bowl building. It is also used by the adjacent Pietro’s Pizza and Veterinary Cancer & Surgery Specialists as a shared driveway with two rows of angled parking. The lot is encumbered by an easement for ingress, egress, parking, and maintenance for the benefit of Tax Lot 403 (veterinary clinic). The existing terminus of SE 23<sup>rd</sup> Avenue is adjacent to the property’s eastern property line and is shown on the preliminary plans to be used as a gated emergency-only access. The property is currently served by overhead utility lines via the SE 23<sup>rd</sup> Avenue right-of-way. Where located on-site, these utilities are planned to be placed underground as part of this project. City stormwater, sewer, and water lines are located in adjacent public right-of-way to the property and currently serving the existing use.

## **III. Applicable Review Criteria**

Sections of Milwaukie Municipal Code (MMC) not addressed in this narrative are not applicable to the review of the project.



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## Milwaukie Municipal Code

### MMC CHAPTER 19.300 BASE ZONES

#### MMC Section 19.304 DOWNTOWN ZONES

##### 19.304.2 Uses

###### A. Permitted Uses

Uses allowed in the downtown zones are listed in Table 19.304.2 with a “P.” These uses are allowed if they comply with the development and design standards, any applicable design guidelines, and other regulations of this title.

**Response:** The project involves a multifamily residential use of land, which is indicated as a permitted use per Table 19.304.2. As described later in this written narrative, a zoning map amendment is necessary for the northeast portion of the property from R-5 to DMU zone to facilitate parking and secondary emergency access in this area.

###### E. Accessory Uses

Uses that are accessory to a primary use are allowed if they comply with all development standards. Accessory uses include but are not limited to restrooms in City parks and refreshment stands at the library.

**Response:** Off-street surface parking is allowed as an accessory use for the primary multifamily residential use.

##### 19.304.3 Use Limitations, Restrictions, and Provisions

###### A. Use Limitations and Restrictions

The following provisions describe the limitations for uses listed in Table 19.304.2.

1. Residential uses are permitted throughout downtown Milwaukie, subject to the following limitations.
  - a. Along Main St south of Scott St, as shown in Figure 19.304-2, residential dwellings are only allowed on the second floor or above; they are not permitted on the ground floor.
  - b. Lobbies for upper-level dwellings are allowed on the ground floor only if a commercial use is located along a majority of the property’s street frontage. North of Scott St, residential dwellings and/or lobbies are permitted anywhere on the ground floor along Main St.
  - c. Live/work units and rowhouses are not permitted on Main St.

**Response:** These limitations do not apply to the project because the building does not have frontage on Main Street. Tax Lot 401 is separated from Main Street by Tax Lots 400, 402 and 403.

##### 19.304.4 Development Standards

Standard	Required	Proposed
<b>A. Lot Standards</b>		
1. Min. Lot Size (sq ft)	750	NA – the proposed project does not divide land. The existing properties are ±70,567 sf (TL 401) and ±13,950 (TL 402)
2. Min. street frontage (ft)	15	±55 feet of SE Main Street frontage on TL 402
<b>B. Development Standards</b>		
1. Floor Area Ratio a. Minimum b. Maximum	FAR standards do not apply to residential projects. Residential densities are controlled by minimum density requirement.	N/A
2. Building height (ft) a. Minimum b. Maximum	Min: 25 Base Max: 4 stories/55 ft (Fig. 19.304-4) Bonus: up to 2 stories/24 ft above base max. Overall Max: 79 (55 base + 24 bonus)	71'-6" 1). 12 ft. height bonus is achieved through residential use (19.304.5.B.3.a) 2). An additional story is achieved through Green Building/the Earth Advantage certification planned for this project. (19.304.5.B.3.c).
3. Flexible ground-floor space	None for stand-alone residential buildings	N/A
4. Street setback (ft)	Min: 0 Max: 10-20	A variance is necessary for this standard due to physical constraints of the property and access easement over the property that fronts on SE Main Street.
5. Frontage occupancy requirements	50-90%	A variance is required for this standard due to physical constraints of the property and access easement over the lot that fronts on SE Main Street.
6. Primary entrances	Yes	Primary entrance faces SE Main Street.
7. Off-street parking required	Min: 135 <i>(@ 1 space per unit x 178 units)</i> <i>25% DMU reduction (-45) spaces</i>  Max: 356 <i>(@ 2 spaces/unit)</i> <i>(Table 19.605.1)</i>	173 spaces provided.
8. Usable open space	50% of setback area	A variance is needed for this standard. A building cannot reasonably be provided along SE Main Street, however, a ±950-sq. ft. landscaped plaza is provided at the site access to SE Main Street.

9. Transition measures	Not applicable for residential developments	Although not required for a residential project, the applicant has provided the following transition measures: 7' stepback above 19' (the ground floor) within 50' of the property line to the R-5 zone to the east. Building height is 52' (4 stories) within 50' of R-5 zone (which is below 55' base max. height, per Fig. 19.304-4)
<b>C. Other Standards</b>		
1. Residential density (du/ac) a. Rowhouses and live/work units (1) Minimum: 10 du/ac (2) Maximum: none  b. Stand-alone multifamily (1) Minimum: 30 du/ac (2) Maximum: none	a. Live/work (1) Minimum 1 <i>(@10 du per 0.06 ac of live/work building footprint)</i> (2) Maximum None  b. Stand-Alone Multifamily: Min: 58 units <i>(@ 30 du per 1.94 ac)</i> Max: N/A for residential buildings in DMU zone. Max density regulated through height.	a. 2 live/work units b. 176 multi-family units (91 du/ac)
2. Signs		Signs are not included with this application. A separate application will be submitted for any future signs.

19.304.5 Detailed Development Standards

A. Floor Area Ratios

2. Standards

- a. The minimum floor area ratios in Subsection 19.304.4.B.1 apply to all nonresidential building development. Stand-alone residential densities are controlled by minimum density requirements.

[...]

**Response:** Floor area ratio standards only apply to nonresidential projects. Therefore, these criteria do not apply.

B. Building Height

2. Standards

- a. The minimum building height standards apply to new commercial, office, residential, and mixed-use buildings.
- b. Minimum building heights are specified in Table 19.304.4. The minimum building height of 25 ft shall be met along all street frontages for a depth of at least 25 ft from the front of the building.

- 
- c. Base maximum building heights are specified in Figure 19.304-4. Height bonuses are available for buildings that meet the standards of Subsection 19.304.5.B.3.

**Response:** Per Figure 19.304-4, the base maximum height for the subject site is four stories, or 55 feet. The Henley Place multifamily residential community is shown on the elevations to be six stories, or 72 feet. See Sheets C20 – C21 in the preliminary architectural plan set. The project is using two development incentives for an additional height of up to two stories, or 24 feet. Explanation of the height bonus requested is provided in the response below.

3. Height Bonuses

To incentivize the provision of additional public amenities or benefits beyond those required by the baseline standards, height bonuses are available for buildings that include desired public amenities or components; increase downtown vibrancy; and/or help meet sustainability goals.

A building can utilize up to 2 of the development incentive bonuses of this subsection, for a total of 2 stories or 24 ft of additional height, whichever is less, above the height maximum specified in Figure 19.304-4.

a. Residential

New buildings that devote at least one story or 25% of the gross floor area to residential uses are permitted 1 additional story or an additional 12 ft of building height, whichever is less. The residential height bonus cannot be used in combination with the lodging height bonus.

**Response:** The project is using the residential bonus for an additional 12 feet of height.

c. Green Building

Project proposals that receive approvals and certification as identified in Section 19.510 are permitted 1 additional story or an additional 12 ft of building height, whichever is less.

**Response:** This building is also slated to be Earth Advantage Certified to achieve the second building height bonus permitted in this section.

C. Flexible Ground-Floor Space

[...]

3. Exemptions

Stand-alone residential buildings on Main St as specified in Figure 19.304-2 are exempt from this requirement.

**Response:** As a stand-alone residential building, this project is exempt from the flexible ground floor space requirement. Per MMC Table 19.304.2, live/work use are listed under “Residential” use category.

D. Street Setbacks/Build-To Lines

2. Standards

- a. No minimum street setbacks are required.

- 
- b. First-floor build-to lines (required zero setbacks) are established for block faces identified on Figure 19.304-5.

**Response:** Per Figure 19.304-5, the subject site is not identified as having a build-to line requirement.

- (2) For other block faces, there is no build-to line requirement and the maximum setback shall be 10 ft. The front setback shall provide usable open space that meets the requirements of Subsection 19.304.5.H.

**Response:** Due to the existing site geometry/configuration, this application includes a variance from this standard. A detailed response is included in Section 19.911.

### 3. Exemption

The DMU Zone is exempt from the clear vision area requirements of Chapter 12.24 of the Milwaukie Municipal Code, with the exception of driveway and street intersections with McLoughlin Blvd.

**Response:** The project site does not intersect McLoughlin Boulevard. Therefore, the project is exempt from the clear vision requirements of Chapter 12.24.

### E. Frontage Occupancy

#### 2. Standards

Minimum frontage occupancy requirements are established for block faces identified on Figure 19.304-6. Frontage occupancy requirements are used in combination with the required build-to line of Subsection 19.304.5.D. The frontage occupancy requirements apply as follows:

- a. For block faces that front on Main St, 90% of the site frontage must be occupied by a building or buildings. If the development site has frontage on Main St and another street, the frontage occupancy requirement must be met on Main St only.

**Response:** The narrow width of the site and an existing easement prohibit 50 percent frontage occupancy. Therefore, the application includes a variance from this standard. Please refer to findings provided in section 19.911 for further information.

### F. Primary Entrances

#### 2. Standards

- a. All new buildings shall have at least one primary entrance facing an abutting street (i.e., within 45° of the street property line) or, if the building entrance must be turned more than 45° from the street (i.e., front door is on a side or rear elevation) due to the configuration of the site or similar constraints, a pedestrian walkway must connect the primary entrance to the sidewalk.

**Response:** As shown on the preliminary plans, the primary building entrance is oriented towards SE Main Street and a pedestrian walkway leads to the building entrance along the south side of Tax Lot 402.

### G. Off-Street Parking

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2. Standards

- a. Off-street parking for residential uses is required at the ratios established in Table 19.605.1. All other applicable standards of Chapter 19.600 apply.

**Response:** The project meets off-street parking standards. Compliance with Table 19.605.1 is addressed later in this narrative.

- c. Off-street surface parking lots (including curb cuts) shall not be located within 50 ft of the Main St right-of-way.

**Response:** The project does not include parking lots within 50 feet of SE Main Street. Along with the site access, the first 50 feet are improved as usable open space with attractive landscaping and a seating area.

- d. Off-street parking shall not be located between a building and the street-facing lot line.

**Response:** This application includes a variance from this standard due to unique physical characteristics of the property. A detailed response is provided in Section 19.911.

H. Open Space

2. Standards

- a. When a building is set back from the sidewalk, at least 50% of the setback area shall provide usable open space, such as a public plaza or pedestrian amenities, that meets the standards of this subsection. Building setbacks cannot exceed the maximum setbacks established by Subsection 19.304.5.D and the frontage occupancy requirements of Subsection 19.304.5.E.

**Response:** This application includes a request for a variance from this standard due to unique physical characteristics of the property. The bulk of the subject site's frontage on SE Main Street is occupied by a driveway that provides ingress/egress to the site and is shared with adjoining properties; therefore, this standard cannot be met. Please refer to the detailed response in Section 19.911.

- b. Usable open space shall be abutted on at least two sides by retail shops, restaurants, offices, services, or residences with windows and entrances fronting on the space.

**Response:** This criterion does not apply, as the project cannot provide a building along Tax Lot's 402 frontage on SE Main Street (as previously addressed).

- c. Usable open space must be accessible at grade adjacent to the sidewalk.

**Response:** The preliminary plans illustrate that open space (pedestrian plaza) at SE Main Street is accessible at grade adjacent to the pedestrian walkway.

- d. Open space may be hardscaped or landscaped, including plazas, courtyards, gardens, terraces, outdoor seating, and small parks.

**Response:** The plaza incorporates a combination of landscape, hardscape, and street furnishings.

I. Transition Measures

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1. Intent

To minimize impacts of commercial or mixed-use development on lower-density residential uses.

2. Standards

For properties north of Harrison St and located within 50 ft of a lower-density residential zone (R-10, R-7, or R-5), the transition area measures in Subsection 19.504.6 apply.

**Response:** The subject property is located north of Harrison Street and located within 50 feet of the R-5 zoning district. Per the standards of Section 19.504.6, this application includes proper transition between the multifamily building and the neighboring properties (to the east) in the R-5 zoning designation. A zone change is included with this application for the northeast section of the property currently zoned R-5. Additional setbacks are not required for northeast section of the multifamily structure, but is required for the southeast section of the building. As shown on the preliminary plans, the building steps back 7 feet above the ground floor within 50 feet of the property line to the R-5 zone to the east. As shown on the architectural drawings, the building height within 50 feet of the property line to the R-5 zone (eastern property line) is 52 feet, lower than the base building height allowance of 55 feet.

In addition:

- a. Within 50 ft of the property line abutting lower-density residential zones, buildings shall provide a step back of at least 6 ft for any portion of the building above 35 ft.

**Response:** The site abuts R-5-zoned properties along its eastern property line. As shown on the preliminary plans, the building steps back 7 feet above 19 feet in height within 50 feet of the property line abutting the R-5 zone to the east.

- b. The height bonuses in Subsection 19.304.5.B.3 cannot be applied within 50 ft of a lower-density residential zone.

**Response:** As shown on the architectural drawings, the building height within 50 feet of the property line abutting the R-5 zone is 52 feet, lower than the base maximum building height of 55 feet.

J. Residential Density

2. Standards

- a. Minimum densities for rowhouses and live/work units shall be 10 units per acre.
- b. Minimum densities for stand-alone multifamily dwellings and senior/retirement housing in the DMU Zone shall be 30 units per acre. Maximum residential densities are controlled by height limits.

**Response:** At 30 du/ac minimum density for stand-alone multifamily housing, the 1.94-acre site has a minimum requirement of 58 units. The project includes 176 standard units, and two live/work units. The minimum required density for live/work portion of the project is one unit, based on 10 du/ac density applied to the ±2,500 square feet of building area

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dedicated to live/work use. The plans show compliance with the height limit, which controls maximum residential density. As such, both criteria are met.

3. Exemption

There are no minimum density requirements when residential units are developed as part of a mixed-use building.

**Response:** This application does not involve a mixed-use building. This criterion does not apply.

19.304.6 Public Area Requirements

B. Applicability, Review Process, and Standards

Development in downtown zones is subject to the review process and standards of Chapter 19.700 as specified in the chapter's applicability provisions. Required public improvements along rights-of-way included in the PAR shall be consistent with the PAR as implemented in the Milwaukie Public Works Standards.

**Response:** Compliance with MMC Chapter 19.700 is addressed further in the narrative.

19.304.7 Additional Standards

Depending upon the type of use and development proposed, the following sections of Chapter 19.500 Supplementary Development Regulations may apply. These sections are referenced for convenience and do not limit or determine the applicability of other sections within the Milwaukie Municipal Code.

A. Section 19.504 Site Design Standards

B. Section 19.505 Building Design Standards

C. Section 19.508 Downtown Site and Building Design Standards

**Response:** Responses to criteria in Sections 19.504, 19.505, and 19.508 are addressed below.

19.304.8 Variances

The Planning Director or Planning Commission may authorize variances to the development standards under Subsection 19.304.4 in accordance with procedures of Section 19.911.

**Response:** Variances are described later in the narrative, demonstrating compliance with MMC Section 19.911.

MMC CHAPTER 19.400 OVERLAY ZONES AND SPECIAL AREAS

MMC Section 19.402 NATURAL RESOURCES

19.402.3 Applicability

A. The regulations in Section 19.402 apply to all properties that contain, or are within 100 ft of a WQR and/or HCA (including any locally significant Goal 5 wetlands or habitat areas identified by the City of Milwaukie) as shown on the Milwaukie Natural Resource Administrative Map (hereafter "NR - Administrative Map").

**Response:** Per the City of Milwaukie's Natural Resources (NR) Administrative Map, there are two off-site Water Quality Resources (WQRs) partially overlaying the project site.

The City Administrative Map shows the WQR overlaying a small portion of northeast corner of the site. AKS biologist completed a field boundary verification and determined that WQR does not extend over the project boundary and is located outside the planned



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limit of disturbance on SE 23<sup>rd</sup> Avenue. Please refer to Sheets P-03, P-07, P-10, and P-12 in the Preliminary Plans for the WQR boundary overlay.

The southern property line runs adjacent to an artificially created pond, which is located 5 feet below the site's grade and is separated by a concrete retaining wall and a chain link fence. The full width of the mapped 50-foot Vegetated Corridor (VC) is located on the Applicant's property. The site has been visited and mapped by a qualified wetland biologist. These areas were developed and paved ±60 years ago; no vegetation or any natural resources are present within the VC on-site.

- G. If more than 150 sq ft of area will be disturbed in conjunction with a proposed activity listed as exempt in Subsection 19.402.4.B, a construction management plan shall be submitted according to the provisions of Subsection 19.402.9. This requirement applies even when the proposed activity will not occur within a designated natural resource but is within at least 100 ft of the resource, in accordance with Table 19.402.3.

**Response:** A Preliminary Construction Management, Grading, Erosion, and Sediment Control Plan is included with this application. Please refer to Sheet P-07 in the preliminary plans.

#### 19.402.4 Exempt Activities

##### A. Outright Exemptions

The following activities in WQRs or HCAs are exempt from the provisions of Section 19.402:

- 10. Routine repair and maintenance, alteration, and/or total replacement of existing utility facilities, accesses, streets, driveways, trails, walkways, and parking improvements (including asphalt overlays); provided that there is no new disturbance of the WQR or HCA, no increase in impervious area, no reduction in landscaped areas or tree cover, and no other change that could result in increased direct stormwater discharges to the WQR.

**Response:** Planned improvements along 23rd Ave are exempt from NR review, as the existing asphalt is slated to be replaced with new pavement without increase in impervious area, reduction in landscaped areas or tree cover, or other changes that will result in increased direct stormwater discharges to the WQR.

#### 19.402.8 Activities Requiring Type III Review

Within either WQRs or HCAs, the following activities are subject to Type III review and approval by the Planning Commission under Section 19.1006, unless they are otherwise exempt or permitted as a Type I or II activity.

- A. The activities listed below shall be subject to the general discretionary review criteria provided in Subsection 19.402.12:
  - 1. Any activity allowed in the base zone that is not otherwise exempt or permitted as a Type I or II activity.
  - 2. Within HCAs, development that is not in compliance with the nondiscretionary standards provided in Subsection 19.402.11.D.
  - 3. New roads to provide access to protected water features, necessary ingress and egress across WQRs, or the widening of an existing road.

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4. Improvement of existing public utility facilities that cannot meet the applicable standards of Subsection 19.402.11.E.
  5. New stormwater facilities that cannot meet the applicable standards of Subsection 19.402.11.E.
  6. New public or private utility facility construction that cannot meet the applicable standards of Subsection 19.402.11.E.
  7. Walkways and bike paths that are not exempt per Subsection 19.402.4 or cannot meet the applicable standards of Subsection 19.402.11.E.
  8. Tree removal in excess of that permitted under Subsections 19.402.4 or 19.402.6.
  9. Landscaping and maintenance of existing landscaping that would increase impervious area by more than 150 sq ft.
  10. Routine repair and maintenance, alteration, and/or total replacement of existing legal buildings or structures that increases the existing disturbance area by more than 150 sq ft within the WQR.
  11. Routine repair and maintenance, alteration, and/or total replacement of existing utility facilities, accesses, streets, driveways, and parking improvements that would disturb more than 150 sq ft within the WQR.

**Response:** The project involves removal of existing paved parking within the mapped VC in the southern portion of the property and accommodates needed multi-family housing, common outdoor open space, and a 10-foot-wide native tree/shrub landscape area. Due to site constraints, reestablishment of parking area in VC at this location was determined to be not practical; therefore, these activities require a Type III Discretionary Review. As noted above, the 50-foot VC associated with the off-site pond is devoid of vegetation and consists entirely of paved parking established in the early 1960s for the former Kellogg Bowl Bowling Alley. Due to existing development within the WQR, the project itself will not have a detrimental impact to the ecological functions of the adjacent water feature but rather provides an overall net ecological benefit to the WQR over existing conditions.

#### 19.402.9 Construction Management Plans

- B. Construction management plans shall provide the following information:
  1. Description of work to be done.
  2. Scaled site plan showing a demarcation of WQRs and HCAs as areas for building foundations, utilities, stormwater facilities, etc.
  3. Location of site access and egress that construction equipment will use.
  4. Equipment and material staging and stockpile areas.
  5. Erosion and sediment control measures.
  6. Measures to protect trees and other vegetation located within the potentially affected WQR and/or HCA. A root protection zone shall be established around each tree in the WQR or HCA that is adjacent to any approved work area. The root protection zone shall extend from the trunk to the outer edge of the tree's canopy, or as

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close to the outer edge of the canopy as is practicable for the approved project. The perimeter of the root protection zone shall be flagged, fenced, or otherwise marked and shall remain undisturbed. Material storage and construction access is prohibited within the perimeter. The root protection zone shall be maintained until construction is complete.

**Response:** A Preliminary Construction Management, Grading, Erosion, and Sediment Control Plan is included with this application. It provides the required information stated above, as applicable.

19.402.11 Development Standards

A. Protection of Natural Resources During Site Development During development of any site containing a designated natural resource, the following standards shall apply:

1. Work areas shall be marked to reduce potential damage to the WQR and/or HCA.

**Response:** The area of the WQR is planned to be marked during construction to reduce the potential for damage to the WQR.

2. Trees in WQRs or HCAs shall not be used as anchors for stabilizing construction equipment.

**Response:** Trees or vegetation located within the WQR area or the Vegetative Corridor will not be used as anchors or for stabilizing construction equipment. These areas will be marked to prohibit entry.

3. Native soils disturbed during development shall be conserved on the property.

**Response:** As stated above, the site has been previously filled and paved, so native soils are not present within the WQR overlay. Per the Preliminary Construction Management, Grading, Erosion, and Sediment Control Plan, the project will not disturb additional areas.

4. An erosion and sediment control plan is required and shall be prepared in compliance with requirements set forth in the City's Public Works Standards.

**Response:** The preliminary plans include grading and erosion control measures. Prior to the start of construction activities, the Applicant will apply for a grading and erosion control permit consistent with the City's Public Works Standards.

5. Site preparation and construction practices shall be followed that prevent drainage of hazardous materials or erosion, pollution, or sedimentation to any WQR adjacent to the project area.

**Response:** The Applicant is prepared to implement best management practices on-site to prevent the drainage of hazardous materials, erosion, pollution, or sedimentation within the adjacent WQR.

6. Stormwater flows that result from proposed development within and to natural drainage courses shall not exceed predevelopment flows.

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**Response:** The application includes a preliminary composite utility plan and preliminary stormwater report that demonstrate that stormwater runoff associated with the project is directed to the public system and is attenuated in accordance with City standards.

7. Prior to construction, the WQR and/or HCA that is to remain undeveloped shall be flagged, fenced, or otherwise marked and shall remain undisturbed. Such markings shall be maintained until construction is complete.

**Response:** The resource will continue to be fenced during construction to ensure that construction activities are not undertaken within the protected areas, which are located off-site, on the adjacent property to the south.

8. The construction phase of the development shall be done in such a manner as to safeguard the resource portions of the site that have not been approved for development.

**Response:** The protected resource is located off-site (on the adjacent property to the south).

9. Where practicable, lights shall be placed so that they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

**Response:** Lighting is not planned which would shine directly into or at the pond.

10. All work on the property shall conform to a construction management plan prepared according to Subsection 19.402.9.

**Response:** The Applicant acknowledges the above standards and agrees to comply with them during construction. The Applicant has prepared a Preliminary Construction Management, Grading, Erosion, and Sediment Control Plan, which conforms to the requirements of 19.402.9. The Final Construction Management Plan will be provided to the City's Engineering Department prior to the commencement of construction activities.

**B. General Standards for Required Mitigation**

Where mitigation is required by Section 19.402 for disturbance to WQRs and/or HCAs, the following general standards shall apply:

1. Disturbance
  - a. Designated natural resources that are affected by temporary disturbances shall be restored, and those affected by permanent disturbances shall be mitigated, in accordance with the standards provided in Subsection 19.402.11.C for WQRs and Subsection
  - b. Landscape plantings are not considered to be disturbances, except for those plantings that are part of a non-exempt stormwater facility; e.g., raingarden or bioswale.
2. Required Plants

Unless specified elsewhere in Section 19.402, all trees, shrubs, and ground cover planted as mitigation shall be native plants, as identified on the Milwaukie Native Plant List. Applicants are encouraged to choose particular native species that are

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appropriately suited for the specific conditions of the planting site; e.g., shade, soil type, moisture, topography, etc.

**Response:** As illustrated on the preliminary plans, a 10-foot-wide landscape strip is planned to be provided along the project site’s southern boundary (adjacent to the off-site resource). This replaces the asphalt parking lot in the area. Appropriately suited Native Species, as identified on the Milwaukie Native Plant List, are slated to be planted in the landscape strip.

3. Plant Size

Required mitigation trees shall average at least a ½-in caliper—measured at 6 in above the ground level for field-grown trees or above the soil line for container-grown trees—unless they are oak or madrone, which may be 1-gallon size. Required mitigation shrubs shall be at least 1-gallon size and 12 in high.

**Response:** As illustrated on the preliminary plans, the guidelines required by this section are satisfied.

4. Plant Spacing

Trees shall be planted between 8 and 12 ft on center. Shrubs shall be planted between 4 and 5 ft on center or clustered in single-species groups of no more than 4 plants, with each cluster planted between 8 and 10 ft on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing measurements.

**Response:** A Preliminary Landscape Plan is included in the preliminary plans as Sheet P-11. Due to the unique characteristics of the site, preparation of this plan necessitated the expertise of a natural resource specialist in concert with a landscape architect. This standard is met, as applicable.

5. Plant Diversity

Shrubs shall consist of at least 2 different species. If 10 trees or more are planted, then no more than 50% of the trees shall be of the same genus.

**Response:** As illustrated on the Preliminary Landscape Plan, a 10-foot landscape strip along the project site’s southern boundary includes native cascara trees and native dull Oregon grape and flowering red currant shrubs. The tree and shrub species selected are not expected to have a long-term effect on the integrity of the off-site retaining wall, yet will provide shade to the Primary Protected Water Feature.

6. Location of Mitigation Area

a. On-Site Mitigation

All mitigation vegetation shall be planted on the applicant’s site within the designated natural resource that is disturbed, or in an area contiguous to the resource area; however, if the vegetation is planted outside of the resource area, the applicant shall preserve the contiguous planting area by executing a deed restriction such as a restrictive covenant.

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**Response:** As illustrated on the preliminary plans, the 10-foot landscape strip is to be located on-site and consist of a total of ±1,800 square feet, immediately adjacent to the off-site pond.

7. **Invasive Vegetation**

Invasive nonnative or noxious vegetation shall be removed within the mitigation area prior to planting, including, but not limited to, species identified as nuisance plants on the Milwaukie Native Plant List.

**Response:** There is no vegetation present on the site within the mapped WQR, as it is surfaced in asphalt.

8. **Ground Cover**

Bare or open soil areas remaining after the required tree and shrub plantings shall be planted or seeded to 100% surface coverage with grasses or other ground cover species identified as native on the Milwaukie Native Plant List. Revegetation shall occur during the next planting season following the site disturbance.

**Response:** As illustrated on the Preliminary Landscape Plan, tree and shrub plantings achieve 100% surface coverage, no groundcover is planned in the native plant strip.

9. **Tree and Shrub Survival**

A minimum of 80% of the trees and shrubs planted shall remain alive on the second anniversary of the date that the mitigation planting is completed.

a. **Required Practices**

To enhance survival of the mitigation plantings, the following practices are required:

- (1) Mulch new plantings to a minimum of 3-in depth and 18-in diameter to retain moisture and discourage weed growth.
- (2) Remove or control nonnative or noxious vegetation throughout the maintenance period.

**Response:** New plantings will be maintained throughout the maintenance period, as required by this section.

b. **Recommended Practices**

To enhance survival of tree replacement and vegetation plantings, the following practices are recommended:

- (1) Plant bare root trees between December 1 and April 15; plant potted plants between October 15 and April 30.
- (2) Use plant sleeves or fencing to protect trees and shrubs against wildlife browsing and the resulting damage to plants.
- (3) Water new plantings at a rate of 1 in per week between June 15 and October 15 for the first 2 years following planting.

**Response:** The Applicant notes the planting recommendations and intends to follow the City’s guidelines for recommended planting practices.

c. **Monitoring and Reporting**

Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die shall be replaced in kind as needed to ensure the minimum 80% survival rate. The Planning Director may require a maintenance bond to cover the continued health and survival of all plantings. A maintenance bond shall not be required for land use applications related to owner-occupied single-family residential projects. An annual report on the survival rate of all plantings shall be submitted for 2 years.

**Response:** The Applicant notes the City’s monitoring and maintenance bond requirements and will comply with the City’s requirements throughout the maintenance period, as applicable.

10. **Light Impacts**

Where practicable, lights shall be placed so that they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

**Response:** Lighting that will shine directly into the proposed WQR area is not being provided as part of this project.

C. **Mitigation Requirements for Disturbance within WQRs**

1. The requirements for mitigation vary depending on the existing condition of the WQR on the project site at the time of application. The existing condition of the WQR shall be assessed in accordance with the categories established in Table 19.402.11.C.
2. When disturbance within a WQR is approved according to the standards of Section 19.402, the disturbance shall be mitigated according to the requirements outlined in Table 19.402.11.C and the standards established in Subsection 19.402.11.B.

Table 19.402.11.C Mitigation Requirements for WQRs	
Existing Condition of WQR	Requirements
Class C (“Poor”)	
Extent and character of existing vegetation provides poor conditions for water quality and wildlife habitat	
Combination of trees, shrubs, and ground cover are less than 80% present and/or less than 25% canopy coverage in vegetated corridor.	<ul style="list-style-type: none"> <li>• Restore and mitigate disturbed areas with native species from the Milwaukee Native Plant List, using a City-approved plan developed to represent the vegetative composition that would naturally occur on the site.</li> <li>• Plant and/or seed all bare areas to provide 100% surface coverage.</li> <li>• Inventory and remove debris and noxious materials.</li> </ul>

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**Response:** The mapped onsite WQR consists entirely of paved parking lot and does not contain any vegetation. It is separated from the pond by an off-site retaining wall and is ±5 feet above water level. Due to this physical separation, there is no opportunity to restore the vegetated corridor buffer on the project site without off-site grading and removing the retaining wall from the adjacent property. The Applicant intends to provide a 10-foot on-site native plant landscaping strip adjacent to the pond, thus creating a 3D connection with the pond via tree canopies, which are intended to shade the pond, as well as provide a greater physical barrier from human activities on the project site than currently exists. The landscaping area will be planted with species selected from the Milwaukie Native Plant List. Expanding the landscaping beyond 10 feet would not provide any additional environmental benefit for WQR due to the significant difference in grade and the concrete wall in between. This design provides maximum possible benefit while still allowing the project to remain financially viable.

#### 19.402.12 General Discretionary Review

This subsection establishes a discretionary process by which the City shall analyze the impacts of development on WQRs and HCAs, including measures to prevent negative impacts and requirements for mitigation and enhancement. The Planning Director may consult with a professional with appropriate expertise to evaluate an application, or they may rely on appropriate staff expertise to properly evaluate the report's conclusions.

##### A. Impact Evaluation and Alternatives Analysis

An impact evaluation and alternatives analysis is required to determine compliance with the approval criteria for general discretionary review and to evaluate development alternatives for a particular property. A report presenting this evaluation and analysis shall be prepared and signed by a knowledgeable and qualified natural resource professional, such as a wildlife biologist, botanist, or hydrologist. At the Planning Director's discretion, the requirement to provide such a report may be waived for small projects that trigger discretionary review but can be evaluated without professional assistance.

The alternatives shall be evaluated on the basis of their impact on WQRs and HCAs, the ecological functions provided by the resource on the property, and off-site impacts within the subwatershed (6th Field Hydrologic Unit Code) where the property is located.

**Response:** The Applicant has submitted a Natural Resource Management Plan prepared by a qualified natural resource professional. Please refer to that document for impact evaluation and alternatives analysis.

### MMC Chapter 19.500 SUPPLEMENTARY DEVELOPMENT REGULATIONS

#### MMC Section 19.504 SITE DESIGN STANDARDS

##### 19.504.1 Clear Vision Areas

A clear vision area shall be maintained on the corners of all property at the intersection of 2 streets or a street and a railroad according to the provisions of the clear vision ordinance in Chapter 12.24.



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**Response:** The subject site is not located where two streets or a street and a railroad intersect; therefore, this standard is not applicable.

**19.504.2 Maintenance of Minimum Ordinance Requirements**

No lot area, yard, other open space, or off-street parking or loading area shall be reduced by conveyance or otherwise below the minimum requirements of this title, except by dedication or conveyance for a public use.

**Response:** This application does not require any conveyance for public use or dedication. This criterion does not apply.

**19.504.3 Dual Use of Required Open Space**

No lot area, yard, or other open space or off-street parking or loading area which is required by this title for one use shall be used to meet the required lot area, yard, or other open space or off-street parking area for another use, except as provided in Subsection 19.605.4.

**Response:** This application does not include the use of required open space area (or other) for parking or similar use. The criterion is met.

**19.504.4 Buildings on the Same Lot**

- A. In R-10, R-7, and R-5 Zones, 1 primary dwelling shall be permitted per lot. A detached accessory dwelling unit may be permitted per Subsection 19.910.1.
- B. In the R-3 Zone, 1 single-family detached dwelling shall be permitted per lot. A detached accessory dwelling unit may be permitted per Subsection 19.910.1. Multifamily housing, with multiple structures designed for dwelling purposes, may be permitted as a conditional use per Section 19.905.

**Response:** The subject property is split zoned Downtown Mixed Use (DMU) and Single-Family Residential (R-5). Included in this application are narrative responses for a zoning map amendment for the R-5 portion of the property to DMU. This will allow for more efficient use of the property and is consistent with adjacent zoning. The only structural improvement included with this application is for one multifamily housing building. The criteria are met.

**19.504.5 Distance from Property Line**

Where a side or rear yard is not required and a structure is not to be erected at the property line, it shall be set back at least 3 ft from the property line.

**Response:** The DMU zone does not require the structure to be set back a minimum distance. Due to the neighboring properties zoned R-5, the multifamily building will be set back 5 feet from the property line in the southeast corner and floors are terraced to be setback further, as shown on the preliminary plans (Exhibit B). The northeast corner of the building is shown to be set back 3 feet off the side (north) and rear (east) property lines. The criterion is met.

**19.504.6 Transition Area Measures**

Where commercial, mixed-use, or industrial development is proposed abutting or adjacent to properties zoned for lower-density residential uses, the following transition measures shall be required. These additional requirements are intended to minimize impacts on lower-density residential uses.

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- A. All yards that abut, or are adjacent across a right-of-way from, a lower-density zone shall be at least as wide as the required front yard width of the adjacent lower-density zone. This additional yard requirement shall supersede the base zone yard requirements for the development property where applicable, except in the NMU Zone. In the NMU Zone, the base zone front yard requirements supersede these requirements.
  - B. All yards that abut, or are adjacent across a right-of-way from, a lower-density zone shall be maintained as open space. Natural vegetation, landscaping, or fencing shall be provided to at least the 6-ft level to screen lower-density residential uses from direct view across the open space, subject to the provisions of Subsection 19.502.2.B.

**Response:** This application does not include commercial, mixed-use, or industrial land uses. Rather, it is a multi-family residential project. This criterion does not apply.

#### 19.504.7 Minimum Vegetation

No more than 20% of the required vegetation area shall be covered in mulch or bark dust. Mulch or bark dust under the canopy of trees or shrubs is excluded from this limit. Plans for development shall include landscaping plans which shall be reviewed for conformance to this standard.

**Response:** As shown on the Preliminary Landscape Plan (Exhibit B), less than 20 percent of the required vegetation area is covered in mulch or bark dust. The criterion is met.

#### 19.504.8 Flag Lot Design and Development Standards

##### A. Applicability

Flag lots in all zones are subject to the development standards of this subsection.

**Response:** The project site involves two properties. One is long and narrow (rectangle shape), fronts on SE Main Street, and is ±0.32 acres. The other is geometrically configured similar to a square, is located “behind” the rectangular shaped property and is ±1.62 acres. Viewed together, there is somewhat of a flag lot appearance; however, these properties were not created at as a flag lot and thus these standards do not apply.

#### 19.504.9 On-Site Walkways and Circulation

##### A. Requirement

All development subject to Chapter 19.700 (excluding single-family and multifamily residential development) shall provide a system of walkways that encourages safe and convenient pedestrian movement within and through the development site.

**Response:** Per Subsection 19.504.9.A., multifamily residential projects are excluded from On-Site Walkways and Circulation requirement of MMC 19.504.9. The project meets the applicable requirements for on-site walkways and circulation requirements of Code Section 19.304 Downtown Zones, subsection 19.304.5.F.2.(a) and Section 19.606.3 Pedestrian Access and Circulation for parking areas. Pedestrian walkways connect public sidewalks and parking areas to the building’s primary entrance as well as to the pedestrian building entrance on the east facade.

### MMC Section 19.505 BUILDING DESIGN STANDARDS

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**Response:** Per MMC Subsection 19.907.2, stand-alone multifamily residential buildings have various options for downtown design review. The Applicant is opting for Type III review pursuant to the standards of MMC 19.508 Downtown Site and Buildings Design Standard, which requires substantial consistency with the purpose statement of the applicable design standards and the applicable Downtown Design Guidelines. MMC 19.508.4.A.3 requires multi-family residential buildings to comply with the objective standards of Subsection 19.505.3.D.6 Building Façade Design. Therefore, a response to that subsection is provided below.

**19.505.3 Multifamily Housing**

[...]

**D. Design Guidelines and Standards**

[...]

**6. Building Façade Design**

- a. Street-facing building façades shall be divided into wall planes. The wall plane on the exterior of each dwelling unit shall be articulated by doing one or more of the following:
  - (1) Incorporating elements such as porches or decks into the wall plane.
  - (2) Recessing the building a minimum of 2 ft deep x 6 ft long.
  - (3) Extending an architectural bay at least 2 ft from the primary street-facing façade.

**Response:** The exterior street facing facades have projecting balconies, a major recess at the center of the building, plus minor recesses of 2 feet.

- b. Windows and the glass portion(s) of doors with glazing shall occupy a minimum of 25% of the total street-facing façade.

**Response:** The west façade facing SE Main Street and east façade facing SE 23<sup>rd</sup> Avenue are subject to the minimum 25% glazing standard. As illustrated on the preliminary architectural plans, the project exceeds this standard. Please refer to sheets C25 and C26 for glazing area calculations.

- c. Buildings shall have a distinct base and top. The base of the building (ground-floor level) shall be considered from grade to 12 ft above grade. The base shall be visually distinguished from the top of the building by any of the following physical transitions: a change in brick pattern, a change in surface or siding materials, a change in color, or a change in the size or orientation of window types.

**Response:** The building has a distinct base, middle, and top. The base of the building is clad with brick, the middle section of the building is lap siding, and the top of the building has an attic story in a contrasting color with a projecting cornice.

- d. To avoid long, monotonous, uninterrupted walls, buildings shall incorporate exterior wall off-sets, projections and/or recesses. At least 1 ft of horizontal variation shall be used at

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intervals of 40 ft or less along the building’s primary façade on the ground-floor level.

**Response:** The building has strong horizontal offsets at both the building base and upper levels with a recessed courtyard on levels 2 through 6. The building has a brick base with offsets of more than 12 inches every 40 feet. Please refer to plan sheets C16 and C33 in the preliminary architectural set. A partial cross section of the west façade with dimensioned offsets has been added to sheet C33 along the elevation view to clearly demonstrate the offsetting planes at the ground floor.

- e. Blank, windowless walls in excess of 750 sq ft are prohibited when facing a public street, unless required by the Building Code. In instances where a blank wall exceeds 750 sq ft, it shall be articulated or intensive landscaping shall be provided.

**Response:** There are no blank walls facing public Main Street (please refer to Sheet C16 in the preliminary architectural drawings for the West Elevation). Only a small portion of the east facade is visible from SE 23<sup>rd</sup> Avenue, which is perpendicular to the building (please refer to Sheet C18 in the preliminary architectural plans for the East Elevation). SE 23<sup>rd</sup> Avenue leading to the project is to be used by emergency response vehicles and does not support pedestrian separated traffic. The ground floor of the east façade is occupied by structured parking, which is why it does not contain windows. Building Code requires ventilation of structured parking, therefore metal mesh grilles are provided throughout intervals along the ground floor to provide ventilation and daylight. Extensive landscaping is included along the east perimeter of site to provide screening along the ground floor. Wax Leaf Privet shrubs serve as an effective privacy hedge with its dense evergreen foliage. Trees on the east façade are projected to grow ±30 feet in height and ±10 feet in width at maturity. Above the ground floor, the east facing façade is well articulated, has varying heights and massing achieved with building stepbacks, balconies, and roof terraces.

- f. Garage doors shall be painted to match the color or color palette used on the rest of the buildings.

**Response:** Garage doors are painted to match the exterior building palette.

#### 19.505.6 Live/Work Units

##### A. Purpose

This section establishes regulations and standards for creating and operating live/work units as a primary use. The purposes of these provisions are as follows:

1. Allow for the creation of cost-efficient alternative work space that will provide an incentive for entrepreneurs, business owners, artists, artisans, and other individuals to work in Milwaukie and contribute to the city’s economy.
2. Foster and encourage the development of small businesses.
3. Enliven the vitality of commercial corridors by encouraging on-site residential uses.

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4. Ensure that the use and design of live/work units is compatible with the use and design of surrounding structures and development.

**B. Applicability**

These standards apply to live/work units, as defined in Section 19.201, wherever this use is allowed by the base zones in Chapter 19.300 or the overlay zones in Chapter 19.400.

1. Live/work units may be established through the conversion of existing buildings or through new construction.
2. The construction or creation of live/work units in the Downtown Mixed Use Zone is subject to the design standards and applicability of Subsection 19.508.
3. Development standards for live/work units are those of the base zone and Subsection 19.505.6.D.

**Response:** MMC Section 19.201 defines “live/work unit” as a dwelling unit where residential and nonresidential spaces are combined and where the dwelling unit is the principal residence of the business operator/proprietor. Per Table 19.304.2, Live/work units are a permitted use in DMU zone, listed under residential type of use. The narrative addresses compliance with standards of Subsection 19.505.6.D below.

**C. Use Standards**

1. Any nonresidential use allowed in the base zone within which a live/work unit is legally located may be conducted on the premises of that live/work unit.

**Response:** DMU base zone allows the following non-residential uses by right: day care, manufacturing and production, home occupation, short-term rentals. The following uses are allowed with a conditional use approval: traditional office, eating and drinking establishment, indoor recreation, retail sales, personal/business services, and repair-oriented.

2. At least one of the employees of the commercial portion of the live/work unit must reside in the unit.

**Response:** This provision can be met through leasing agreement.

3. If the live/work unit is multistory, the ground floor can be used for either commercial or residential purposes. When the ground floor is being used as part of the dwelling, the provisions of Subsection 19.508.4.E.5.e are not applicable.

**Response:** Live/work units are configured as single-story units on the ground floor of the building.

4. A live/work unit is allowed instead of, or in addition to, a home occupation as defined by Section 19.201.

**D. Development Standards**

In addition to the standards of the base zone, live/work units shall comply with all of the following standards.

1. The nonresidential portion of the unit shall occupy at least 25% of the gross floor area.
2. If the live/work unit is multistory, the nonresidential portion of the building shall be located on the ground floor and the residential

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unit shall be located on the upper floors or to the rear of the nonresidential portion. Live/work units may be single-floor units, in which case a separation between the residential and nonresidential uses is not required.

3. Employees shall be limited to occupants of the residential portion of the building plus up to 5 persons not residing in the residential portion.

**Response:** The ground floor building floor plan (Sheet C10 in the preliminary drawings) demonstrates that these standards can be met, implemented by a leasing agreement.

#### MMC Section 19.508 DOWNTOWN SITE AND BUILDING DESIGN STANDARDS

This section contains building design standards to be used with Type I and II downtown design reviews, as established in Section 19.907, and to provide additional direction when the Downtown Design Guidelines are applied through a Type III downtown design review process.

**Response:** Type III downtown design review is needed because the project does not meet one standard from MMC Subsection 19.508.4 (D. Exterior Building Materials). Per MMC Section 19.907, the Applicant has demonstrated substantial consistency with the Downtown Design Guidelines in place of the exterior building materials standard of MMC Subsection 19.508.4.

##### 19.508.1 Purpose

The design standards contained in this section are intended to encourage building design and construction with durable, high-quality materials. The design standards will support the development of a cohesive, attractive, and safe downtown area and encourage private investment. The design standards do not prescribe a particular building or architectural style. Compliance with the standards is reviewed as part of a Type I or II downtown design review.

##### 19.508.2 Applicability

The design standards in this section generally apply to the street-abutting façades of nonresidential, mixed-use, and residential-only multifamily buildings within the downtown zones. More detailed applicability language is provided at the beginning of each specific standard. Development is subject to the standards of this section as described below.

###### A. New Development

1. All new development is subject to the standards of this section.
2. New development that does not meet one or more standards of this section is subject to Type III downtown design review per Section 19.907 and review against the purpose statement and Downtown Design Guideline(s) related to that standard.

**Response:** This application includes responses to the Downtown Design Guidelines in place of the Exterior Wall Materials design standard of MMC Subsection 19.508.3.D.

##### 19.508.4 Building Design Standards

All buildings that meet the applicability provisions in Subsection 19.508.2 shall meet the following design standards. An architectural feature may be used to comply with more than one standard.

###### A. Building Façade Details

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[...]

3. Residential Buildings

- a. Stand-alone multifamily residential buildings are subject to the objective standards of Subsection 19.505.3.D.6 Building Façade Design, with the exception of the private and public open space requirements of Subsections 19.505.3.D.1 and 2. The open space requirements of Subsection 19.508.5 apply to stand-alone multifamily residential buildings in downtown.

**Response:** Findings with the objective standards of Subsection 19.505.3.D.6 Building Façade Design are addressed earlier in the narrative, please refer to that subsection. Compliance with the open space requirements is addressed in the response to code subsection 19.508.3.G. Open Space.

[...]

- c. Live/work units are subject to the objective standards in Subsection 19.505.6 Live/Work Units.

**Response:** The Applicant has submitted an application for a Vertical Housing Tax Credit. If that effort is successful, a portion of the ground floor of the building is planned to be dedicated to live/work area. Responses demonstrating compliance with the objective standards in Subsection 19.505.6 have been provided.

[...]

C. Weather Protection

2. Weather Protection Required

All buildings shall provide weather protection for pedestrians as follows:

- a. Minimum Weather Protection Coverage
  - (1) All ground-floor building entries shall be protected from the weather by canopies or recessed behind the front building façade at least 3 ft.

**Response:** Ground floor public entries are protected by canopies, including the east façade facing SE 23<sup>rd</sup> Avenue. Please refer to Sheet C24 in the preliminary architectural drawings. The criteria are met.

- (2) Permanent awnings, canopies, recesses, or similar weather protection shall be provided along at least 50% of the ground-floor elevation(s) of a building where the building abuts a sidewalk, civic space, or pedestrian accessway.

**Response:** The building has extensive weather protection canopies on the west facade, which fronts on SE Main Street and contains the main building entrance, and on the south façade, where the fitness room and lounge open up to the common outdoor patio. The canopies cover over 50 percent of the west and south façades. The north stairwell exit does not serve as a public building entry, therefore it is not covered. The walkway along the north façade will rarely be used by the public as it mainly serves for maintenance access to the water/fire room and electrical room, as well as for emergency egress from the stairwell.

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The east façade abuts a pedestrian accessway only along the north side of driveway. A canopy is provided over the pedestrian entrance door from the surface parking area. Please refer to Sheet C24 in the preliminary architectural drawings for locations of canopies that meet this standard.

- (3) Weather protection used to meet the above standard shall extend at least 4 ft, and no more than 6 ft, over the pedestrian area, and a maximum of 4 ft into the public right-of-way. Balconies meeting these dimensional requirements can be counted toward this requirement.

**Response:** Please refer to Sheet C-24 in the preliminary architectural drawings for the size and extent of the canopies.

**b. Weather Protection Design**

Weather protection shall comply with applicable building codes and shall be designed to be visually compatible with the architecture of a building. Where applicable, weather protection shall be designed to accommodate pedestrian signage (e.g., blade signs) while maintaining required vertical clearance.

**Response:** Visually compatible canopies for weather protection are provided at the ground floor building entries. Please refer to conceptual building elevations, Sheets C16 and C22 in the preliminary architectural drawings. The criterion is met.

**D. Exterior Building Materials**

**1. Purpose**

To encourage the construction of attractive buildings with materials that evoke a sense of permanence and are compatible with downtown Milwaukee and the surrounding built and natural environment.

**Response:** This application involves Type III downtown design review because the proposed building does not meet the Primary Materials criteria of the Exterior Wall Standards. This response demonstrates substantial consistency with the purpose statement of this subsection.

Henley Place is built to evoke a sense of permanence and is compatible with downtown Milwaukee and the surrounding built and natural environment. The facades have a tripartite façade division of base, middle, and top with an overhanging cornice similar to established neighbors (compatibility). Brick is used at the ground floor of all building facades to establish the building base and extends up to the second floor in some areas to highlight building entrances (permanence). The middle portion of the building is clad in painted lap siding of fiber cement which is durable and permanent and is compatible with the Milwaukee Context of North Main Street (such as the adjacent apartment building “North Main”). Windows have substantial trim and are vertically proportioned. The top of the building is differentiated from the middle by a belt course at the level six floor line and a contrasting color. The top floor is clad in painted fiber cement wall panels, which are durable and permanent, with vertical windows and a projecting cornice capping the building. In addition, natural and subdued exterior colors are used.



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2. Exterior Wall Standards

The following standards are applicable to the street-facing façades of all new buildings. For the purposes of this standard, street-facing façades are those abutting streets, courtyards, and/or public squares in all of the downtown. Table 19.508.4.D specifies the primary, secondary, and prohibited material types referenced in this standard.

- a. Buildings shall utilize primary materials for at least 65% of each applicable building façade.
- b. Secondary materials are permitted on no greater than 35% of each applicable building façade.
- c. Accent materials are permitted on no greater than 10% of each applicable building façade as trims or accents (e.g. flashing, projecting features, ornamentation, etc.).
- d. Buildings shall not use prohibited materials on any exterior wall, whether or not it is a street-facing façade.

**Response:** The project does not comply with the primary material standard; therefore, it will be reviewed through the Type III downtown design review process.

- a. Building utilizes ±55 percent of primary materials (brick and glass).
- b. Secondary materials (fiber cement siding) comprise ±45 percent of building façade.
- c. Accent materials constitute ±4.5 percent of façade.
- d. Prohibited materials are not included in the exterior building design.

The narrative demonstrates compliance with the Milwaukie Downtown Design Guidelines.

### MILWAUKIE DOWNTOWN DESIGN GUIDELINES: WALL MATERIALS

**Guideline:** Use materials that create a sense of permanence.

**Description:** Quality wall materials can provide a sense of permanence in a building, and bring life and warmth to downtown. Articulation of wall materials should be bold, with materials used in a way that shows their depth. It should be apparent that the materials have substance and mass, and are not artificial, thin “stage sets” applied only to the building surface.

**Recommended:**

- Boldly articulated window and storefront trim.
- Natural or subdued building colors.
- Limited use of bright accent trim colors.
- Varied yet compatible cladding materials.
- Belt courses and medallions.

**Not Recommended:**

- Bright or primary wall colors for the entire wall surface.
- Flagstone, simulated river rock or other similar veneer cladding.

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• Painted brick.

**Response:** The Milwaukie Downtown Design Guidelines/Wall Materials description states: “Quality wall materials can provide a sense of permanence in a building, and bring life and warmth to downtown. Articulation of wall materials should be bold, with materials used in a way that shows their depth. It should be apparent that the materials have substance and mass, and are not artificial, thin “stage sets” applied only to the building surface”.

Henley Place is designed with quality wall materials that provide a sense of permanence warmth and is compatible with downtown Milwaukie and the surrounding built and natural environment. The materials are also used to create substance and mass and are detailed to provide depth.

The design includes:

- Boldly articulated window and storefront trim: Windows in levels 2-6 include bold fiber cement trim and jambs, head, and sills. Ground floor storefronts are recessed deeply into the walls to create depth at the ground floor;
- Natural or subdued building colors: The brick is a light limestone color to define the building base. The body of the building is painted to match natural cedar, and the attic story is painted grey to cap the building;
- Limited use of bright accent trim colors.: Bright accent colors are not used;
- Varied yet compatible cladding materials: Materials are varied (brick and fiber cement), but compatible in scale, color, and texture;
- Belt courses and medallions: Belt courses occur at level 2 above the building base and at the level 6 floor line to define the buildings attic story.

None of the guidelines “not recommended” material are used.

Based on the quality of the materials used and consistency with the guideline statements, the criteria are met.

**19.508.3. E. Windows and Doors**

**2. Main Street**

For block faces along Main St, 50% of the ground-floor street wall area must consist of openings; i.e., windows or glazed doors. The ground-floor street wall area is defined as the area up to the finished ceiling height of the space fronting the street or 15 ft above finished grade, whichever is less.

**Response:** As shown on sheet C25 of the preliminary architectural plans, ±56% of ground-floor wall area along Main Street consists of windows or glazed doors.

**3. Other Streets**

For all other block faces, the exterior wall(s) of the building facing the street/sidewalk must meet the following standards:

- a. 40% of the ground-floor street wall area must consist of openings; i.e., windows or glazed doors.

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**Response:** As shown on sheet C26 of the preliminary architectural plans, ±52% of the ground-floor wall area on the east façade consists of openings.

4. Upper Level

Along all block faces, the following standards are applicable on the upper-level building façades facing a street or public space.

- a. Upper building stories shall provide a minimum of 30% glazing. For the purposes of this standard, minimum glazing includes windows and any glazed portions of doors.
- b. The required upper-floor window/door percentage does not apply to floors where sloped roofs and dormer windows are used.
- c. A minimum of 60% of all upper-floor windows shall be vertically oriented. This vertical orientation applies to grouped window arrays as opposed to individual windows.

**Response:** The west and east facades of the building are street-facing and are therefore subject to the above requirement. As demonstrated in the calculations on sheets C25 and C26 of preliminary architectural plans, upper building stories on both west and east facades provide over 30% glazing, and 100% of all upper-floor windows are vertically oriented.

5. General Standards

- a. Windows shall be designed to provide shadowing. This can be accomplished by recessing windows 4 in into the façade and/or incorporating trim of a contrasting material or color.

**Response:** As shown on the preliminary architectural drawings, all windows have a contrasting trim.

- b. All buildings with nonresidential ground-floor windows must have a visible transmittance (VT) of 0.6 or higher.

**Response:** As shown on the preliminary architectural drawings, all ground floor nonresidential windows have a visible transmittance (VT) of 0.6 or higher.

- c. Doors and/or primary entrances must be located on the street-facing block faces and must be unlocked when the business located on the premises is open. Doors/entrances to second-floor residential units may be locked.

**Response:** Primary entrances will be unlocked during business hours.

- d. The bottom edge of windows along pedestrian ways shall be constructed no more than 30 in above the abutting walkway surface.

**Response:** As shown on the preliminary building elevations Sheets C16 - C19, there are no residential windows on the ground floor that are along pedestrian walkways. There are two two-bedroom units at the southeast corner of the building, but they are facing private patios, not along walkways. The rest of the ground floor windows are aluminum storefront windows.

- f. Signs are limited to a maximum coverage of 20% of the required window area.

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**Response:** Signs are not included in this application.

6. Prohibited Window Elements

For all building windows facing streets, courtyards, and/or public squares in the downtown, the following window elements are prohibited:

- a. Reflective, tinted, or opaque glazing.
- b. Simulated divisions (internal or applied synthetic materials).
- c. Exposed, unpainted metal frame windows.

**Response:** The preliminary architectural materials (Exhibit B) illustrate compliance by not including these prohibited window elements.

F. Roofs and Rooftop Equipment

2. Roof Forms

- a. The roof form of a building shall follow one (or a combination) of the following forms:
  - (1) Flat roof with parapet or cornice.
  - (2) Hip roof.
  - (3) Gabled roof.
  - (4) Dormers.
  - (5) Shed roof.

**Response:** As shown on the preliminary architectural plans (Exhibit B), the roof type complies with these standards by providing a flat roof with a cornice.

- b. All flat roofs, or those with a pitch of less than 4/12, shall be architecturally treated or articulated with a parapet wall that projects vertically above the roofline at least 12 in and/or a cornice that projects from the building face at least 6 in.

**Response:** The flat roof is planned to be treated with a 12-inch vertical projecting cornice at the roof edges with a 3-foot overhang. The criteria are met.

3. Rooftop Equipment and Screening

- a. The following rooftop equipment does not require screening:
  - (1) Solar panels, wind generators, and green roof features.
  - (2) Equipment under 2 ft high, if set back a minimum of 5 ft from the outer edge of the roof.
- b. Elevator mechanical equipment may extend above the height limit a maximum of 16 ft, provided that the mechanical shaft is incorporated into the architecture of the building.

**Response:** The project has two elevators with an elevator overrun that is less than 16 feet tall and is incorporated into the architecture.

- c. Satellite dishes, communications equipment, and all other roof-mounted mechanical equipment shall be limited to 10 ft high, shall be set back a minimum of 10 ft from the roof edge, and shall be screened from public view and from views from adjacent buildings by one of the following methods:
  - (1) A screen around the equipment that is made of a primary exterior finish material used on other portions of the building, wood fencing, or masonry.
  - (2) Green roof features or regularly maintained dense evergreen foliage that forms an opaque barrier when planted.
- d. Required screening shall not be included in the building's maximum height calculation.

**Response:** Other than as exempted above, rooftop equipment is planned to be screened, as applicable.

4. Rooftop Structures

Rooftop structures related to shared outdoor space—such as arbors, trellises, or porticos related to roof decks or gardens—shall not be included in the building's maximum height calculation, as long as they do not exceed 10 ft high.

**Response:** As shown on the preliminary plans, rooftop structures were not included in the building's maximum height calculation.

G. Open Space/Plazas

1. Intent

To assure adequate public and private open space in the downtown.

2. Mixed-Use and Residential Development

The following standards apply to mixed-use buildings with more than 4 residential units and residential-only multifamily developments.

a. Outdoor Space Required

50 sq ft of private or common open space is required for each dwelling unit. The open space may be allocated exclusively for private or common use, or it may be a combination of the two uses.

**Response:** Per code, 8,900 square feet of outdoor space is required (50 square feet x 178 units). This project exceeds the outdoor space requirement by providing ±9,423 square feet of outdoor open space via a combination of private balconies and a common roof top terrace. Additionally, a ±2,598-square foot terrace is provided outside the ground-floor lounge and fitness room, and a ±950-square foot publicly accessible landscaped plaza is provided at Main Street entrance to the project, for a total of almost 13,000 square feet of outdoor open space. Please refer to sheets C27-C31 for open space locations and area calculations.

**Table 1: Outdoor Open Space**

Type of Outdoor Space	Area (sq. ft.)
<b>MEETS MINIMUM CODE REQUIREMENT</b>	
Private unit terraces	±4,543
Private unit balconies	±1,440
Common roof-top terrace abutted on 2 sides with windows and doors	±3,440
<b>Subtotal:</b>	<b>±9,423</b>
<b>ADDITIONAL OUTDOOR OPEN SPACE</b>	
Common ground-floor terrace	±2,598
Public plaza at SE Main St and project entry	±950
<b>Total Outdoor Space</b>	<b>±12,971</b>

**b. Common Open Space**

- (1) Common open space may be provided in the form of decks, shared patios, roof gardens, recreation rooms, lobbies, or other gathering spaces created strictly for the tenants and not associated with storage or circulation. Landscape buffer areas may not be used as common open space unless active and passive uses are integrated into the space and its use will not adversely affect abutting properties.

**Response:** The project provides ±17,696 square feet of highly amenitized common usable open space for building residents. Table 2 provides the breakdown of indoor and outdoor common amenities.

**Table 2: Common Open Space**

Type of Common Open Space	Area (sq. ft.)
<b>Indoor Open Space</b>	
Fitness Center	±1,900
Club Room, Level 1	±625
Club Room, Level 2	±1,300
Lobby	±900
<i>Total Indoor Open Space</i>	<i>±4,725</i>
<b>Outdoor Open Space</b>	
<i>Total Outdoor Open Space – see Table 1</i>	<i>±12,971</i>
<b>Total Common Open Space</b>	<b>±17,696</b>

- (2) With the exception of roof decks or gardens, outdoor common open space shall be abutted on at least two sides by residential units or by nonresidential uses with windows and entrances fronting on the space.

**Response:** The project satisfies its minimum outdoor open space requirement by providing private balconies and a common roof top terrace, which add up to ±9,423 square feet. As shown on sheet C28 of the preliminary architectural plans, the second-floor common roof

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terrace meets the code requirement as it is abutted on three sides by residential units and by the common amenity room with windows and entrances. The ground-floor terrace is abutted by windows and entrances from the interior common amenities on one side and is surrounded by landscaping on the other three sides. The ground floor outdoor terrace is not counted towards meeting the project's required open space and serves as an added bonus open space; therefore, it is not subject to the above code requirement.

**c. Private Open Space**

- (1) Private open space may be provided in the form of a porch, deck, balcony, patio, terrace, or other private outdoor area.

**Response:** Private open space is provided in the form of balconies, patios, and terraces.

- (2) The private open space provided shall be contiguous with the unit.

**Response:** Private open space is contiguous with the unit.

- (3) Balconies used for entrances or exits shall not be considered as private open space except where such exits or entrances are for the sole use of the unit.

**Response:** Not applicable. Balconies are not to be used for entrances.

- (4) Balconies may project up to a maximum of 4 ft into the public right-of-way.

**Response:** Not applicable. The building does not abut public right-of-way.

**d. Credit for Open Space**

An open space credit of 50% may be granted when a development is directly adjacent to, or across a public right-of-way from, an improved public park.

**Response:** Not applicable. The Applicant is not requesting credit for open space.

**19.508.5 Variances**

Variances cannot be granted for the design standards of Section 19.508. Projects that cannot meet the design standards in this section must be reviewed through a Type III downtown design review and demonstrate compliance with the Milwaukie Downtown Design Guidelines, pursuant to Section 19.907.

**Response:** As described above, the project does not comply with one criterion in this section of the code (19.508.D.2, minimum 65 percent primary wall material); therefore, it will be reviewed through Type III downtown design review. The narrative demonstrates compliance with the applicable Milwaukie Downtown Design Guidelines.

**MMC CHAPTER 19.600 OFF-STREET PARKING AND LOADING**

**MMC Section 19.602 APPLICABILITY**

**Response:** The proposed consists of 178 apartment units, which includes two ground-floor live/work units, in a single six-story building. This application includes off-street parking within the structure, adjacent to the structure, and along the north side of Tax Lot 402, which is configured as a driveway and connects to SE Main Street.

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## MMC Section 19.603 REVIEW PROCESS AND SUBMITTAL REQUIREMENTS

### 19.603.2 Submittal Requirements

Except for single-family dwellings, a development or change in use subject to Chapter 19.600 as per Section 19.602 shall submit a parking plan, drawn to scale. The parking plan shall show that all applicable standards are met, and shall include but not be limited to the items listed below, unless waived by the Planning Director.

- A. Delineation of individual spaces and wheel stops.
- B. Drive aisles necessary to serve spaces.
- C. Accessways, including driveways and driveway approaches, to streets, alleys, and properties to be served.
- D. Pedestrian pathways and circulation.
- E. Bicycle parking areas and rack specifications.
- F. Fencing.
- G. Abutting land uses.
- H. Grading, drainage, surfacing, and subgrading details.
- I. Location and design of lighting fixtures and levels of illumination.
- J. Delineation of existing and proposed structures.
- K. Parking and loading area signage.
- L. Landscaping, including the following information.
  - 1. The location and area of existing and proposed trees, vegetation, and plant materials, including details about the number, size, and species of such items.
  - 2. Notation of the trees, plants, and vegetation to be removed, and protection measures for existing trees and plants to be preserved.

**Response:** The application includes a parking plan that meets the submittal requirements. Surface parking is shown on Sheet P-10 of the preliminary drawings. Landscaping and lighting details are shown on Sheets P-11 and P-12. Structured parking is shown on Sheets C10, C24, and C31.

## MMC Section 19.604 GENERAL PARKING STANDARDS

### 19.604.1 Parking Provided with Development Activity

All required off-street parking areas shall be provided at the time the structure is built; at the time a structure or site is enlarged; or when there is change in use or an increase in density or intensity. All required off-street parking areas shall be provided in conformance with the standards of Chapter 19.600 prior to issuance of a certificate of occupancy, or final development permit approval, or as otherwise specified in any applicable land use decision.

**Response:** Parking will be provided at the time the project is built.

### 19.604.2 Parking Area Location

Accessory parking shall be located in one or more of the following areas:

- A. On the same site as the primary use for which the parking is accessory.
- B. On a site owned by the same entity as the site containing the primary use that meets the standards of Subsection 19.605.4.B.2. Accessory parking that



is located in this manner shall not be considered a parking facility for purposes of the base zones in Chapter 19.300.

C. Where shared parking is approved in conformance with Subsection 19.605.4.

**Response:** Parking is located on the same site as the apartments.

19.604.3 Use of Parking Areas

All required off-street parking areas shall continually be available for the parking of operable vehicles of intended users of the site. Required parking shall not be rented, leased, sold, or otherwise used for parking that is unrelated to the primary or accessory use of the site, except where a shared parking agreement per Subsection 19.605.4 has been recorded. Subsection 19.604.3 does not prohibit charging fees for parking when the parking serves the primary or accessory uses on site.

**Response:** A private easement (Doc # 90-020212) for ingress/egress and utilities is recorded on the property title for Tax Lot 402.

19.604.4 Storage Prohibited

No required off-street parking area shall be used for storage of equipment or materials, except as specifically authorized by Subsection 19.607.2 Commercial Vehicle, Pleasure Craft, and Recreational Vehicle Parking.

**Response:** Parking areas will not be allowed to be used for storage.

**MMC Section 19.605 VEHICLE PARKING QUANTITY REQUIREMENTS**

19.605.1 Minimum and Maximum Requirements

- A. Development shall provide at least the minimum and not more than the maximum number of parking spaces as listed in Table 19.605.1. Modifications to the standards in Table 19.605.1 may be made as per Section 19.605. Where multiple ratios are listed, the Planning Director shall determine which ratio to apply to the proposed development or use.
- D. Where the calculation of minimum parking spaces does not result in a whole number, the result shall be rounded down to the next whole number. Where the calculation of maximum parking spaces does not result in a whole number, the result shall be rounded to the nearest whole number.
- E. Parking spaces for disabled persons, and other improvements related to parking, loading, and maneuvering for disabled persons, shall conform to the Americans with Disabilities Act and shall be subject to review and approval by the Building Official. Spaces reserved for disabled persons are included in the minimum required and maximum allowed number of off-street parking spaces.

Table 19.605.1		
Standard	Required	Included
Min: 1 space per unit 25% DMU reduction allowed	Min: 134 <i>(@178 - 45 DMU reduction)</i>	173 spaces
Max: 2 spaces per unit	Max: 356	

**Response:** This application includes 178 residential units, including two live/work units. DMU zone parking ratio requirement is 1:1 regardless of the unit size. A 25 percent reduction, which



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equals 45 parking spaces, is allowed in the DMU zone per Section 19.605.3.B.2.c. This project provides 173 stalls (31 exterior and 142 structured). Structured parking on the ground floor includes 64 mechanical parking stalls, 10 tandem stalls, and 68 conventional standard stalls.

The tandem stalls will be assigned to two-bedroom units.

A CityLift Puzzle mechanical parking system is planned to be provided within the parking structure. Specifications have been included with the application, please refer to Exhibit H. This state-of-the-art secure mechanical parking system includes three-level car lifts over an underground pit and shuffles the stalls both vertically and horizontally. Each car lift has the capacity to hold three cars vertically. The parking lift extends down into the ground to the depth equal to one vertical parking stall. Initially there is one parking stall below the ground level, one at the ground level, and one above it. As the ground level stall is occupied, it gets lifted up making space for the underground stall, while the upper-level stall is shuffled horizontally into the adjacent stacker, which also shuffles to make room for the stall. When the second car comes in and occupies the ground-level parking stall, it gets lifted to access the third and final stall. This parking system allows a car to leave independently, irrespective of the availability of the car owner of the other two cars parked. This proposed mechanical parking system is the same as at the Axletree Apartments.

### 19.605.3 Exemptions and By-Right Reductions to Quantity Requirements

#### B. Reductions to Minimum Parking Requirements

##### 2. Proximity to Public Transit

- c. Parking for all uses except single-family attached and detached dwellings may be reduced by 25% if the development is within 1,000-ft walking distance, as defined in Subsection 19.605.3.B.2.d, of a light rail transit stop, or if it is located in the Downtown Mixed Use Zone DMU.

**Response:** The project qualifies for a 25 percent parking reduction by being in DMU zone. The actual parking ratio proposed is 0.98 spaces per unit, which is a 2 percent reduction from minimum base required parking. The project requires as close to 1:1 parking ratio as possible in order to maintain economic viability. Market analysis has demonstrated that people are unwilling to rent apartments without at least one dedicated parking space.

### MMC Section 19.606 PARKING AREA DESIGN AND LANDSCAPING

#### 19.606.1 Parking Space and Aisle Dimensions

- A. The dimensions for required off-street parking spaces and abutting drive aisles, where required, shall be no less than in Table 19.606.1. The minimum dimensions listed in Table 19.606.1 are illustrated in Figure 19.606.1.

Table 19.606.1 Minimum Parking Space and Aisle Dimensions					
Angle (A)	Width (B)	Curb Length (C)	1-Way Aisle Width (D)	2-Way Aisle Width (D)	Depth (E)
90°	9'	9'	22'	22'	18'

**Response:** The Preliminary Dimensioned Site Plan (Sheet P-10 of the drawings) demonstrates that the proposed surface parking areas contain 9-foot by 18-foot standard parking stalls, and the spaces are accessed at a 90-degree angle. The aisle width exceeds the required standards. Structured parking design and dimensions are shown on plan Sheet C31. Parking stalls are 9 feet by 18 feet, and drive aisles are 24 feet wide.

#### 19.606.2 Landscaping

##### B. General Provisions

1. Parking area landscaping shall be required for the surface parking areas of all uses, except for cottage clusters, rowhouses, duplexes, and single-family detached dwellings. Landscaping shall be based on the standards in Subsections 19.606.2.C-E.
2. Landscaped areas required by Subsection 19.606.2 shall count toward the minimum amount of landscaped area required in other portions of Title 19.
3. Parking areas with 10 or fewer spaces in the Downtown Mixed Use Zone are exempt from the requirements of Subsection 19.606.2.
4. Required trees shall be species that, within 10 years of planting, will provide a minimum of 20-ft diameter shade canopy. Compliance with this standard is based on the expected growth of the selected trees.

**Response:** All exterior off-street parking areas comply with the landscaping standards. There are two surface parking areas provided on-site. One is located along the access driveway off SE Main Street (Tax Lot 402), on the west side of the site. The second area is on the east side of the building and is accessed by driving through the parking structure (as access to the site from SE 23<sup>rd</sup> Avenue is restricted to emergency vehicles). The surface lot on the west side provides 14 spaces, and the surface lot on the east side provides 17 spaces. Both parking areas are broken up with landscape islands. Green Vase Zelkova trees, Oregon Grape shrub, and Hameln Fountain Grass groundcover are included within the parking islands.

##### C. Perimeter Landscaping

The perimeter landscaping of parking areas shall meet the following standards which are illustrated in Figure 19.606.2.C.

##### 1. Dimensions

The minimum width of perimeter landscape areas are shown in Table 19.606.2.C.1. Where a curb provides the border for a perimeter landscape area, the dimension shall be measured from the inside of the curb(s). The Planning Director may reduce the required

minimum width of a perimeter landscaping area where existing development or site constraints make it infeasible to provide drive aisles, parking spaces, and the perimeter landscaping buffer width listed in Table 19.606.2.C.1.

Table 19.606.2.C.1 Minimum Perimeter Landscape Strip Dimensions		
Location	Downtown Zones	All Other Zones
Lot line abutting a right-of-way	4'	8'
Lot line abutting another property, except for abutting properties that share a parking area	0'	6'

2. **Planting Requirements**

Landscaping requirements for perimeter buffer areas shall include one tree planted per 30 lineal ft of landscaped buffer area. Where the calculation of the number of trees does not result in a whole number, the result shall be rounded up to the next whole number. Trees shall be planted at evenly spaced intervals along the perimeter buffer to the greatest extent practicable. The remainder of the buffer area shall be grass, ground cover, mulch, shrubs, trees, or other landscape treatment other than concrete and pavement.

3. **Additional Planting Requirements Adjacent to Residential Uses**

In addition to the planting requirements of Subsection 19.606.2.D.2, all parking areas adjacent to a residential use shall have a continuous visual screen in the landscape perimeter area that abuts the residential use. The area of required screening is illustrated in Figure 19.606.2.C.3. The screen must be opaque throughout the year from 1 to 4 ft above ground to adequately screen vehicle lights. These standards must be met at the time of planting. Examples of acceptable visual screens are a fence or wall, an earth berm with plantings, and other plantings of trees and shrubs.

**Response:** The north side of the parking area behind the building is located along SE 23<sup>rd</sup> Avenue. A 16-foot-wide landscape strip with Bowhall Maple trees spaced at ±27 feet and groundcover is planned to be used for perimeter landscaping in that area.

The south side of the same parking area abuts residential private property. A 7-foot-wide landscape strip with evenly spaced Bowhall Maple trees is included along the southern perimeter of the parking area. In addition, Wax Leaf Privet is provided along the perimeter of the parking area that abuts residential uses to serve as a visual screen. This evergreen hedge has very dense foliage and provides effective visual screening.

The parking area west of the building abuts Pietro’s Pizza. A minimum landscape strip is not required for that parking area, but the project includes a ±2-foot-wide landscaping strip with turf groundcover. The project exceeds the standard.

D. **Interior Landscaping**

The interior landscaping of parking areas shall meet the following standards which are illustrated in Figure 19.606.2.D.

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1. General Requirements

Interior landscaping of parking areas shall be provided for sites where there are more than 10 parking spaces on the entire site. Landscaping that is contiguous to a perimeter landscaping area and exceeds the minimum width required by Subsection 19.606.2.C.1 will be counted as interior landscaping if it meets all other requirements of Subsection 19.606.2.D.

2. Required Amount of Interior Landscaped Area

At least 25 sq ft of interior landscaped area must be provided for each parking space. Planting areas must be at least 120 sq ft in area and dispersed throughout the parking area.

3. Location and Dimensions of Interior Landscaped Areas

- a. Interior landscaped area shall be either a divider median between opposing rows of parking, or a landscape island in the middle or at the end of a parking row.
- b. Interior landscaped areas must be a minimum of 6 ft in width. Where a curb provides the border for an interior landscape area, the dimension shall be measured from the inside of the curb(s).

4. Planting Requirements for Interior Landscaped Areas

- a. For divider medians, at least 1 shade or canopy tree must be planted for every 40 linear ft. Where the calculation of the number of trees does not result in a whole number, the result shall be rounded up to the next whole number. Trees shall be planted at evenly spaced intervals to the greatest extent practicable.
- b. For landscape islands, at least 1 tree shall be planted per island. If 2 interior islands are located contiguously, they may be combined and counted as 2 islands with 2 trees planted.
- c. The remainder of any divider median or landscape island shall be grass, ground cover, mulch, shrubs, trees, or other landscape treatment other than concrete and pavement.

**Response:** The project exceeds the minimum requirements for interior landscaping. The parking area in front of the building has 14 spaces, and ±740 square feet of interior landscaping is provided (minimum required landscape area is 350 square feet). The parking area behind the building has 17 spaces, and ±3,000 square feet of landscaped area is provided (425 square feet required). The Preliminary Landscape Plan (Sheet P-11) demonstrates compliance with the location, dimensions, and planting materials requirements of this code section.

19.606.3 Additional Design Standards

A. Paving and Striping

Paving and striping are required for all required maneuvering and standing areas. Off-street parking areas shall have a durable and dust-free hard surface, shall be maintained for all-weather use, and shall be striped to show delineation of parking spaces and directional markings for driveways and

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accessways. Permeable paving surfaces may be used to reduce surface water runoff and protect water quality.

**B. Wheel Stops**

Parking bumpers or wheel stops, of a minimum 4-in height, shall be provided at parking spaces to prevent vehicles from encroaching on the street right-of-way, adjacent landscaped areas, or pedestrian walkways. Curbing may substitute for wheel stops if vehicles will not encroach into the minimum required width for landscape or pedestrian areas.

**Response:** The preliminary plans (Sheet P-10) demonstrate compliance with this code section.

**C. Site Access and Drive Aisles**

1. Accessways to parking areas shall be the minimum number necessary to provide access while not inhibiting the safe circulation and carrying capacity of the street. Driveway approaches shall comply with the access spacing standards of Chapter 12.16.
2. Drive aisles shall meet the dimensional requirements in Subsection 19.606.1.
3. Parking drive aisles shall align with the approved driveway access and shall not be wider than the approved driveway access within 10 ft of the right-of-way boundary.
4. Along collector and arterial streets, no parking space shall be located such that its maneuvering area is in an ingress or egress aisle within 20 ft of the back of the sidewalk, or from the right-of-way boundary where no sidewalk exists.
5. Driveways and on-site circulation shall be designed so that vehicles enter the right-of-way in a forward motion.

**Response:** As demonstrated on the preliminary plans (Sheet P-10), the project design meets the site access and drive aisles requirements.

**D. Pedestrian Access and Circulation**

Subsection 19.504.9 establishes standards that are applicable to an entire property for on-site walkways and circulation. The purpose of Subsection 19.606.3.D is to provide safe and convenient pedestrian access routes specifically through off-street parking areas. Walkways required by Subsection 19.606.3.D are considered part of the on-site walkway and circulation system required by Subsection 19.504.9.

1. Pedestrian access shall be provided for off-street parking areas so that no parking space is further than 100 ft away, measured along vehicle drive aisles, from a building entrance, or a walkway that meets the standards of Subsection 19.606.3.D.2.
2. Walkways through off-street parking areas must be continuous, must lead to a building entrance, and meet the design standards of Subsection 19.504.9.E.

**Response:** The site plan is consistent with these requirements. The parking area in front of the building contains a pedestrian walkway from SE Main Street to the main building entrance. Parking spaces behind the building are located less than 100 feet away from a building entrance. The structured parking satisfies these requirements by providing striping for pedestrian walkways.

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F. Lighting

Lighting is required for parking areas with more than 10 spaces. The Planning Director may require lighting for parking areas of less than 10 spaces if the parking area would not be safe due to the lack of lighting. Lighting shall be designed to enhance safe access for vehicles and pedestrians on the site, and shall meet the following standards:

1. Lighting luminaires shall have a cutoff angle of 90 degrees or greater to ensure that lighting is directed toward the parking surface.
2. Parking area lighting shall not cause a light trespass of more than 0.5 footcandles measured vertically at the boundaries of the site.
3. Pedestrian walkways and bicycle parking areas in off-street parking areas shall have a minimum illumination level of 0.5 footcandles, measured horizontally at the ground level.
4. Where practicable, lights shall be placed so they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

**Response:** A lighting plan (Sheet P-12) demonstrates compliance with the lighting standards for surface parking areas. The structured parking garage complies with Section 19.603.F by providing a minimum of 0.5 footcandles inside the garage. The Oregon Building Code requires lighting in excess of this standard in the structured parking garage. The criteria are met.

**MMC Section 19.608 LOADING**

**19.608.1 General Provisions**

- A. The purpose of off-street loading areas is to contain loading activity of goods on-site and avoid conflicts with travel in the public right-of-way; provide for safe and efficient traffic circulation on the site; and minimize the impacts of loading areas to surrounding properties.
- B. Off-street loading areas may be required for commercial, industrial, public, and semipublic uses for the receipt or distribution of merchandise, goods, or materials by vehicles. Off-street loading is not required in the Downtown Mixed Use Zone.

**Response:** The above listed provisions state that off-street loading is not required in the DMU zone. That said, a ±10' x 35' loading area is provided inside the structured parking garage to accommodate the potential need for loading.

**MMC Section 19.609 BICYCLE PARKING**

**19.609.1 Applicability**

Bicycle parking shall be provided for all new commercial, industrial, community service use, and multifamily residential development. Bicycle parking shall be provided in the Downtown Mixed Use Zone and at transit centers.

**19.609.2 Quantity of Spaces**

- A. The quantity of required bicycle parking spaces shall be as described in this subsection. In no case shall less than 2 spaces be provided.

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1. Unless otherwise specified, the number of bicycle parking spaces shall be at least 10% of the minimum required vehicle parking for the use.
  2. The number of bicycle parking spaces at transit centers shall be provided at the ratio of at least 1 space per 100 daily boardings.
  3. Multifamily residential development with 4 or more units shall provide 1 space per unit.

**Response:** The project exceeds the minimum 1 space per unit requirement and provides 190 bicycle parking spaces. Bicycle parking areas are dispersed throughout the project to provide a range of options for the residents' convenience and accommodate a variety of preferences. Namely, 10 bike racks are provided in the ground-floor dedicated bike room accessed from the parking garage; a bike storage room is provided on each floor of the building, with 16 spaces per room (which equals 80 spaces); 90 residential units have a permanent wall-mounted rack for bike storage in the foyer, and 10 additional bicycle parking spaces are provided outside the front entrance for the visitors. Please refer to Sheet C32 in the preliminary architectural plans for calculations and the in-unit bike rack cut sheet.

It has been the applicant's experience on similar multifamily projects that many residents prefer to keep expensive bicycles inside their apartments or on the same floor as their unit as they are not comfortable storing them in a remote common storage room, therefore the Applicant is responding to the need for individual choices.

- B. Covered or enclosed bicycle parking. A minimum of 50% of the bicycle spaces shall be covered and/or enclosed (in lockers or a secure room) in any of the following situations:
  1. When 10% or more of vehicle parking is covered.
  2. If more than 10 bicycle parking spaces are required.
  3. Multifamily residential development with 4 or more units.

**Response:** Required bicycle parking spaces are covered inside the building. The criteria are met.

#### 19.609.3 Space Standards and Racks

- A. The dimension of each bicycle parking space shall be a minimum of 2 x 6 ft. A 5-ft-wide access aisle must be provided. If spaces are covered, 7 ft of overhead clearance must be provided. Bicycle racks must be securely anchored and designed to allow the frame and 1 wheel to be locked to a rack using a high security, U-shaped, shackle lock.
- B. Lighting shall conform to the standards of Subsection 19.606.3.F.

**Response:** Each residential unit provides sufficient space for storage of one bicycle. The criteria are met.

#### 19.609.4 Location

- A. Bicycle parking facilities shall meet the following requirements:
  1. Located within 50 ft of the main building entrance.
  2. Closer to the entrance than the nearest non-ADA designated vehicle parking space.



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3. Designed to provide direct access to a public right-of-way.
  4. Dispersed for multiple entrances.
  5. In a location that is visible to building occupants or from the main parking lot.
  6. Designed not to impede pedestrians along sidewalks or public rights-of-way.
  7. Separated from vehicle parking areas by curbing or other similar physical barriers.

**Response:** Ten bicycle parking spaces are proposed within 50 feet of the entry. The remaining bike parking is provided inside the units.

- B. The public right-of-way may be utilized for bicycle parking when parking cannot be reasonably accommodated on the site and the location is convenient to the building's front entrance. The bicycle parking area in the right-of-way must leave a clear, unobstructed width of sidewalk that meets the Engineering Department's Public Works Standards for sidewalk passage. See Figure 19.609 for illustration of space and locational standards. A right-of-way permit is required.

**Response:** This application does not involve any bicycle parking within the right-of-way.

#### MMC Section 19.611 PARKING STRUCTURES

##### 19.611.1 Permitted Zones and Review Procedures

- A. Parking structures, including underground parking, are allowed in all zoning districts except the R-10, R-7, R-5, and Open Space Zones. A parking structure can be permitted through approval of a Community Service Use application in all zones except the Open Space Zone. A parking structure to be used for commercial parking in the Downtown Mixed Use Zone must be permitted through approval of a conditional use application.
- B. Applications for parking structures with fewer than 20 spaces are subject to Type II review, per the procedures of Section 19.1005. Applications for parking structures with 20 spaces or more shall be reviewed by the Planning Commission at a public hearing per Section 19.1006 Type III Review. The Planning Commission may impose conditions on the proposed structure to make it compatible with surrounding properties.

##### 19.611.2 Compliance with Other Sections of Chapter 19.600

- A. Spaces in parking structures can be used to satisfy the minimum quantity requirements of Section 19.605. Spaces in parking structures are exempt from counting against maximum parking allowances if the spaces are utilized for types of parking listed in Subsection 19.605.3.A.
- B. The space and drive aisle dimensions required in Subsection 19.606.1 shall apply to structured parking unless the applicant requests that the dimensions be reduced. Dimensions may be reduced if the applicant can demonstrate that the reduced dimensions can safely accommodate parking and maneuvering for standard passenger vehicles.
- C. In addition to the standards in Subsection 19.611.3, parking structures shall comply with the development standards, design standards, and design guidelines for the base zone(s) in which the structure will be located.

##### 19.611.3 Standards and Design Criteria for Structured Parking

- A. A minimum of 75% of the length of any façade of a parking structure that faces a street shall provide ground-floor windows or wall openings. Blank walls are prohibited.
- B. The structure shall be compatible with related structures on the lot in terms of appearance, size, scale, and bulk.
- C. The required yard setbacks between the property line and the structure shall be landscaped per the requirements of Subsection 19.606.2.D.3.
- D. The structure shall provide safe pedestrian connections between parking structure and the public sidewalk or principal building.
- E. The structure shall provide adequate lighting to ensure motorist and pedestrian safety within the structured parking facility and connecting pedestrian ways to the principal building.

**Response:** The western building façade is planned to be ±270 in length. Of that frontage, ± 94 feet is planned to include structured parking (at the building face). Seventy-five percent of the façade (within this 94 feet of frontage) has 75 percent openings, and the façade materials are brick between openings. The building does not “face” SE 23<sup>rd</sup> Avenue, rather it fronts on its existing terminus. Therefore, design criteria above do not apply to the east façade. The criteria are met.

## MMC CHAPTER 19.700 PUBLIC FACILITY IMPROVEMENTS

### MMC Section 19.702 APPLICABILITY

#### 19.702.1 General

Chapter 19.700 applies to the following types of development in all zones:

[...]

- D. New construction.

**Response:** The project involves new construction of 178 multifamily residential units, including two live/work units, which triggers the requirements of MMC 19.700.

### MMC Section 19.704 TRANSPORTATION IMPACT EVALUATION

The Engineering Director will determine whether a proposed development has impacts on the transportation system by using existing transportation data. If the Engineering Director cannot properly evaluate a proposed development’s impacts without a more detailed study, a transportation impact study (TIS) will be required to evaluate the adequacy of the transportation system to serve the proposed development and determine proportionate mitigation of impacts.

**Response:** The application includes a Transportation Impact Study (TIS) according to scoping developed by the City Engineer and ODOT. Off-site mitigation was not found to be required. Adjacent frontage improvements are planned to include curb extensions on SE Main Street. Per findings within the TIS, the project does not result in a vehicular impact on SE 23<sup>rd</sup> Avenue. Apartment residents have one vehicular access to SE Main Street. The access point off SE 23<sup>rd</sup> Avenue access is gated for emergency vehicles only. The project will extend SE 23<sup>rd</sup> Avenue to the site property line.

The project includes new sidewalks along the site frontage on SE Main Street and curb ramps that link with on-site sidewalks connecting to the apartment building.

### MMC Section 19.708 TRANSPORTATION FACILITY REQUIREMENTS

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### 19.708.1 General Street Requirements and Standards

#### B. Clear Vision

All development subject to Chapter 19.700 shall comply with clear vision standards contained in Chapter 12.24.

**Response:** Per MMC section 19.304.5.D.3, the DMU zone is exempt from the clear vision area requirements of Chapter 12.24 of the Milwaukie Municipal Code.

#### C. Development in Downtown Zones

Street design standards and right-of-way dedication for the downtown zones are subject to the requirements of the Milwaukie Public Works Standards, which implement the streetscape design of the Milwaukie Downtown and Riverfront Plan: Public Area Requirements (PAR). Unless specifically stated otherwise, the standards in Section 19.708 do not apply to development located in the downtown zones or on street sections shown in the PAR per Subsection 19.304.6.

**Response:** The project is located in the DMU zone and complies with the requirements of the Milwaukie Public Works Standards, as demonstrated on the civil engineering drawings. Final design will be approved by the City Engineer prior to construction.

### MMC Section 19.709 PUBLIC UTILITY REQUIREMENTS

#### 19.709.2 Public Utility Improvements

Public utility improvements shall be required for proposed development that would have a detrimental effect on existing public utilities, cause capacity problems for existing public utilities, or fail to meet standards in the Public Works Standards. Development shall be required to complete or otherwise provide for the completion of the required improvements.

A. The Engineering Director shall determine which, if any, utility improvements are required. The Engineering Director's determination requiring utility improvements shall be based upon an analysis that shows the proposed development will result in one or more of the following situations:

1. Exceeds the design capacity of the utility.
2. Exceeds Public Works Standards or other generally accepted standards.
3. Creates a potential safety hazard.
4. Creates an ongoing maintenance problem.

**Response:** Public utilities are not included with this project. The Preliminary Composite Utility Plan (Sheet P-09) shows a new private connection to the existing public sanitary sewer main in SE Main Street with a new private sanitary sewer lateral extending through Tax Lot 402 to the building.

B. The Engineering Director may approve one of the following to ensure completion of required utility improvements.

1. Formation of a reimbursement district in accordance with Chapter 13.30 for off-site public facility improvements fronting other properties.

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2. Formation of a local improvement district in accordance with Chapter 3.08 for off-site public facility improvements fronting other properties.

**Response:** The application does not involve a formation of a reimbursement district or local improvement district.

#### 19.709.3 Design Standards

Public utility improvements shall be designed and improved in accordance with the requirements of this chapter, the Public Works Standards, and improvement standards and specifications identified by the City during the development review process. The applicant shall provide engineered utility plans to the Engineering Director for review and approval prior to construction to demonstrate compliance with all City standards and requirements.

**Response:** These standards do not apply as the project does not involve public utilities.

### MMC CHAPTER 19.900 LAND USE APPLICATIONS

#### MMC Section 19.902 AMENDMENTS TO MAPS AND ORDINANCES

##### 19.902.6 Zoning Map Amendments

###### A. Review Process

1. Changes to the Zoning Map described in Subsection 19.902.2.D shall be evaluated through either a Type III review, per Section 19.1006, or Type V review, per Section 19.1008. The City Attorney shall have the authority to determine the appropriate review process for each Zoning Map amendment. The City Attorney's review process determination is not a land use decision per ORS 197.015 and is not subject to appeal.

Generally, Zoning Map amendments that involve 5 or more properties or encompass more than 2 acres of land are legislative in nature and subject to Type V review. Zoning Map amendments that involve fewer properties and encompass a smaller area of land are quasi-judicial in nature and subject to Type III review.

**Response:** The zoning map amendment encompasses a portion of a single property of ±0.05 acres and is related to the provision of housing, which requires Type III review.

2. Changes that affect both the Zoning Map and text of Titles 14, 17, or 19, or other land use regulations within the Milwaukie Municipal Code shall be evaluated through a Type V review per Section 19.1008. These changes are subject to the approval criteria of Subsections 19.902.5.B and 19.902.6.B.

**Response:** The amendment does not involve changes to the text of Milwaukie's Municipal Code, only a change to the zoning designation for a small portion of the project site from low-density residential (R-5) to Downtown Mixed Use (DMU).

###### B. Approval Criteria

Changes to the Zoning Map shall be evaluated against the following approval criteria. A quasi-judicial map amendment shall be approved if the following criteria are met:

1. The proposed amendment is compatible with the surrounding area based on the following factors:
  - a. Site location and character of the area.

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- b. Predominant land use pattern and density of the area.
  - c. Expected changes in the development pattern for the area.

**Response:** The surrounding area is predominantly commercial to the west (DMU); Scott Park public park (OS), commercial and several apartment buildings (DMU) to the south; low-density residential (R-5) to the east; and OR-224 Highway is to the north. The actual area involved in rezoning from R-5 to MDU is an ±0.05-acre (±9,350-square-foot) corner of the site that is currently used as a parking lot for existing commercial use on-site and is planned to remain surface parking for the future use. Surface parking associated with a multifamily use is not a permitted use in the R-5 zone but is a permitted accessory use in the DMU zone. The purpose of the amendment is to allow for a more efficient use of the property (unified zoning designation allows for a unified site plan).

Changes to the development pattern for the area are not expected, as DMU zoning designation is consistent with and implements the underlying comprehensive plan land use designation (Town Center land use). Additionally, the project includes a “trip cap” on the rezone portion of the property to avoid the potential for any transportation impacts. Per TIS findings, this trip cap would limit any future use/redevelopment of the parking area to that which would generate an equivalent number of trips permitted under the existing R-5 zoning. The trip cap is allowable as mitigation to address Oregon’s Transportation Planning Rule (TPR) and ensures that impacts are associated with the rezone and/or potential future redevelopment.

The zoning map amendment is compatible with the surrounding area based on the factors listed above.

- 2. The need is demonstrated for uses allowed by the proposed amendment.

**Response:** The primary use of the project is multifamily residential, which is a permitted use in DMU zoning district, per MMC 19.304.2. The project provides 178 rental units, including two live/work units. The City of Milwaukie Comprehensive Plan, adopted August 18, 2020, includes the goals related to increasing the City’s housing supply. The demand for housing is supported by the findings of 2016 Milwaukie Housing Strategies Report and the 2018 Milwaukie Housing Affordability Strategy (MHAS).

- 3. The availability is shown of suitable alternative areas with the same or similar zoning designation.

**Response:** The small area involved in rezoning is contiguous to a larger area with the same zoning designation. This criterion is met.

- 4. The subject property and adjacent properties presently have adequate public transportation facilities, public utilities, and services to support the use(s) allowed by the proposed amendment, or such facilities, utilities, and services are proposed or required as a condition of approval for the proposed amendment.

**Response:** The application package includes a TIS, preliminary plans, and Preliminary Stormwater Report that demonstrate that public facilities are adequate to serve the project. Necessary improvements will be constructed to meet applicable City standards. The

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subject property and adjacent properties presently have adequate public transportation facilities, public utilities, and services to support the project.

5. **The proposed amendment is consistent with the functional classification, capacity, and level of service of the transportation system. A transportation impact study may be required subject to the provisions of Chapter 19.700.**

**Response:** TIS concluded that traffic volumes associated with the zoning map amendment will not cause any of the intersections in the study area to fall below acceptable levels of service. Please refer to the TIS for additional information.

6. **The proposed amendment is consistent with the goals and policies of the Comprehensive Plan, including the Land Use Map.**

**Response:** Currently, R-5 zoning designation for the subject property is not consistent with the Land Use Map in Milwaukie's Comprehensive Plan, which designates the subject site as Town Center (TC) use. Per MMC 19.304.1, the DMU zone implements the TC land use designation in the Milwaukie Comprehensive Plan. Therefore, the amendment will make the zoning map consistent with the Land Use Map.

7. **The proposed amendment is consistent with the Metro Urban Growth Management Functional Plan and relevant regional policies.**

**Response:** The Metro Urban Growth Management Functional Plan includes a number of titles that address various aspects of the region's goals and policies for urban development.

(a) Title 1 Housing Capacity

The project will provide 178 needed housing units in a compact urban form.

(b) Title 7 Housing Choice

The project will provide needed multi-unit rental housing and will support Metro's policies for expanding housing choice with a needed housing type in Milwaukie.

The zoning amendment is consistent with the Metro Urban Growth Management Functional Plan and relevant regional policies.

8. **The proposed amendment is consistent with relevant State statutes and administrative rules, including the Statewide Planning Goals and Transportation Planning Rule.**

**Response:** Several of the Statewide Planning Goals are relevant to the amendment:

**(a). Statewide Planning Goal 10 Housing**

**Compliance with Goal 10:** The proposed project would provide 178 units of much-needed rental housing to the City, including two live/work units. Per the City's 2016 Housing Needs Assessment (HNA), over the next 20 years, 30 percent of all needed units are projected to be multifamily in structures of five-plus attached units.

**(b). Statewide Planning Goal 12 Transportation**

**Compliance with Goal 12:** A Transportation Impact Study prepared by Kittelson & Associates is submitted as part of the application package. It demonstrates compliance

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with Goal 12 and applicable State, County, and City transportation related requirements. Please refer to the TIS for further information. The intended street and connectivity improvements encourage a safe, convenient, and economic transportation system. Therefore, the application is consistent with Goal 12.

**C. Conditions of Approval**

Conditions of approval may be applied to Zoning Map amendments for purposes of fulfilling identified need for public facilities and/or meeting applicable regional, State, or federal regulations. Conditions of approval may include actual construction of facilities or a performance contract, bond, or escrow account to assure installation of public facilities to specified standards.

**Response:** The Applicant understands that conditions of approval may be applied to the zoning map amendment included with this application. The criterion is met.

**D. Modification of Official Zoning Map**

For Zoning Map amendments not involving conditions of approval, the Zoning Map shall be modified when the adopting ordinance goes into effect. For Zoning Map amendments involving conditions of approval, the Zoning Map shall not be modified until all conditions of approval are satisfied.

**E. Revocation**

If conditions of approval are not met within 2 years of ordinance adoption, the Planning Commission shall hold a public hearing to consider the revocation of the approved zoning through a Type III review per Section 19.1006. The Planning Commission may also, upon determination that the applicant is making satisfactory progress towards completing conditions of approval, grant a one-time extension not to exceed a maximum of 2 years. (Ord. 2025 § 2, 2011)

**Response:** The Applicant understands the approval process. The criteria are met.

**MMC Section 19.907 DOWNTOWN DESIGN REVIEW**

**19.907.1 Purpose**

Downtown design review is intended to achieve the following purposes:

- A. Preserve and enhance the character of downtown Milwaukee.
- B. Ensure a degree of order, harmony, and quality in the downtown, providing buildings and projects that are attractive individually yet contribute to a downtown that is distinctive as a whole.
- C. Ensure that new development, and alterations or enlargement of existing development, are consistent with the downtown site and building design standards of Section 19.508 or Downtown Design Guidelines.
- D. Implement the vision of the Downtown and Riverfront Land Use Framework Plan.
- E. Provide a design review process that allows applicants to choose standards or more flexible discretionary guidelines.

[...]

**D. Type III**

The following projects are subject to Type III downtown design review:

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1. Any project, at the applicant's option.
  2. A project, addition, or expansion that is unable to meet one or more of the design standards of Section 19.508.
  3. A project that does not fit the applicability for Type I or II review.
  4. A stand-alone multifamily residential building, if applicants elect to process through Type III downtown design review rather than Type I or II Development Review because additional design flexibility is desired.

**Response:** This application involves a Type III design review application. The narrative demonstrates compliance with the applicable design standards of MMC Section 19.508, substantial consistency with the purpose statement of the Exterior Wall Materials standard which the project does not meet, and the Exterior Wall Materials standard in the Downtown Design Guidelines.

#### 19.907.3 Review Process

##### A. General Provisions

Downtown design review generally includes review of the proposed structure(s) and site improvements for compliance with applicable design standards. For expansions or modifications of existing development, the review is limited to the modified portions of the site or structure and any other site improvements that may be affected by the proposed modifications.

(...)

#### 19.907.5 Approval Criteria

(...)

##### C. Type III Downtown Design Review

An application for Type III downtown design review shall be approved when all of the following criteria have been met:

1. Compliance with Title 19.
2. Compliance with applicable design standards in Section 19.508.
3. Substantial consistency with the purpose statement of the applicable design standard and the applicable Downtown Design Guideline(s) being utilized in place of the applicable design standard(s).

**Response:** The narrative describes compliance with Type III downtown design review criteria and Downtown Design Guidelines.

#### 19.907.6 Report and Recommendation by Design and Landmarks Committee

The Design and Landmarks Committee shall hold a public meeting and prepare a downtown design review report for Type III applications pursuant to Section 19.1011. The Planning Commission shall consider the findings and recommendations contained in the downtown design review report during a public hearing on the proposal.

#### 19.907.7 Variances



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- A. Variances cannot be granted for the downtown design standards of Section 19.508. Applications unable to meet one or more standards must use the Type III discretionary downtown design review process.
  - B. For applications using the Type III downtown design review process, variances will only be allowed for the development standards and design standards that are not met. Variances to the design guidelines themselves will not be granted. (Ord. 2161 § 2, 2018; Ord. 2140 § 2, 2017; Ord. 2106 § 2 (Exh. F), 2015; Ord. 2051 § 2, 2012; Ord. 2025 § 2, 2011)

**Response:** The Type III discretionary downtown design review criteria have been addressed for aspects of this application that are inconsistent with Section 19.508 (exterior wall materials).

#### MMC Section 19.911 VARIANCES

##### 19.911.2 Applicability

###### A. Eligible Variances

Except for situations described in Subsection 19.911.2.B, a variance may be requested to any standard or regulation in Titles 17 or 19 of the Milwaukie Municipal Code, or any other portion of the Milwaukie Municipal Code that constitutes a land use regulation per ORS 197.015.

###### B. Ineligible Variances

A variance may not be requested for the following purposes:

1. To eliminate restrictions on uses or development that contain the word “prohibited.”
2. To change a required review type.
3. To change or omit the steps of a procedure.
4. To change a definition.
5. To increase, or have the same effect as increasing, the maximum permitted density for a residential zone.
6. To justify or allow a Building Code violation.
7. To allow a use that is not allowed outright by the base zone. Requests of this nature may be allowed through the use exception provisions in Subsection 19.911.5, nonconforming use replacement provisions in Subsection 19.804.1.B.2, conditional use provisions in Section 19.905, or community service use provisions in Section 19.904.

**Response:** The application involves four variances to the standards in Title 19 of the MMC; therefore, the variances may be reviewed under this section. The following variances are included:

- 1) Maximum street setback along Main St. – Section 19.304.5.D.2(b)(2)
- 2) Frontage occupancy requirements – Section 19.304.5.E.2
- 3) Off-street parking between the building and the street-facing lot line – Section 19.304.5.G.2(d)
- 4) Open space requirement within 50 percent of setback along Main St. – Section 19.304.5.H.2.a

###### C. Exceptions

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A variance application is not required where other sections of the municipal code specifically provide for exceptions, adjustments, or modifications to standards either “by right” or as part of a specific land use application review process.

**Response:** Where exceptions, adjustments, or modifications to standards are provided by other means in the municipal code, a variance is not sought through this chapter.

#### 19.911.3 Review Process

##### A. General Provisions

1. Variance applications shall be evaluated through either a Type II or III review, depending on the nature and scope of the variance request and the discretion involved in the decision-making process.
2. Variance applications may be combined with, and reviewed concurrently with, other land use applications.
3. One variance application may include up to three variance requests. Each variance request must be addressed separately in the application. If all of the variance requests are Type II, the application will be processed through a Type II review. If one or more of the variance requests is Type III, the application will be processed through a Type III review. Additional variance requests must be made on a separate variance application.

**Response:** Due to the scope of variance requests, this application will be evaluated as a Type III review. As discussed throughout this narrative, the application also involves concurrent review of Type III downtown design review and Type III natural resource review. Since the project requires approval of four variances and only three are allowed per one variance application, the Applicant has submitted a separate application for the additional variance.

##### B. Type II Variances

Type II variances allow for limited variations to numerical standards. The following types of variance requests shall be evaluated through a Type II review per Section 19.1005:

1. A variance of up to 40% to a side yard width standard.
2. A variance of up to 25% to a front, rear, or street side yard width standard. A front yard width may not be reduced to less than 15 ft through a Type II review.
3. A variance of up to 10% to lot coverage or minimum vegetation standards.
4. A variance of up to 10% to lot width or depth standards.
5. A variance of up to 10% to a lot frontage standard.
6. A variance to compliance with Subsection 19.505.1.C.4 Detailed Design, or with Subsection 19.901.1.E.4.c.(1) in cases where a unique and creative housing design merits flexibility from the requirements of that subsection.
7. A variance to compliance with Subsection 19.505.7.C Building Design Standards in cases where a unique design merits flexibility from the requirements of that subsection.

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8. A variance to fence height to allow up to a maximum of 6 ft for front yard fences and 8 ft for side yard, street side yard, and rear yard fences. Fences shall meet clear vision standards provided in Chapter 12.24.

C. Type III Variances

Type III variances allow for larger or more complex variations to standards that require additional discretion and warrant a public hearing consistent with the Type III review process. Any variance request that is not specifically listed as a Type II variance per Subsection 19.911.3.B shall be evaluated through a Type III review per Section 19.1006.

**Response:** Since the variances are not listed under Subsection 19.911.3.B, the Applicant has addressed the Type III variance approval criteria under Subsection 19.911.4.

19.911.4 Approval Criteria

B. Type III Variances

An application for a Type III variance shall be approved when all of the criteria in either Subsection 19.911.4.B.1 or 2 have been met. An applicant may choose which set of criteria to meet based upon the nature of the variance request, the nature of the development proposal, and the existing site conditions.

2. Economic Hardship Criteria

- a. Due to unusual site characteristics and/or other physical conditions on or near the site, the variance is necessary to allow reasonable economic use of the property comparable with other properties in the same area and zoning district.

**Response:** All four variance requests are related to the DMU zone requirements for SE Main Street frontage. The project cannot satisfy the four Downtown Zone standards listed above due to the site's irregular geometry and lack of substantial frontage on SE Main Street; therefore, the project meets the economic hardship criteria outlined below.

The property is comprised of two lots. The long and narrow Tax Lot 402 is perpendicular to SE Main Street and has an ±55-foot street frontage. The much wider and more substantial Tax Lot 401, where the six-story apartment building is proposed, is ±260 feet back from SE Main Street and does not abut right-of-way. This gives the site an appearance and function similar to a flag lot.

Tax Lot 402 has a recorded Easement for Ingress, Egress, Parking and Maintenance for the benefit of Tax Lot 403 over the entire property. Essentially, it is utilized for vehicular and pedestrian connection to access Tax Lot 401, and it has been historically shared by two adjacent properties from the north and south as a driveway and parking lot.

**1. Maximum street setback along SE Main Street – Section 19.304.5.D.2(b)(2)**

Per MMC Section 19.304.5.D.2(b)(2), maximum front setback is 10 feet. As described above, the site is only 55 feet wide for the first 260 feet, and that portion of the site is used as a driveway to access Tax Lot 401, with an ingress/egress easement recorded over it. Therefore, there is physically no room for a multifamily residential building 10 feet from E. While other properties in the area have more significant frontage on SE Main Street, the subject site does not. Where the property physically allows development of a

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multifamily structure, the proposed building is set as close to the property line as possible, as shown on the site plan.

**2. Frontage occupancy requirements – Section 19.304.5.E.2**

Per MMC Section 19.304.5.E.2, Figure 19.304-6, minimum 50 percent of site frontage must be occupied by a building. As described above, the 55-foot-wide by 260-foot-long lot is used for accessing Tax Lot 401 and is encumbered by an ingress and egress easement. This fact prohibits construction of a building on Tax Lot 402. Additionally, a multifamily building of such dimensions and configuration is not physically attainable or economically feasible.

**3. Allow off-street parking between the building and the street-facing lot line – Section 19.304.5.G.2(d)**

Per MMC Section 19.304.5.G.2(d), off-street parking cannot be located between a building and the street-facing lot line. The long and narrow Tax Lot 402 occupies the space between the street and the building. The two-way 26-foot-wide access drive and a new 5-foot sidewalk leading to the building leave only 20 feet available. The only economically reasonable use for the remaining narrow strip of site is parking. Additionally, the multifamily residential project aims to achieve as close to 1:1 parking ratio as possible. DMU zoning allows a reduction in parking standards; however, market analysis has consistently demonstrated that apartments without assigned parking do not get leased and lose value. The project provides 172 spaces for 178 units. As a result, not every unit, and not every tenant of two- and three-bedroom units will be provided with parking. Out of 172 spaces, 158 are control-accessed inside the gated garage and back surface lot. Fourteen surface parking spaces in front of the leasing office are critical for the project's marketability and will serve both the residents and potential tenants who are visiting the leasing office and touring the apartments. For the reasons outlined above, off-street parking between the building and SE Main Street is the best use of land, given its physical constraints.

**4. Open space requirement within 50 percent of setback along SE Main Street – Section 19.304.5.H.2.a**

Per MMC Section 19.304.5.H.2.a, when a building is set back from the sidewalk, at least 50 percent of the setback area must be usable open space to provide amenities for downtown visitors and residents, promote livability, and help soften the effects of built and paved areas. For reasons outlined above, the building exceeds the maximum setback requirement and is located  $\pm 270$  feet away from the sidewalk on SE Main Street. Due to the existing access easement on Tax Lot 402,  $\pm 69\%$  of the lot area is constrained by the driveway, which serves as the single vehicular access to the project, the required pedestrian walkway, and the required fire system utility services. Due to these physical property conditions, the project is not able to provide 50% of its setback as open space as only 21% of the area is unconstrained.

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As discussed in the justification for parking variance above, the project attempts to accommodate 1:1 parking ratio and 14 surface spaces are critically important for the apartments to stay competitive in the rental market. The site plan allocates ±53% of the buildable setback space to parking and ±47% to the publicly accessible ±950-square foot plaza and landscaping. As shown on the Preliminary Landscape Plan, the conceptual design for the public plaza features a seating area, attractive landscaping with a street tree, and decorative pavers. The public plaza creates a visual pause in the urban fabric and an informal space for pedestrians to relax.

The project already far exceeds the usable open space requirement and provides premier community amenities to its residents at two clubrooms, a fitness center, the ground level and rooftop terraces with landscaping and furnishings, and the lobby/lounge area. The project provides a total of ±16,750 square feet of usable open space, including ±10,760 square feet of common usable open space and nearly 6,000 square feet of private open space, as described in detail in Section 19.508.3.G above. The ±950-square foot plaza abutting Main Street sidewalk is visually and physically accessible and welcoming to the general public working, dining, shopping, or living in downtown Milwaukee.

b. **The proposed variance is the minimum variance necessary to allow for reasonable economic use of the property.**

**Response:** Placing the building as shown on the preliminary plans represents the minimum variance possible to allow for reasonable economical use of the property.

c. **Impacts from the proposed variance will be mitigated to the extent practicable.**

**Response:** The intent of the application is to create desired density, building massing, and activated pedestrian frontage in the Downtown Mixed-Use zoning district. While precluded from meeting the standards related to SE Main Street due lack of sufficient frontage and irregular physical characteristics of the site, the project still contributes to the overall goals of the Downtown Zoning District code. To the extent there is an impact, it is mitigated by the following factors:

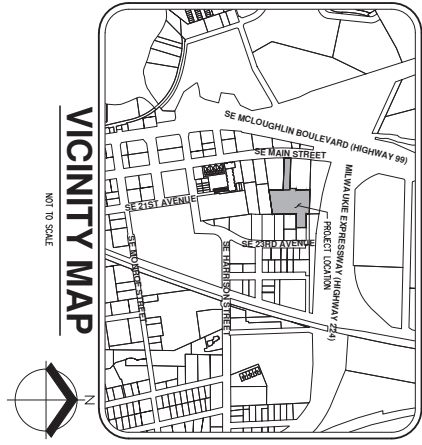
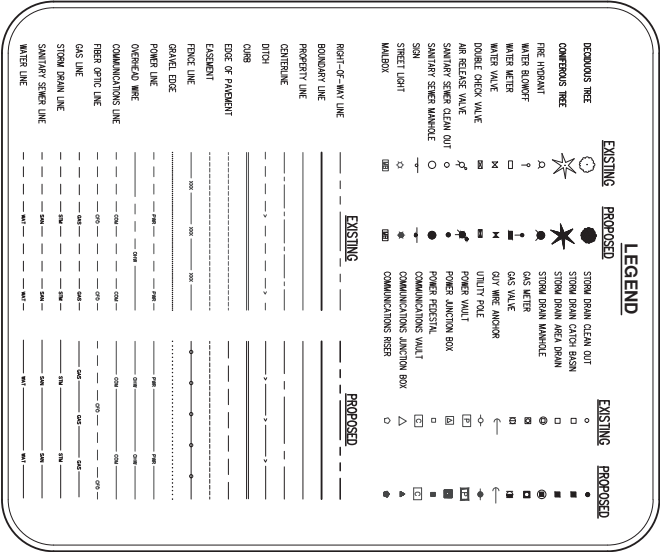
- The 178-unit six-story building demonstrates a distinct urban character due to its high density, two live/work units, and memorable northwest architectural style. Although not directly abutting SE Main Street, the project architecture still focuses on human-scale façade details, such as abundant glass storefronts, brick accents at the ground floor level, and awnings over entrances. Private balconies and shared rooftop terraces facing SE Main Street encourage an interaction between public and private, interior and exterior realm, and create “eyes on the street.”
- The ground floor public lobby and residential amenity spaces are facing SE Main Street.
- The project provides high-quality public spaces, including in excess of 12,000 square feet of usable outdoor open space.

- 
- Reduced parking quantity contributes to an active community that is bike-, transit-, and pedestrian-friendly.
  - An ±950-square-foot pedestrian plaza is proposed between the public sidewalk on SE Main Street and the off-street parking area. The proposed plaza features attractive landscaping, lighting, enhanced paving, and a seating area.
  - The building is projected to achieve a Green Building/the Earth Advantage certification.

#### **IV. Conclusion**

The required findings have been made, and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the Milwaukie Municipal Code. The evidence in the record is substantial and supports approval of the application. Therefore, the City can rely upon this information in its approval of the applications.

# ATTACHMENT 4 Exhibit C



# HENLEY PLACE PRELIMINARY PLANS



**SITE MAP**  
SCALE 1" = 80'



**APPLICANT**  
PAHLISCH COMMERCIAL, INC  
15333 SE OLDA, PARKWAY STE 100  
PORTLAND, OR 97224

**CONSULTING FIRM**  
AKS ENGINEERING & FORESTRY, LLC  
CONTACT: CHRIS COONELL, LANDSHAWN MORSE, PE  
12965 SW HERMAN RD., SUITE 100  
TUALATIN, OR 97062  
PH: 503-563-6151  
FAX: 503-563-6152

**PROPERTY DESCRIPTION**  
TAX LOTS 401 AND 402 OF CLACKAMAS COUNTY TAX MAP 11E 250C LOCATED IN THE SOUTHWEST ONE QUARTER OF SECTION 25, TOWNSHIP 1 SOUTH, RANGE 1 EAST, WILLAMETTE MERIDIAN, CITY OF MILWAUKIE, CLACKAMAS COUNTY, OREGON.

**PROPERTY LOCATION**  
NORTH OF THE INTERSECTION OF SE SCOTT STREET AND SE MAIN STREET AND WEST OF SE 23RD AVENUE IN MILWAUKIE, OR 97224.

**EXISTING LAND USE**  
SITE IS CURRENTLY DEVELOPED WITH AN EXISTING COMMERCIAL STRUCTURE AND SURFACE PARKING LOT MULTIFAMILY RESIDENTIAL HOUSING COMMUNITY

**PROJECT PURPOSE**  
TAX LOT 401 - DOWNTOWN MIXED USE (DMU) & R3  
TAX LOT 402 - DOWNTOWN MIXED USE (DMU)

**ZONING**  
TAX LOT 401 - 1.62E AC (70,567.6 SF)  
TAX LOT 402 - 0.32E AC (13,950.6 SF)

**TOTAL SITE AREA**  
ELEVATIONS ARE BASED ON NGS BENCHMARK NO. 807493, LOCATED AT THE INTERSECTION OF STATE HWY 226 AND MONROE ST. ELEVATION = 97.53 FEET (NAVD 88)

**VERTICAL DATUM**

**SHEET INDEX**  
P-00 COVER SHEET WITH SITE AND VICINITY MAPS  
P-01 PRELIMINARY COLOR LANDSCAPE PLAN  
P-02 PRELIMINARY AERIAL PHOTOGRAPH PLAN  
P-03 EXISTING CONDITIONS PLAN  
P-04 PRELIMINARY DEMOLITION PLAN  
P-05 PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN  
P-06 PRELIMINARY TREE PRESERVATION AND REMOVAL TABLE  
P-07 CONSTRUCTION MANAGEMENT GRADING EROSION & SEDIMENT CONTROL PLAN  
P-08 PRELIMINARY FIRE ACCESS & WATER SUPPLY PLAN  
P-09 PRELIMINARY COMPOSITE UTILITY PLAN  
P-10 PRELIMINARY DIMENSIONED SITE PLAN  
P-11 PRELIMINARY DETAILED LANDSCAPE PLAN  
P-12 PRELIMINARY PHOTO-METRIC PLAN

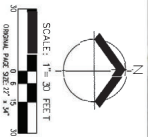
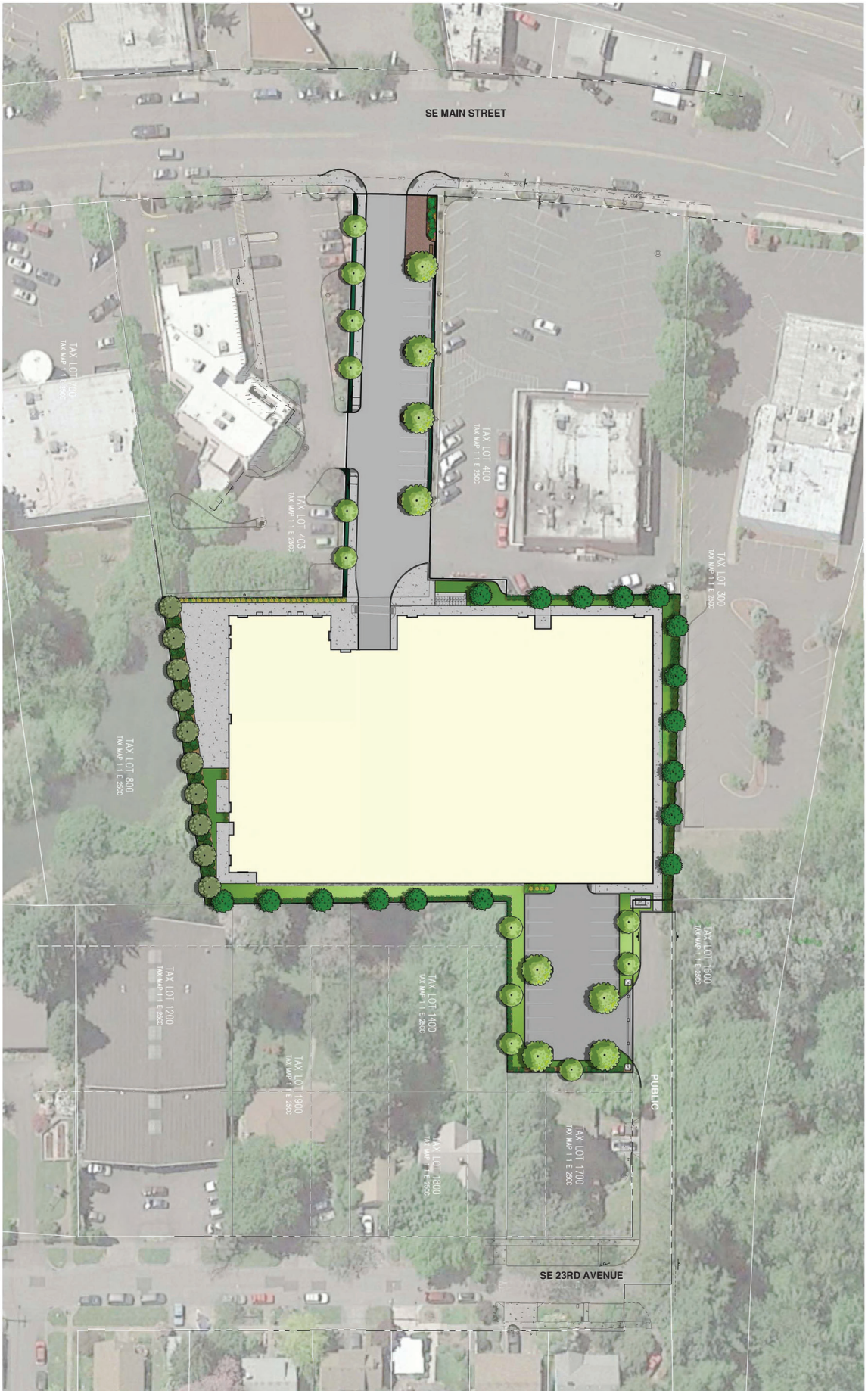
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CHECKED BY: CSW  
SCALE: AS SHOWN

COVER SHEET WITH SITE AND VICINITY MAPS  
**HENLEY PLACE**  
**PAHLISCH COMMERCIAL**  
**MILWAUKIE, OREGON**

5.2 Page 579

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P-01

**PRELIMINARY  
NOT FOR  
CONSTRUCTION**

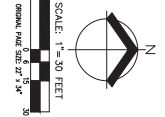
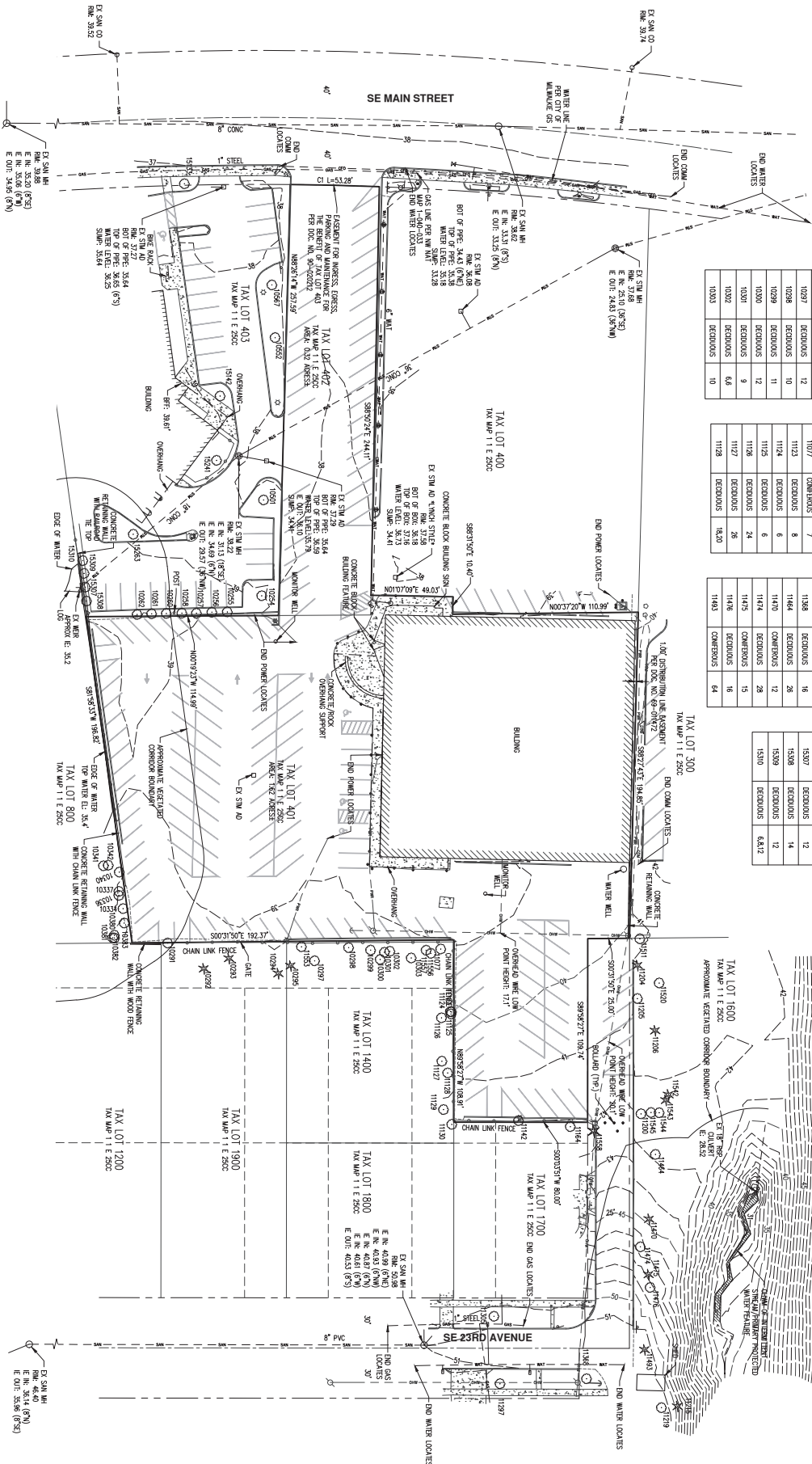
**PRELIMINARY COLOR LANDSCAPE PLAN  
HENLEY PLACE  
PAHLISCH COMMERCIAL 5.2 Page 580  
MILWAUKIE OREGON**



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HEET TABLE	HEET NUMBER	TYPE	BSH (IN)
	1024	DECOROUS	17
	1025	DECOROUS	6.79
	1026	DECOROUS	7.10
	1027	DECOROUS	6.10
	1028	DECOROUS	8.9
	1029	DECOROUS	7.7
	1030	DECOROUS	15
	1031	DECOROUS	6.84
	1032	DECOROUS	8
	1033	DECOROUS	38
	1034	CONCRETS	19
	1035	CONCRETS	22
	1036	CONCRETS	12
	1037	CONCRETS	10
	1038	CONCRETS	11
	1039	CONCRETS	12
	1040	CONCRETS	9
	1041	CONCRETS	6.6
	1042	CONCRETS	10

HEET TABLE	HEET NUMBER	TYPE	BSH (IN)
	1033	DECOROUS	8
	1034	DECOROUS	7
	1035	DECOROUS	6.79
	1036	DECOROUS	7.10
	1037	DECOROUS	6.10
	1038	DECOROUS	8.9
	1039	DECOROUS	7.7
	1040	DECOROUS	15
	1041	DECOROUS	6.84
	1042	DECOROUS	8
	1043	DECOROUS	38
	1044	CONCRETS	19
	1045	CONCRETS	22
	1046	CONCRETS	12
	1047	CONCRETS	10
	1048	CONCRETS	11
	1049	CONCRETS	12
	1050	CONCRETS	9
	1051	CONCRETS	6.6
	1052	CONCRETS	10

HEET TABLE	HEET NUMBER	TYPE	BSH (IN)
	1129	DECOROUS	10
	1130	DECOROUS	7
	1131	DECOROUS	6.89
	1132	DECOROUS	16
	1133	CONCRETS	17
	1134	CONCRETS	7.2
	1135	CONCRETS	10.2
	1136	CONCRETS	9
	1137	CONCRETS	12
	1138	CONCRETS	14
	1139	CONCRETS	12
	1140	CONCRETS	12
	1141	CONCRETS	15
	1142	CONCRETS	15
	1143	CONCRETS	6.4

HEET TABLE	HEET NUMBER	TYPE	BSH (IN)
	1151	DECOROUS	11.8
	1152	DECOROUS	7
	1153	CONCRETS	16
	1154	CONCRETS	17
	1155	CONCRETS	10.2
	1156	CONCRETS	9
	1157	CONCRETS	12
	1158	CONCRETS	14
	1159	CONCRETS	12
	1160	CONCRETS	6.82

- NOTES:**
- VERTICAL CURVE ELEVATIONS ARE BASED ON UNASSIGNED UTILITY LOCATIONS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATIONS NUMBERED 200878, 200877, AND 200876. UNASSIGNED UTILITY LOCATIONS REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL UTILITY LOCATIONS PRIOR TO BEGINNING CONSTRUCTION.
  - FIELD SURVEY WORK WAS CONDUCTED JANUARY 12-14 AND 18, 2020.
  - APPROXIMATE VERTICAL CURVE BOUNDARY.
  - VERTICAL CURVE ELEVATIONS ARE BASED ON UNASSIGNED UTILITY LOCATIONS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATIONS NUMBERED 200878, 200877, AND 200876. UNASSIGNED UTILITY LOCATIONS REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL UTILITY LOCATIONS PRIOR TO BEGINNING CONSTRUCTION.
  - THIS IS NOT A PROPERTY BOUNDARY SURVEY. TO BE RECORDED WITH THE COUNTY SHERIFF'S OFFICE, THIS SURVEY MUST BE RECORDED WITH THE COUNTY SHERIFF'S OFFICE. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL UTILITY LOCATIONS PRIOR TO BEGINNING CONSTRUCTION.
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**EXISTING CONDITIONS PLAN**  
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**MILWAUKIE, OREGON**

5.2 Page 581

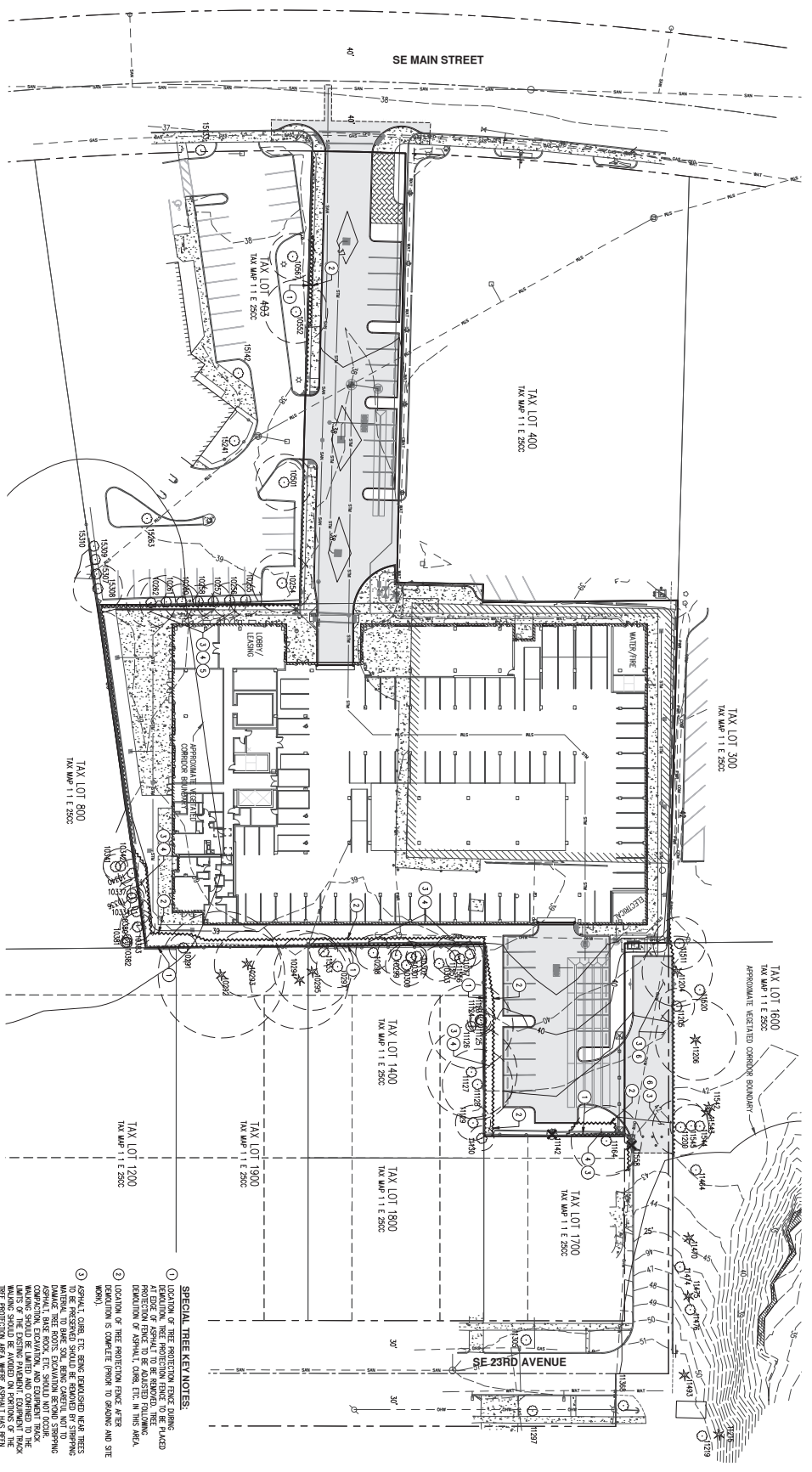
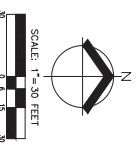
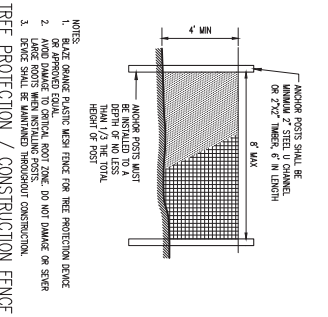
**P-03**

**Pahlisch Commercial**

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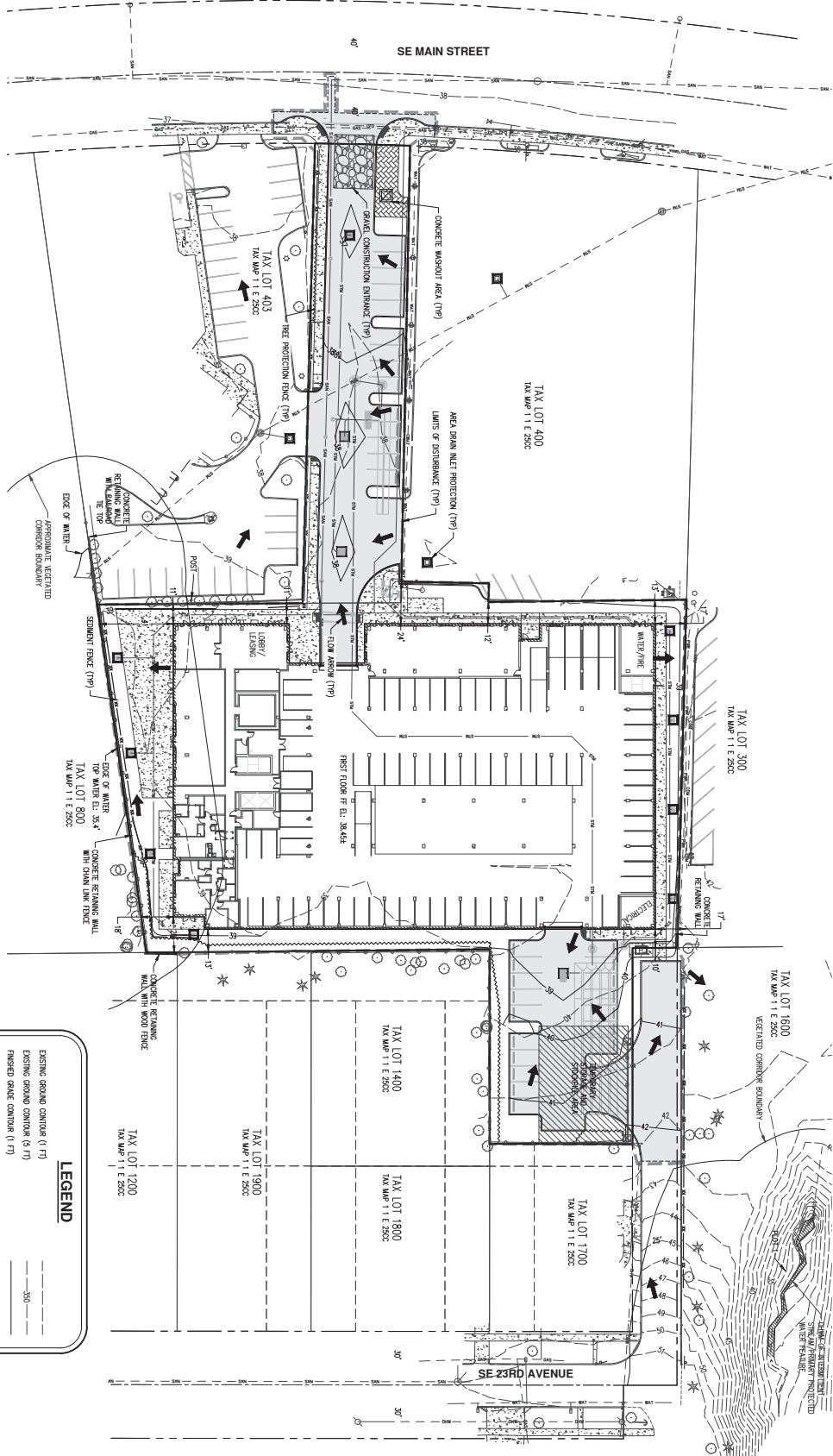


LEGEND	
---	EXISTING GROUND CONTOUR (1 FT)
---	EXISTING GROUND CONTOUR (5 FT)
---	FINISHED GRADE CONTOUR (1 FT)
---	FINISHED GRADE CONTOUR (5 FT)
---	EXISTING CONTOUR TREE
---	EXISTING DECIDUOUS TREE
---	TREE REMOVAL
---	TREE PROTECTION/CONSTRUCTION FENCE
---	ASSIGNED TREE ROOT ZONE (-1 FT RADIIUS PER 1" IN DBH)



- SPECIAL TREE KEY NOTES:**
- LOCATION OF TREE PROTECTION FENCE DURING CONSTRUCTION SHALL BE AS SHOWN. PROTECTION FENCE TO BE ADJUSTED FOLLOWING DESTRUCTION OF ASPHALT, CURB, ETC. IN THIS AREA.
  - LOCATION OF TREE PROTECTION FENCE AFTER WORK IS COMPLETE (OPEN TO DRIVERS AND SITE WORK).
  - ASPHALT, CURB, ETC. SHALL REMOVED NEAR TREES TO BE PRESERVED. SHOULD BE REMOVED BY STRIPPING MATERIAL TO BASE SOIL, BEING CAREFUL NOT TO DAMAGE ROOTS. ASPHALT, BASE ROCK, ETC. SHOULD NOT COVER CONCRETE, EXCAVATION, AND CONCRETE TRUCK TRAILS. REMOVAL OF ASPHALT, CURB, ETC. SHALL BE APPROVED BY THE EXISTING PLANNING DEPARTMENT. BEFORE REMOVAL, IF CONSTRUCTION ACCESS IS NEEDED IN THIS AREA, A TEMPORARY ASPHALT DRIVEWAY SHALL BE APPROVED BY THE PROJECT ARCHITECT. SHOULD BE APPROVED BY THE PROJECT ARCHITECT. SHALL BE ON-SITE DURING DEMOLITION IN THIS AREA.
  - TREE PRUNING MAY BE REQUIRED FOR CONSTRUCTION ACTIVITIES IN THIS AREA.
  - ASSISTANT OBSERVATION REQUIRED FOR CONSTRUCTION ACTIVITIES IN THIS AREA.
  - PLANNING DEPARTMENT SHALL BE NOTIFIED BY STRIPPING CONTRACTOR NOT TO DAMAGE THE ROOTS, AND THEN PLACE CONSTRUCTION MATERIALS. OCCUPANCY OF THIS AREA SHALL BE APPROVED BY THE PLANNING DEPARTMENT. BEFORE ANY WORK IS DONE ON THE MATERIAL SHOULD BE USED TO PROTECT THE ROOTS. EQUIPMENT TRACK MARKING SHOULD BE LIMITED AND CENTERED ON THE SIDE OF THE DRIVEWAY. A CONSTRUCTION ACTIVITIES IN THIS AREA.

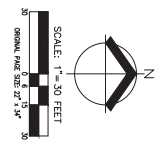




- GENERAL NOTES:**
1. FIRST FLOOR ELEVATION (FF EL) IS APPROXIMATE AND FOR ESTIMATION AND PLANNING PURPOSES ONLY.
  2. THESE PRELIMINARY GRADING AND EROSION CONTROL PLANS ASSUME ERY REINFOR CONSTRUCTION.
  3. CONTRACTOR MAY COMPENSATE WITH ADJACENT PROPERTY TO ALLOW FOR SMOOTH TRANSITIONS FROM NEW IMPROVEMENTS TO EXISTING.

**LEGEND**

- EXISTING GROUND CONTOUR (1 FT)
- EXISTING GROUND CONTOUR (5 FT)
- FINISHED GRADE CONTOUR (1 FT)
- FINISHED GRADE CONTOUR (5 FT)
- SEMENT FENCE
- AREA DRAIN PROTECTION (TP) PER CHAIN LINK INSERT BAR DETAIL
- CONCRETE WASHOUT AREA
- DRAINAGE FLOW DIRECTION
- GRAVEL CONSTRUCTION ENTRANCE (EXISTING PAVED DRIVEWAY TO BE UTILIZED FOR SITE ACCESS)
- LIMITS OF DISTURBANCE
- TEMPORARY STORAGE AND STOCKPILE AREA
- TREE PROTECTION/CONSTRUCTION FENCE
- VEGETATED CORROBOR BOUNDARY



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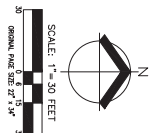
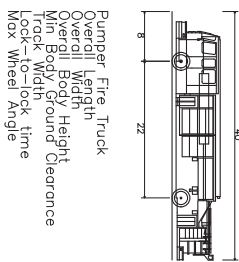
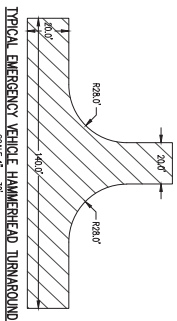
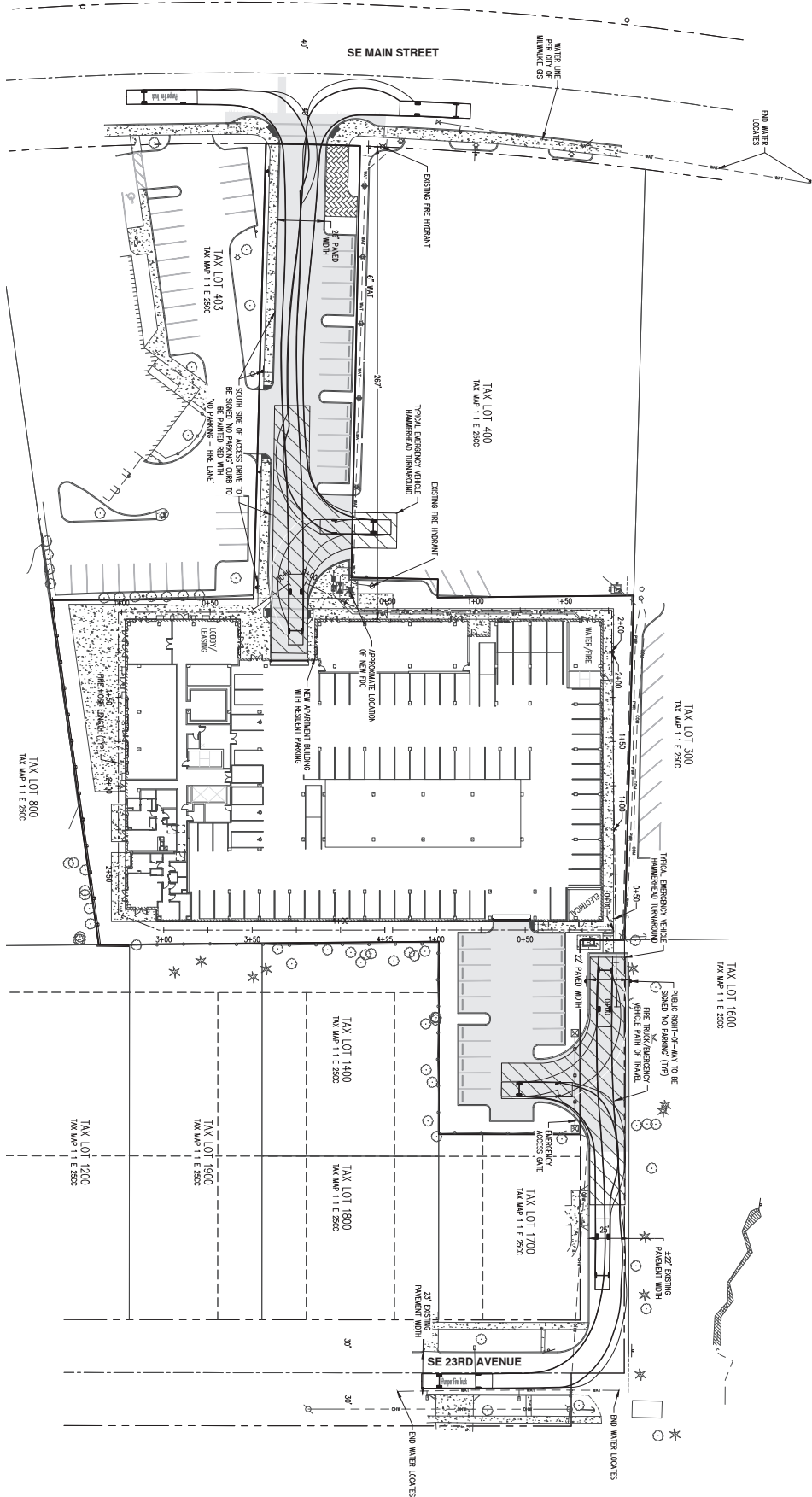
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**CONSTRUCTION MANAGEMENT GRADING EROSION & SEDIMENT CONTROL PLAN**

**HENLEY PLACE**  
**PAHLISCH COMMERCIAL** 5.2 Page 585  
**MILWAUKIE, OREGON**

**Pahlisch Commercial**

**P-07**



**PRELIMINARY FIRE ACCESS & WATER SUPPLY PLAN**  
**HENLEY PLACE**  
**PAHLISCH COMMERCIAL**  
**MILWAUKIE, OREGON**



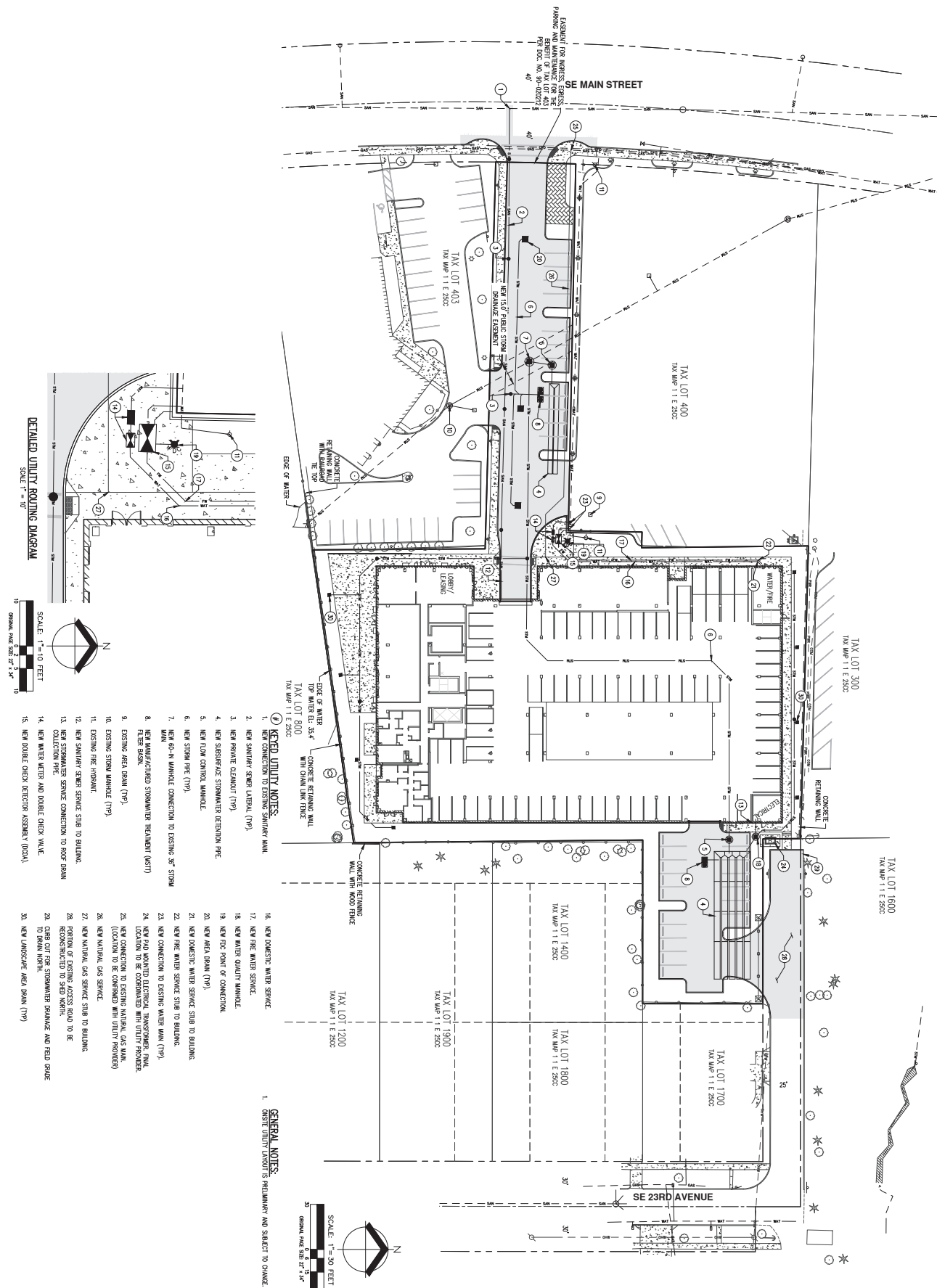
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**P-08**

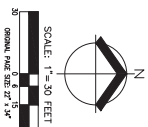
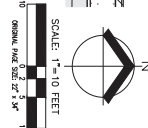
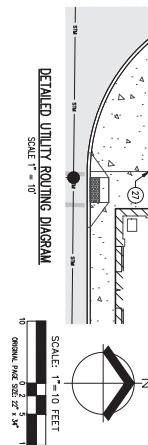
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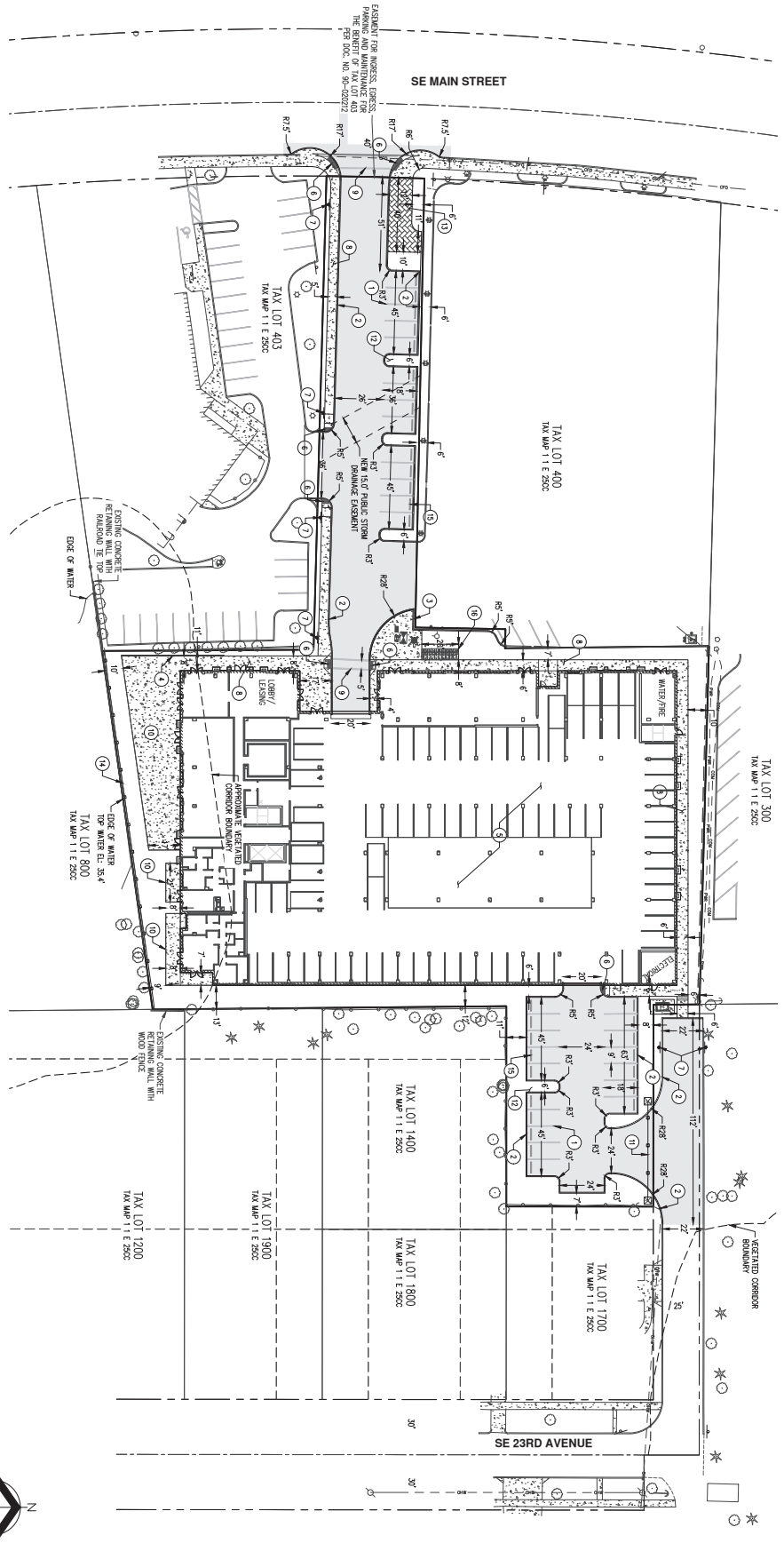


- REQUIRED UTILITY NOTES:**
1. NEW CONNECTION TO EXISTING SANITARY MAIN.
  2. NEW SANITARY SEWER LATERAL (TYP).
  3. NEW PRIVATE CLEANNET (TYP).
  4. NEW SUBSURFACE STORMWATER DETENTION PIPE.
  5. NEW FLOW CONTROL MANHOLE.
  6. NEW STORM PIPE (TYP).
  7. NEW 48" IN MANHOLE CONNECTION TO EXISTING 36" STORM MAIN MANHOLE (TYP).
  8. NEW MANHOLE CIRCUMFERENTIAL STORMWATER TREATMENT (CSTT) FILTER BASIN.
  9. EXISTING AREA DRAIN (TYP).
  10. EXISTING STORM MANHOLE (TYP).
  11. EXISTING FIRE HYDRANT.
  12. NEW SANITARY SEWER SERVICE SLAB TO BUILDING.
  13. NEW STORMWATER SERVICE CONNECTION TO ROOF DRAIN COLLECTION PIPE.
  14. NEW WATER METER AND DOUBLE CHECK VALVE.
  15. NEW DOUBLE CHECK DETECTOR ASSEMBLY (DCDA).

16. NEW DOMESTIC WATER SERVICE.
17. NEW FIRE WATER SERVICE.
18. NEW WATER QUALITY MANHOLE.
19. NEW POC POINT OF CONNECTION.
20. NEW AREA DRAIN (TYP).
21. NEW DOMESTIC WATER SERVICE SLAB TO BUILDING.
22. NEW FIRE WATER SERVICE SLAB TO BUILDING.
23. NEW CONNECTION TO EXISTING WATER MAIN (TYP).
24. NEW P.O.U. MOUNTED ELECTRICAL BREAKER/GENERATOR PANEL LOCATION TO BE COORDINATED WITH UTILITY PROVIDER. (LOCATION TO BE DETERMINED WITH UTILITY PROVIDER).
25. NEW CONNECTION TO EXISTING NATURAL GAS MAIN. (LOCATION TO BE DETERMINED WITH UTILITY PROVIDER).
26. NEW NATURAL GAS SERVICE.
27. NEW NATURAL GAS SERVICE SLAB TO BUILDING.
28. PORTION OF EXISTING ACCESS ROAD TO BE RECONSTRUCTED TO SAVED WIDTH.
29. CURB CUT FOR STORMWATER DRAINAGE AND FLOOD GRADE TO DRAIN NORTH.
30. NEW LANDSCAPE AREA DRAIN (TYP).

- GENERAL NOTES:**
1. ORISTE UTILITY LAYOUT IS PRELIMINARY AND SUBJECT TO CHANGE.





**LEGEND:**

- APPROXIMATE OF-SITE MAN-MADE WATER
- QUALITY RESOURCE (POND BOUNDARY)
- - - ON-SITE VERTICALLY CURBED 3.2% S.F. (0.21% SLOPE)

**KEYED NOTES:**

1. NEW PARKING STALL
2. NEW STANDARD CURB
3. NEW WOODPALE CURB
4. NEW TALL CURB
5. NEW ASPHALT BUILDING WITH RESIDENT PARKING
6. NEW ADA COMPLIANT RAMP (TP)
7. NEW NO PARKING SIGN
8. NEW CONCRETE SIDEWALK (TP)
9. NEW PEDESTRIAN CROSSING
10. NEW HERBACE HEDGECARE PLANT AREA
11. NEW EMERGENCY ACCESS CANYON
12. NEW PARKING AREA LANDSCAPE ISLAND (TP)
13. NEW PEDESTRIAN PLAZA AREA
14. NEW FENCE AT TOP OF EXISTING CONCRETE RETAINING WALL
15. NEW PRECAST METAL STOP (TP)
16. NEW SIGN PARKING AREA

**PARKING SUMMARY:**

EXISTING PARKING PROVISIONS	141
NEW PARKING PROVISIONS	31
TOTAL PARKING STALLS PROVIDED	172
EXISTING BIKE PARKING PROVISIONS	10
NEW BIKE PARKING PROVISIONS	10
TOTAL BIKE PARKING PROVIDED	20

SCALE: 1" = 30' FEET  
 ORIGINAL PLOT SIZE: 27' x 34'

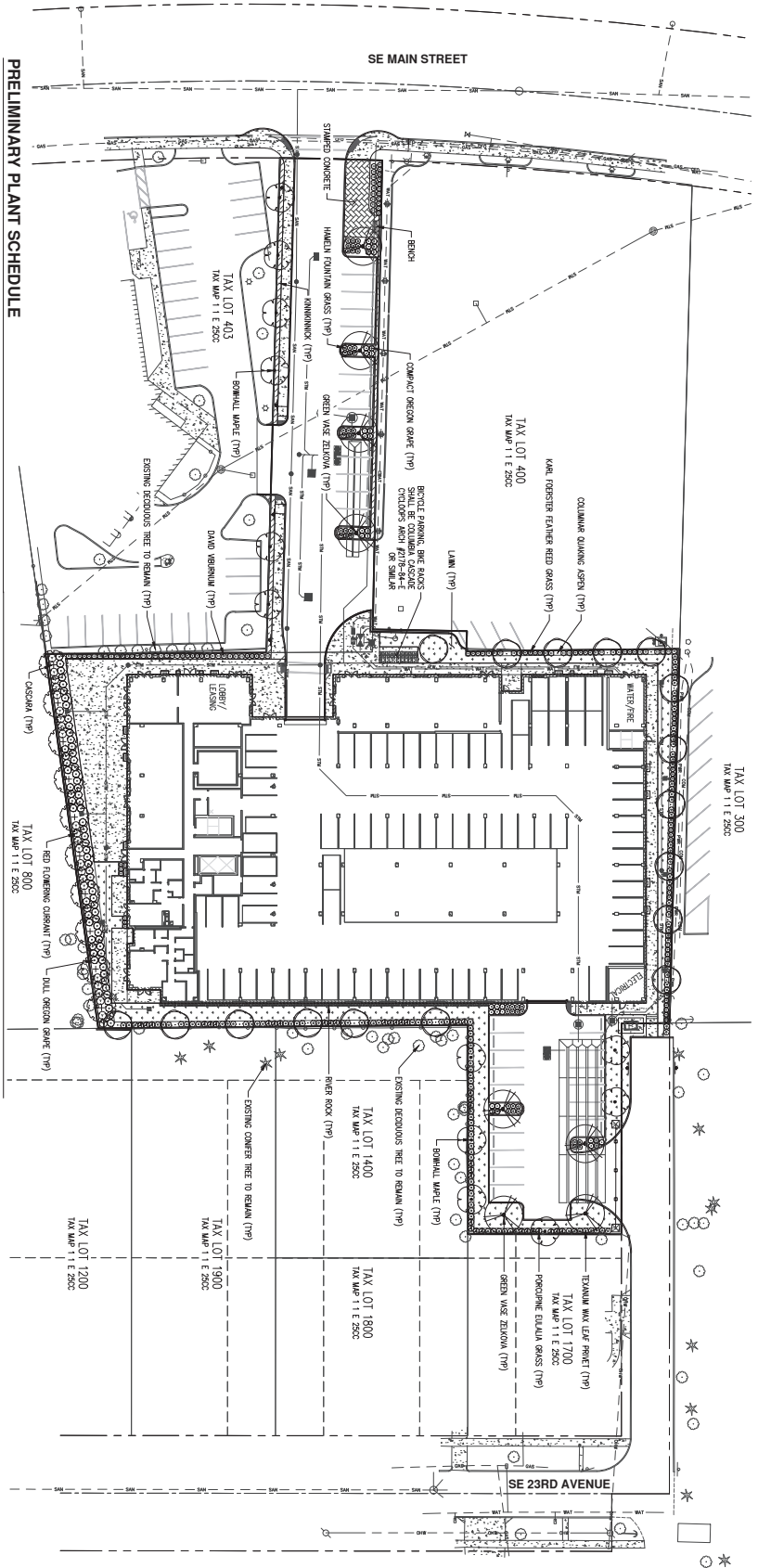
AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD, SITE 100  
 TUALATIN, OR 97062  
 503.653.6151  
 WWW.AKS-ENG.COM

**PRELIMINARY DIMENSIONED SITE PLAN**  
**HENLEY PLACE**  
**PAHLISCH COMMERCIAL**  
**MILWAUKIE, OREGON**



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**PRELIMINARY PLANT SCHEDULE**

TREES	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
○	ACER RUBRA 'BONHUI'	BONHUI RED MAPLE	2" OIL BAB	AS SHOWN
○	POPULUS TREHEDANENSIS 'BENTON'	COLUMBIAN QUINQUE SEVEN	2" OIL BAB	AS SHOWN
○	RYDALMUS PERSICARIA	CASCARA	2" OIL BAB	AS SHOWN
○	ZELKOVA SERIALA 'GREEN HAZE'	GREEN HAZE ZELKOVA	2" OIL BAB	AS SHOWN

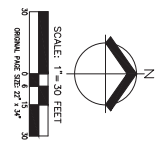
SHRUBS	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
○	CALAMAGOSTIS X ADONISIDA 'VARI FERGSTER'	KARL FERSTER FEATHER REED GRASS	1 OIL CONT.	30' c.c.
○	LOUISIANA JAPONICA 'TENNANT'	WAX LEAF FROST	2 OIL CONT.	30' c.c.
○	MAHONIA AQUIFOLIUM 'COMPACT'	COMPACT OREGON GRAPE	2 OIL CONT.	30' c.c.
○	MAHONIA VIRENS	DOLL OREGON GRAPE	2 OIL CONT.	40' c.c.
○	ISCOPHAGUS SERRATUS 'SERRATUS'	PROSOPINE ELIJAH GRASS	1 OIL CONT.	30' c.c.
○	MAHONIA ODOREATA 'COMPACT'	COMPACT MAHONIA	2 OIL CONT.	30' c.c.
○	FERNETUM ALCORCORGOS 'VANDUEN'	HAULM FOUNTAIN GRASS	1 OIL CONT.	30' c.c.
○	BIRES SANDROBIA	RED FLOWERING CURBANT	2 OIL CONT.	40' c.c.
○	VERBENA DAVIDI	DAVID VERBENA	2 OIL CONT.	30' c.c.

**PRELIMINARY LANDSCAPE NOTES**

- LANDSCAPING SPECIFICATIONS ARE PRELIMINARY AND SUBJECT TO CHANGE FROM TO FINAL REVIEW AND SUBMITTAL.
- LANDSCAPING SHALL COMPLY TO APPLICABLE CITY OF MILWAUKIE DESIGN STANDARDS LICENSED AND BONDED IN THE STATE OF OREGON. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THROUGHOUT THE CONSTRUCTION PERIOD.
- LANDSCAPING AND REDUCTION WORKSHOPS, DESIGN SITE CONDITIONS, AND ALL DETAILS OF THE WORK NECESSARY FOR THE FULL COMPLETION OF THE PROJECT, COORDINATE LANDSCAPE WORK WITH GENERAL CONTRACTOR AND OWNER.
- PLANT DESIGN SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, MATERIALS, AND FINISHING QUANTITIES PRIOR TO BEGINNING CONSTRUCTION.
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- PLANT DESIGN SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, MATERIALS, AND FINISHING QUANTITIES PRIOR TO BEGINNING CONSTRUCTION.

**LANDSCAPE DATA**

INTERIOR PARKING LOT LANDSCAPE AREA REQUIRED: 31 PARKING SPACES, 25 SF = 775 SF  
 INTERIOR PARKING LOT LANDSCAPE AREA INCLUDED WITH SITE PLAN: 41,272 SF



**PRELIMINARY**  
**PROPOSED**  
**CONSTRUCTION**

DATE: 09/27/2021  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]

SCALE: 1" = 30 FEET  
 GRAPHIC SCALE: 0' 15' 30'

**PRELIMINARY DETAILED LANDSCAPE PLAN**  
**HENLEY PLACE**  
**PAHLISCH COMMERCIAL**  
**MILWAUKIE, OREGON**

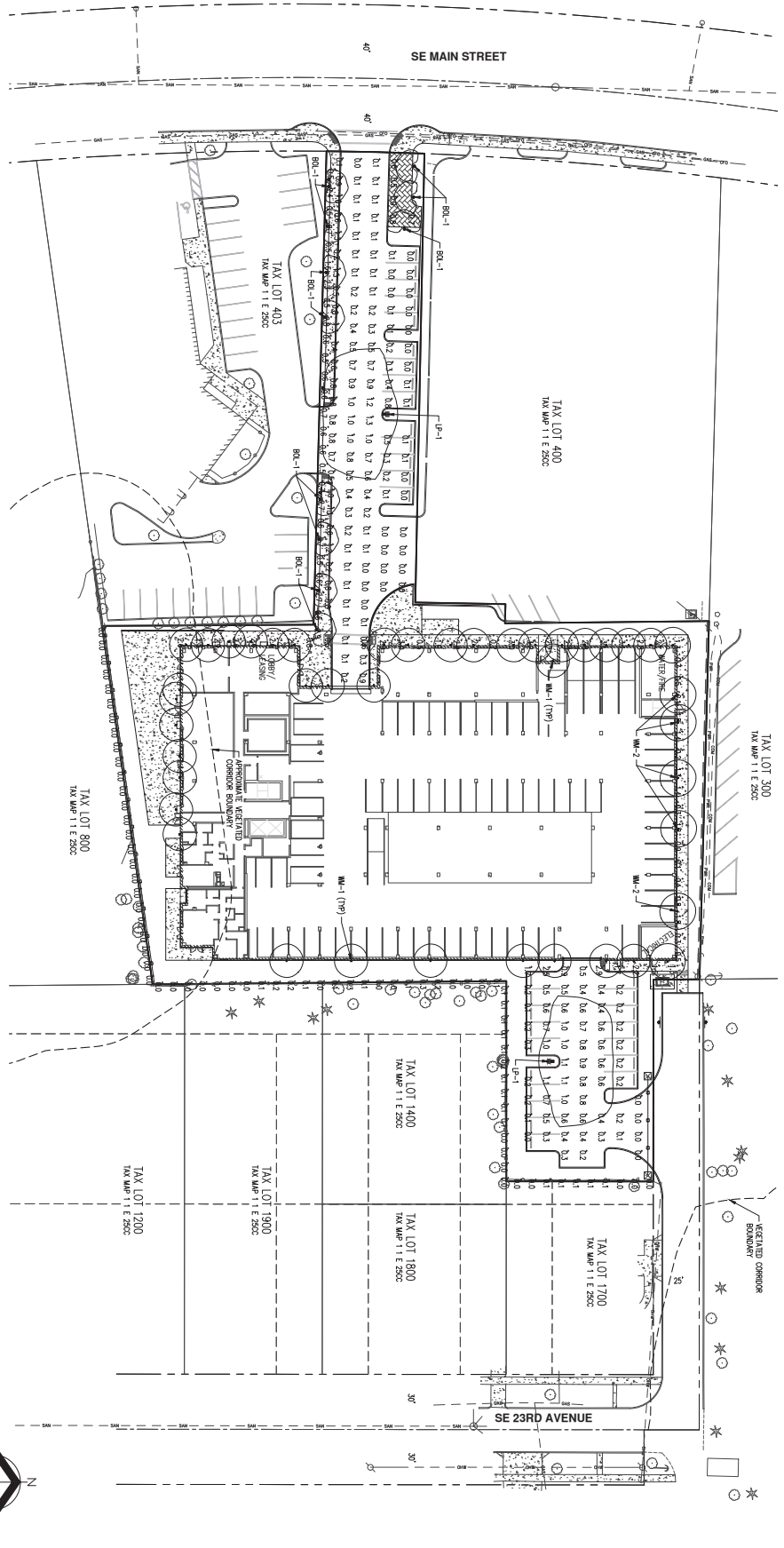
5.2 Page 589

**Pahlisch Commercial**

**AKS ENGINEERING & FORESTRY, LLC**  
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**PRELIMINARY EXISTING SITE LUMINAIRE SCHEDULE**

LABEL	TAG	DESCRIPTION	QTY	TOTAL LUMENS	TOTAL WAITS	LF
RO-1	NEW	HORIZONTAL 3000K LED OPTIC 108 4000 200 WAXEL FT LF 8.0	11	290	37	0.9

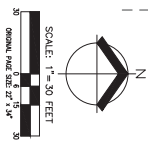
**PRELIMINARY WALL MOUNTED LUMINAIRE SCHEDULE**

LABEL	TAG	DESCRIPTION	QTY	TOTAL LUMENS	TOTAL WAITS	LF
WM-1	NEW	WALL MOUNTING CANISTER OUTDOOR WALL SENSIVE (W-485510)	8	1540	21	0.9
WM-2	NEW	WALL MOUNTING CANISTER OUTDOOR WALL SENSIVE (W-485510)	9	1540	21	0.9

**CONCEPTUAL LUMINAIRE AND POLE SCHEDULE**

LABEL	TAG	DESCRIPTION	QTY	TOTAL LUMENS	TOTAL WAITS	LF
LP-1	NEW	30M LUMINAIRE ISSU LED (ISSU) LED P1 400 1300	20	4318	58	0.9

**LUMINATION LEVEL SUMMARY:**  
 GENERAL ILLUMINATION AND SOCIAL ENTRANCE AREAS  
 MINIMUM ILLUMINATION LEVEL  
 -GENERAL: 0.1 fc  
 LIGHT TRESSSES  
 MINIMUM ILLUMINATION LEVEL  
 -GENERAL: 0.5 fc  
 -PARKING: 0.1 fc





## TABLE OF CONTENTS

C1	VIEW FROM SW/
C2	TABLE OF CONTENTS
C3	VICINITY MAP
C4	EXISTING CONDITIONS
C5	SITE IMAGES
C10	LEVEL 1 FLOOR PLAN
C11	LEVEL 2 FLOOR PLAN
C12	LEVEL 3,4 FLOOR PLAN
C13	LEVEL 5 FLOOR PLAN
C14	LEVEL 6 FLOOR PLAN
C15	ROOF PLAN
C16	WEST ELEVATION
C17	SOUTH ELEVATION
C18	EAST ELEVATION
C19	NORTH ELEVATION
C20	BUILDING SECTION LOOKING NORTH
C21	BUILDING SECTION LOOKING SOUTH
C22	EXTERIOR VIEW
C23	EXTERIOR VIEW
C24	MMC 19.508.4.C.2 WEATHER PROTECTION
C25	MMC 19.508.4.E COMPLIANCE
C26	MMC 19.508.4.E COMPLIANCE
C27	MMC 19.508.4.G OPEN SPACE COMPLIANCE
C28	MMC 19.508.4.G OPEN SPACE COMPLIANCE
C29	MMC 19.508.4.G OPEN SPACE COMPLIANCE
C30	MMC 19.508.4.G OPEN SPACE COMPLIANCE
C31	MMC 19.508.4.G OPEN SPACE COMPLIANCE
C32	MMC 19.600 PARKING & LOADING COMPLIANCE
C33	MMC 19.505.3.D.6.D BUILDING FACADE DESIGN







KELLOGG BOWL BUILDING



LOOKING EAST FROM MAIN ST.



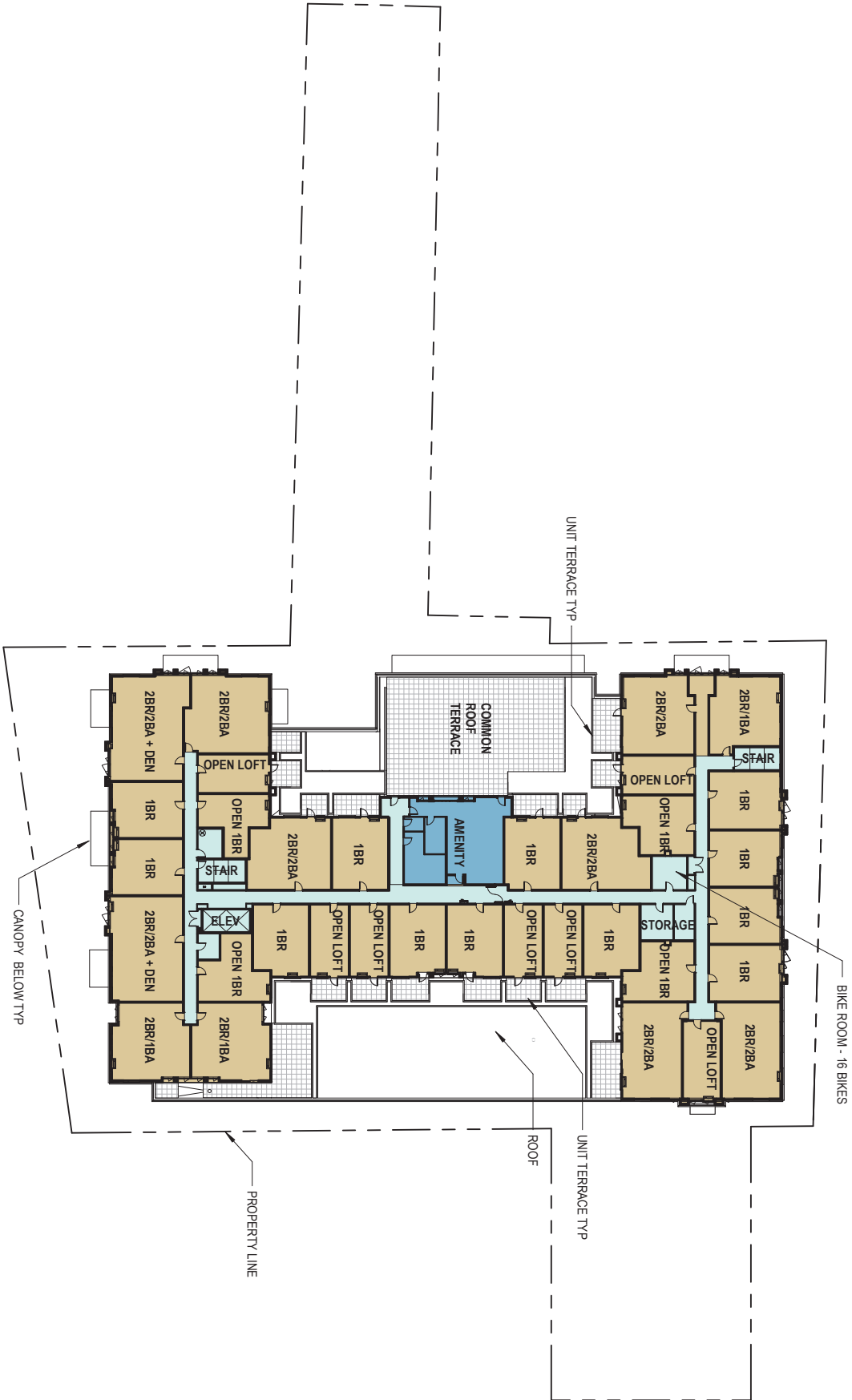
LOOKING WEST TO MAIN ST.

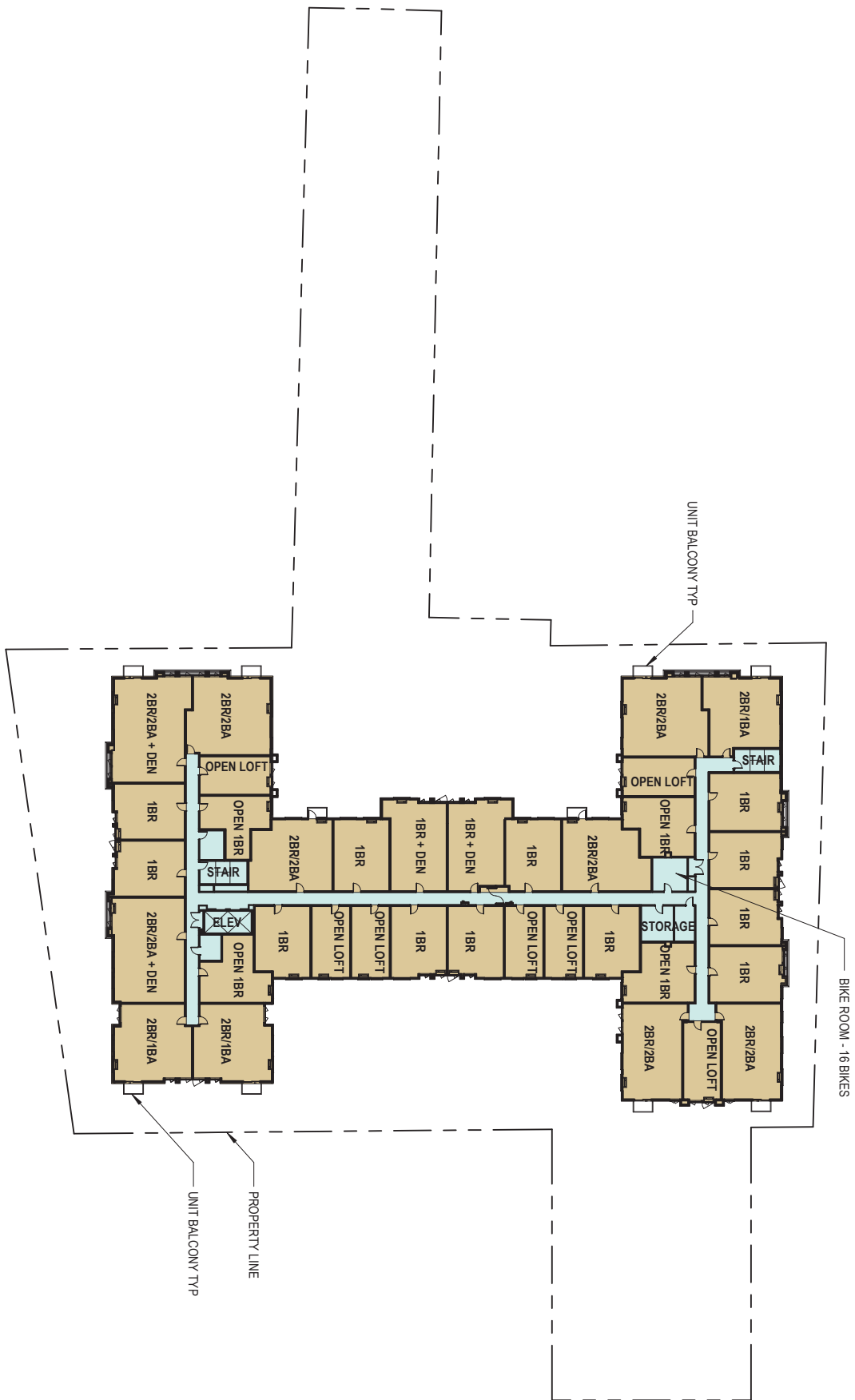


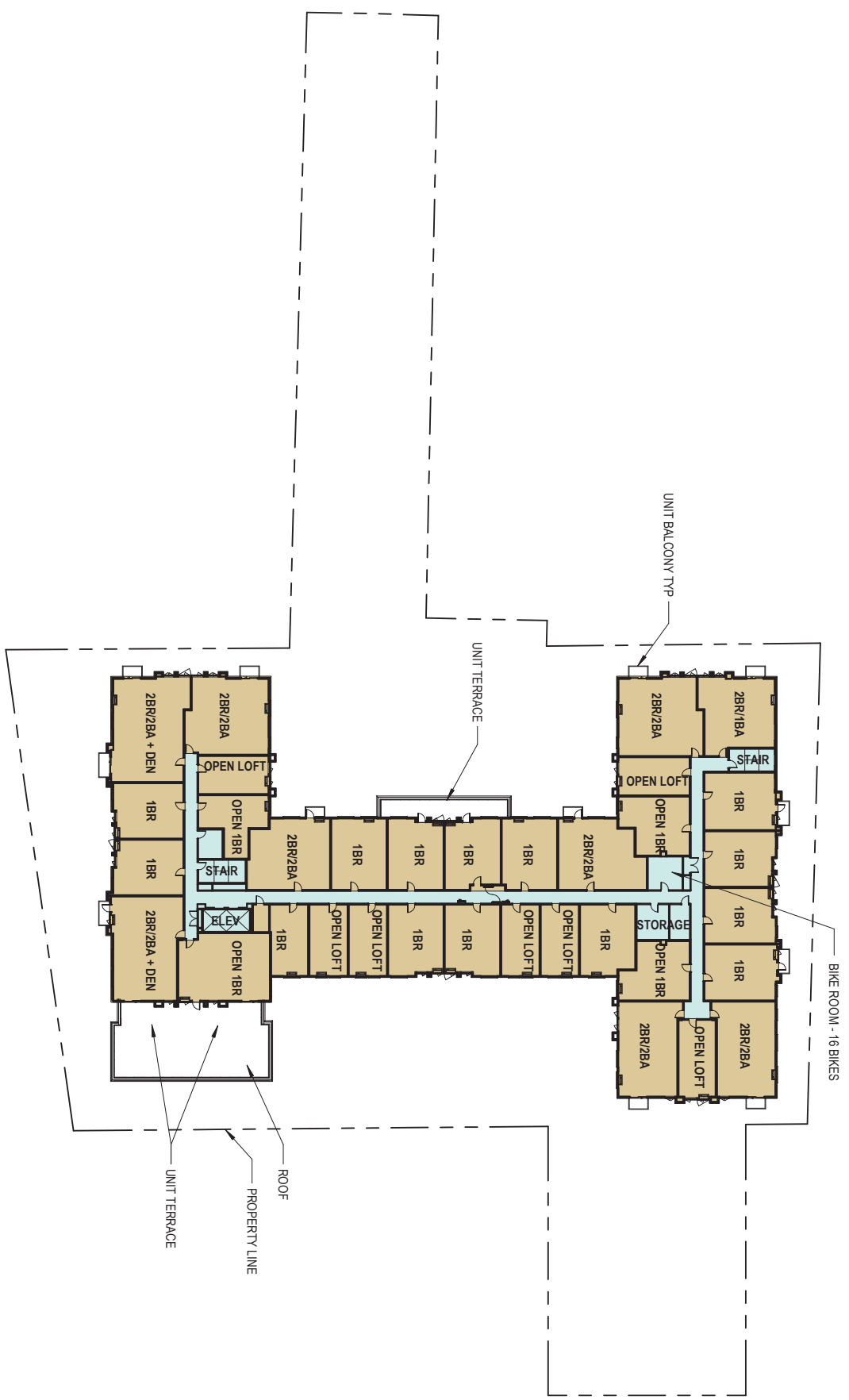
LOOKING SOUTH TOWARDS SCOTT PARK

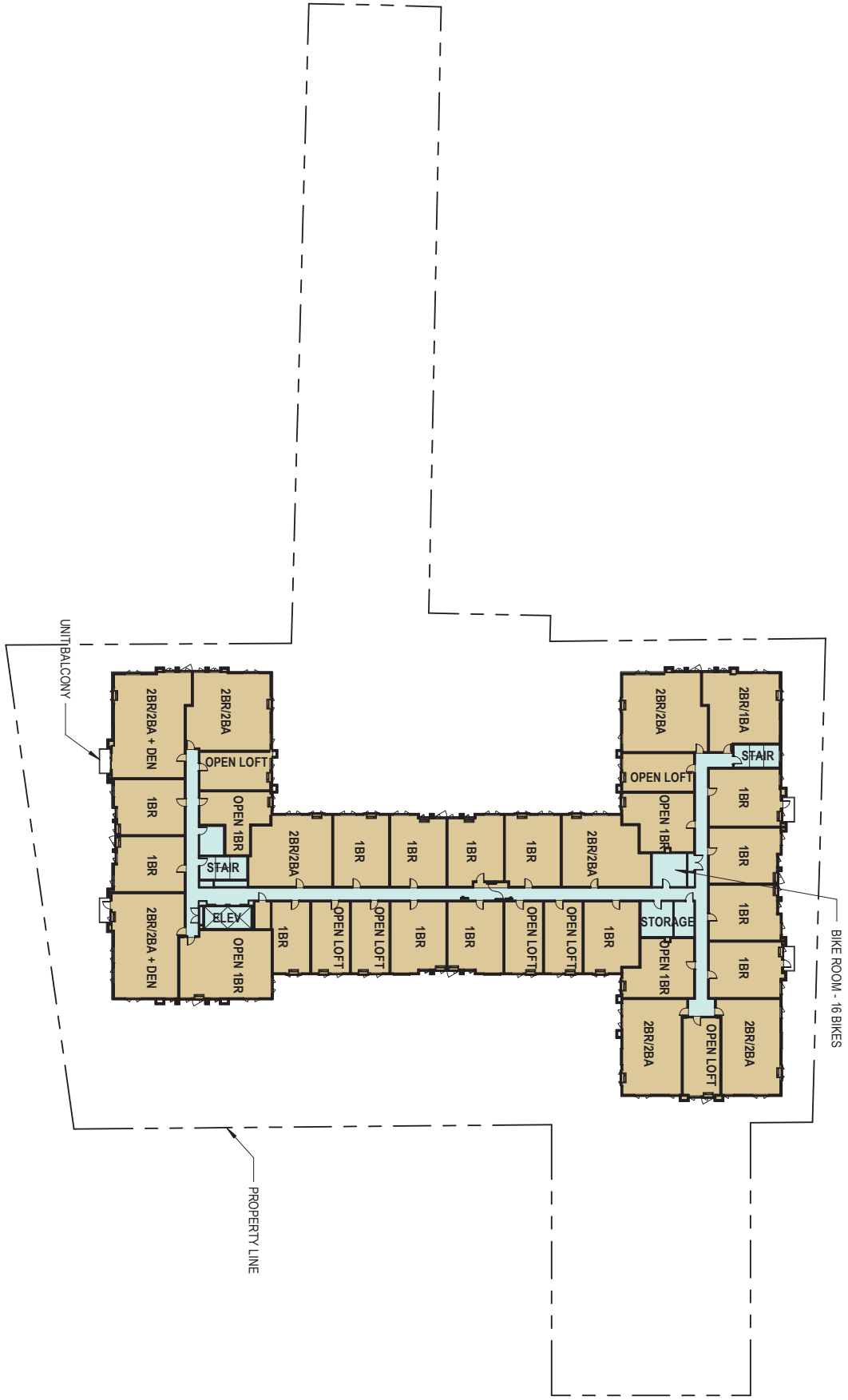


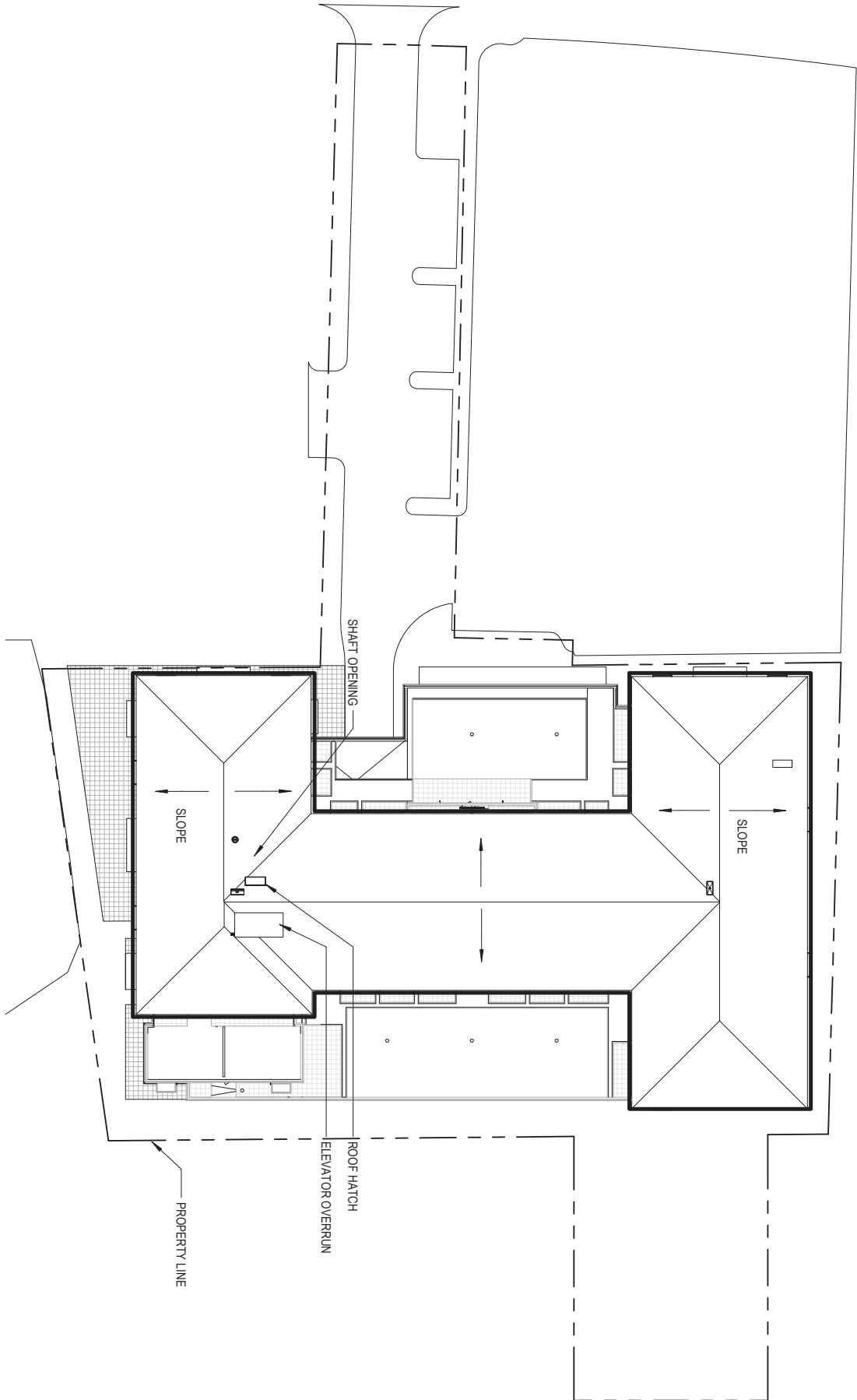














WEST ELEVATION

BRICK MASONRY

2ND FLOOR COMMON TERRACE

ALUMINUM STOREFRONT

COILING GARAGE DOOR

STEEL CANOPY

FIBER CEMENT PANELS  
FIBER CEMENT LAP SIDING

CORNICE OVERHANG  
5TH FLOOR PRIVATE TERRACE

VINYL WINDOWS

STEEL BALCONY

6'-8"



**SOUTH ELEVATION**



EAST ELEVATION

STEEL CANOPY  
 5TH FLOOR PRIVATE TERRACES  
 6'-8"  
 FIBER CEMENT LAP SIDING  
 FIBER CEMENT PANEL  
 VINYL WINDOW  
 CORNICE OVERHANG  
 STEEL BALCONY

BRICK MASONRY  
 ALUMINUM STOREFRONT  
 OPEN METAL GRILLE  
 FIBER CEMENT PANELS

STEEL CANOPY





NORTH ELEVATION

FIBER CEMENT PANEL

OPEN METAL GRILLE

BRICK MASONRY

VINYL WINDOW

STEEL BALCONY

CORNICE OVERHANG

FIBER CEMENT LAP SIDING



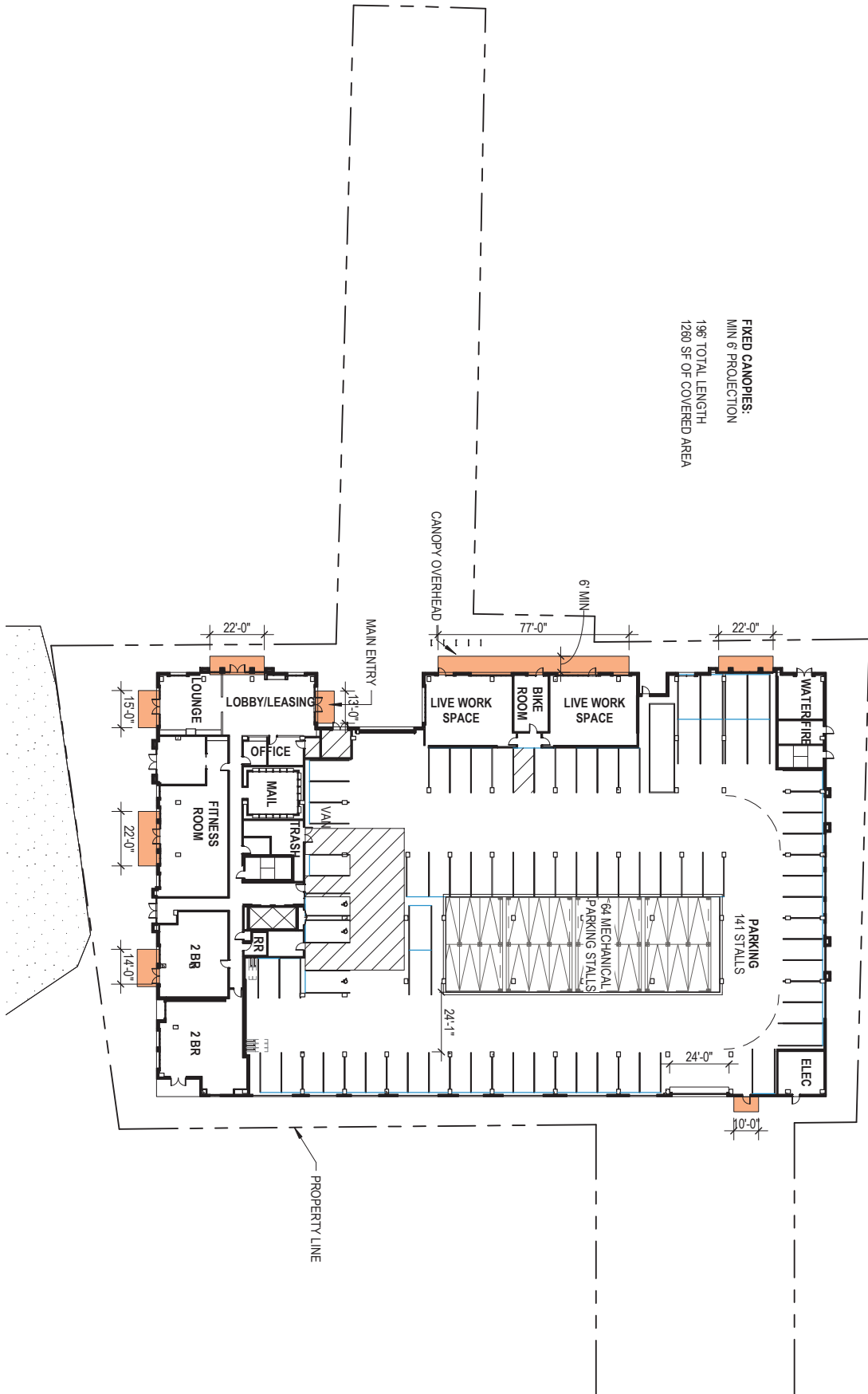




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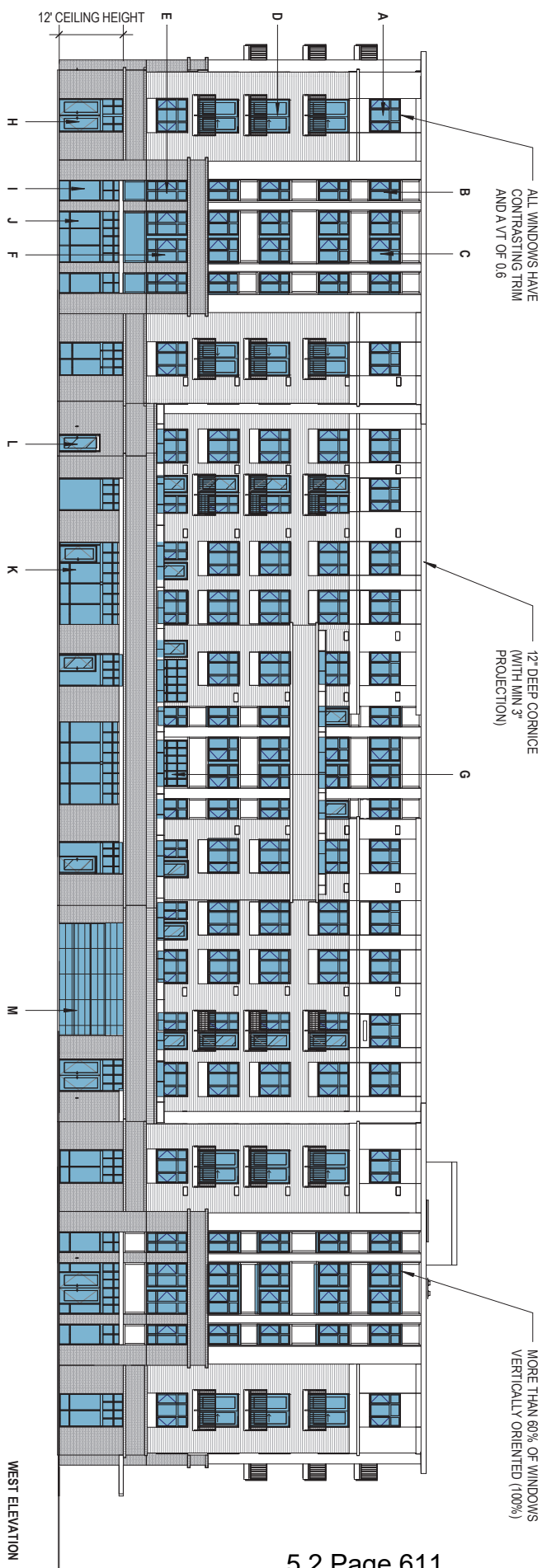


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FIXED CANOPIES:  
 MIN 6' PROJECTION  
 198' TOTAL LENGTH  
 1280 SF OF COVERED AREA





UPPER LEVEL WINDOWS

A	39 SF X 46 = 1,794 SF
B	24 SF X 24 = 576 SF
C	28 SF X 24 = 672 SF
D	52 SF X 24 = 1,248 SF
E	32 SF X 6 = 192 SF
F	36 SF X 4 = 144 SF
G	80 SF X 1 = 80 SF
<b>TOTAL</b>	<b>129 = 4,706 SF</b>

UPPER LEVEL WALL AREA = 14,000 SF  
 UPPER LEVEL GLAZING = 4,706 SF (=33% GLAZING) - MIN 30% GLAZING REQUIRED

GROUND FLOOR OPENINGS

H	81 SF X 8 = 648 SF
I	50 SF X 4 = 200 SF
J	126 SF X 2 = 252 SF
K	200 SF X 2 = 400 SF
L	24 SF X 1 = 24 SF
M	288 SF X 1 = 288 SF
<b>TOTAL</b>	<b>10 = 1,810 SF</b>

GROUND FLOOR WALL AREA = 3240 SF  
 GROUND FLOOR OPENINGS = 1810 SF (=56%) - MIN 50% OPENINGS REQUIRED

MORE THAN 60% OF WINDOWS VERTICALLY ORIENTED (100%)

UPPER LEVEL WINDOWS

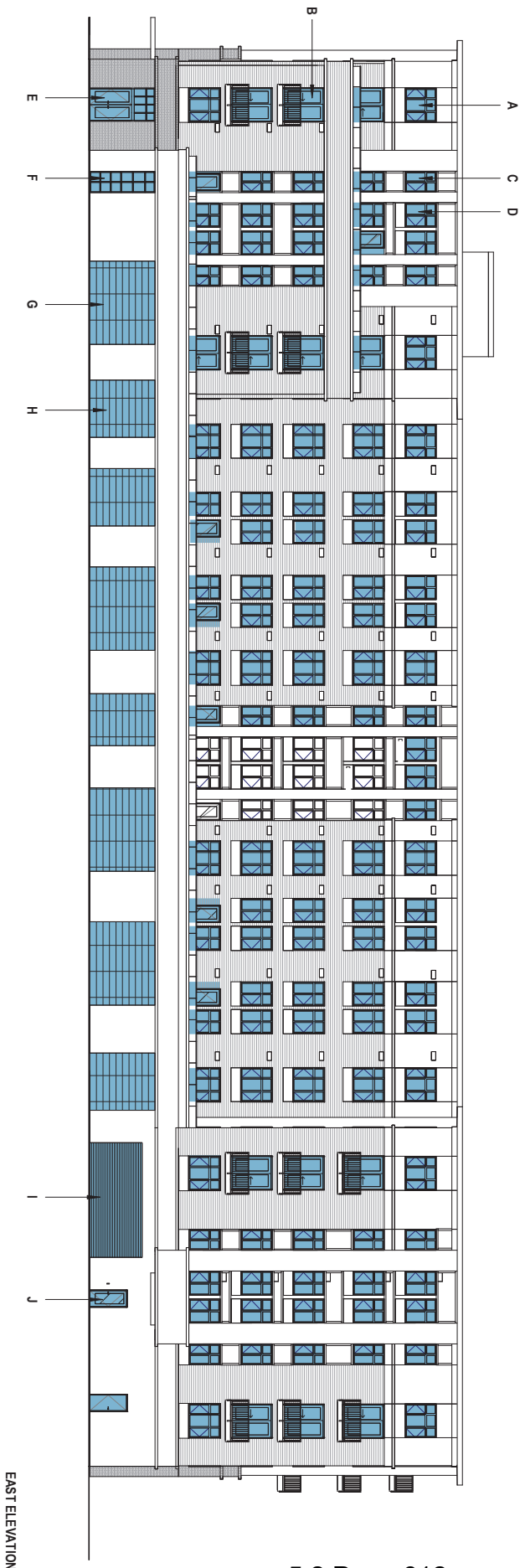
A	38 SF X 27 = 1,026 SF
B	52 SF X 13 = 676 SF
C	24 SF X 30 = 720 SF
D	28 SF X 70 = 1,960 SF
<b>TOTAL</b>	<b>140 = 4,382 SF</b>

UPPER LEVEL WALL AREA = 14,000 SF  
 UPPER LEVEL GLAZING = 4,382 SF (=31% GLAZING) - MIN 30% GLAZING REQUIRED

GROUND FLOOR OPENINGS

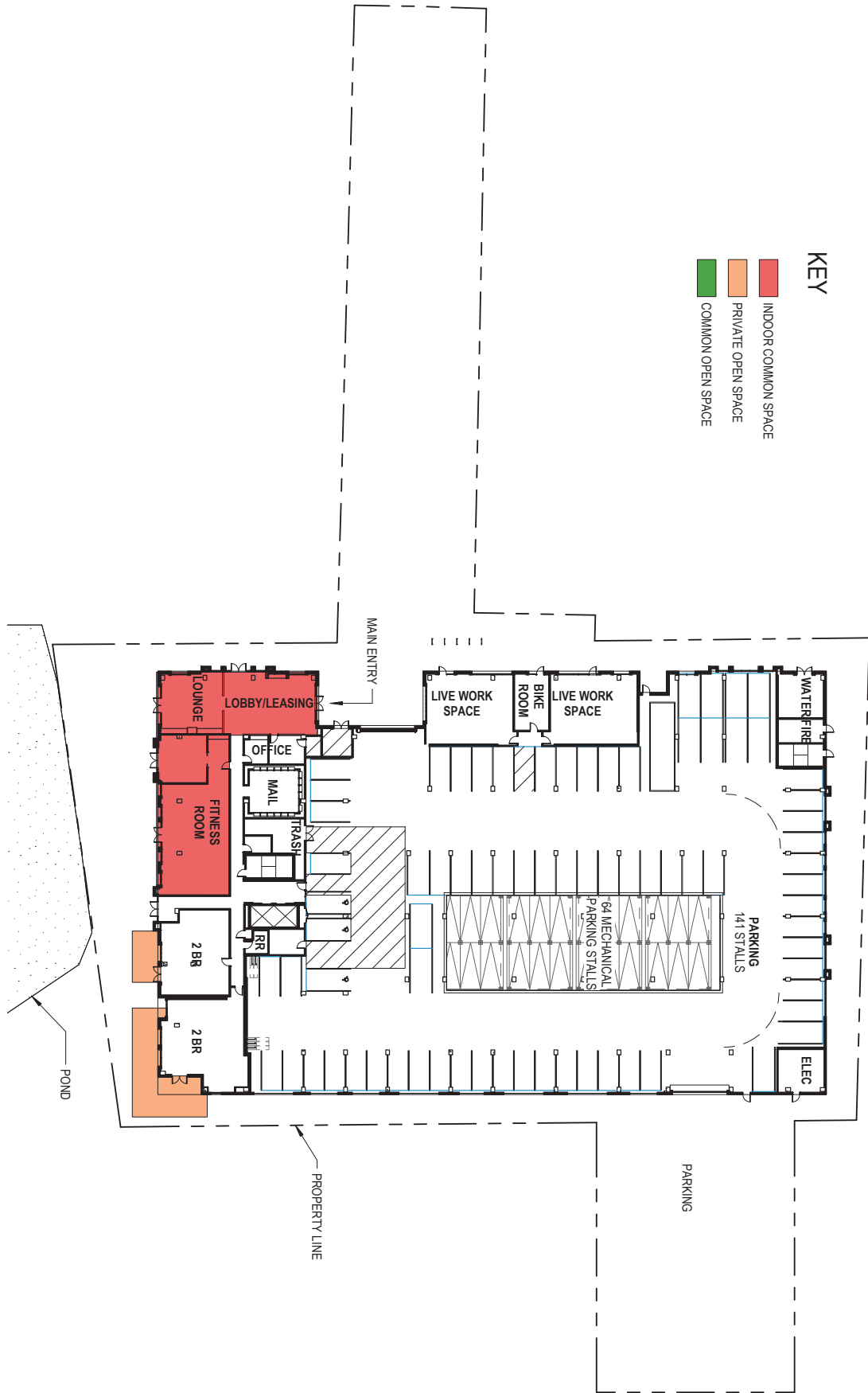
E	81 SF X 1 = 81 SF
F	50 SF X 1 = 50 SF
G	187 SF X 4 = 748 SF
H	136 SF X 4 = 544 SF
I	220 SF X 1 = 220 SF
J	24 SF X 2 = 48 SF
<b>TOTAL</b>	<b>13 = 1,691 SF</b>

GROUND FLOOR WALL AREA = 3240 SF  
 GROUND FLOOR OPENINGS = 1691 SF (=52%) - MIN 40% OPENINGS REQUIRED



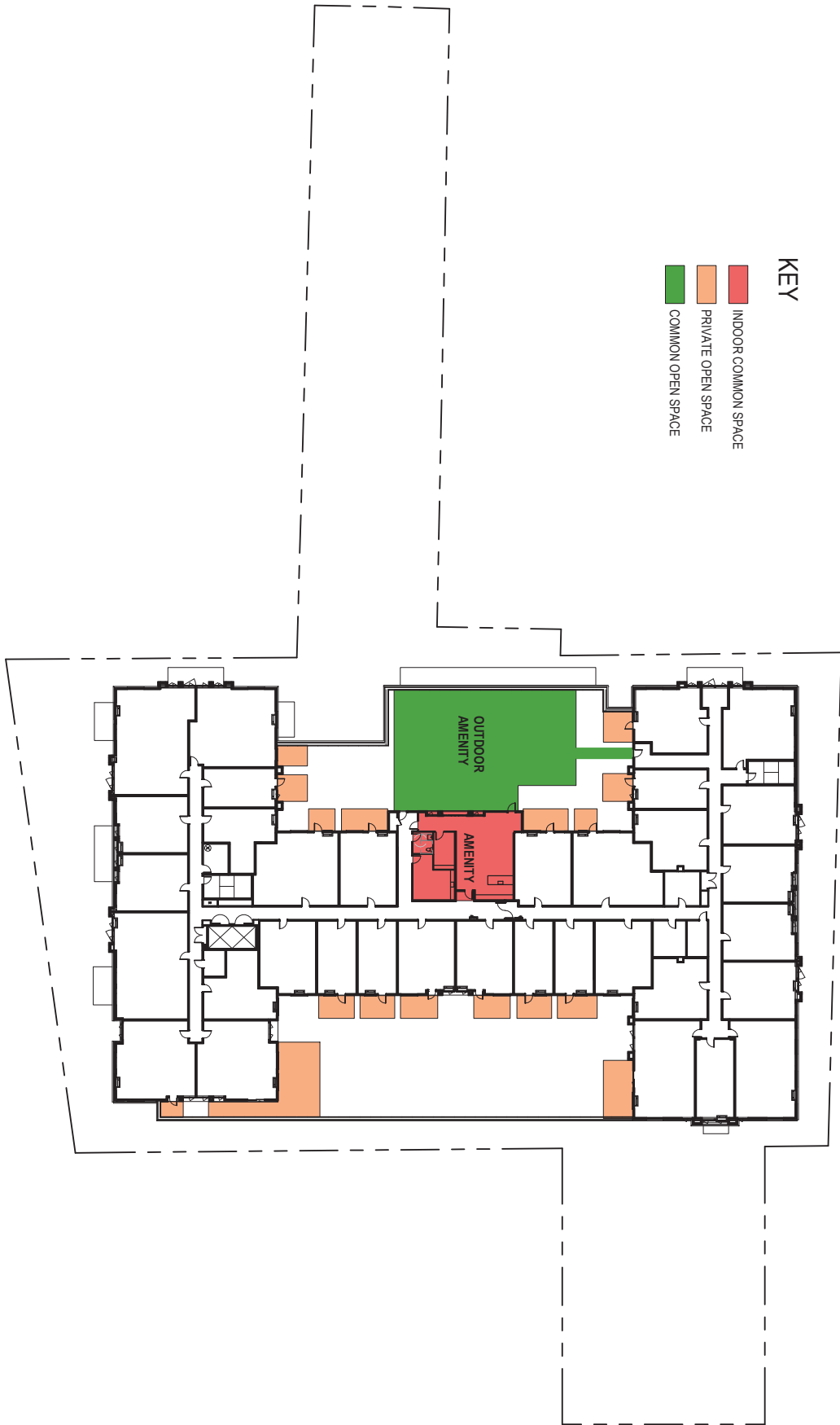
EAST ELEVATION





KEY

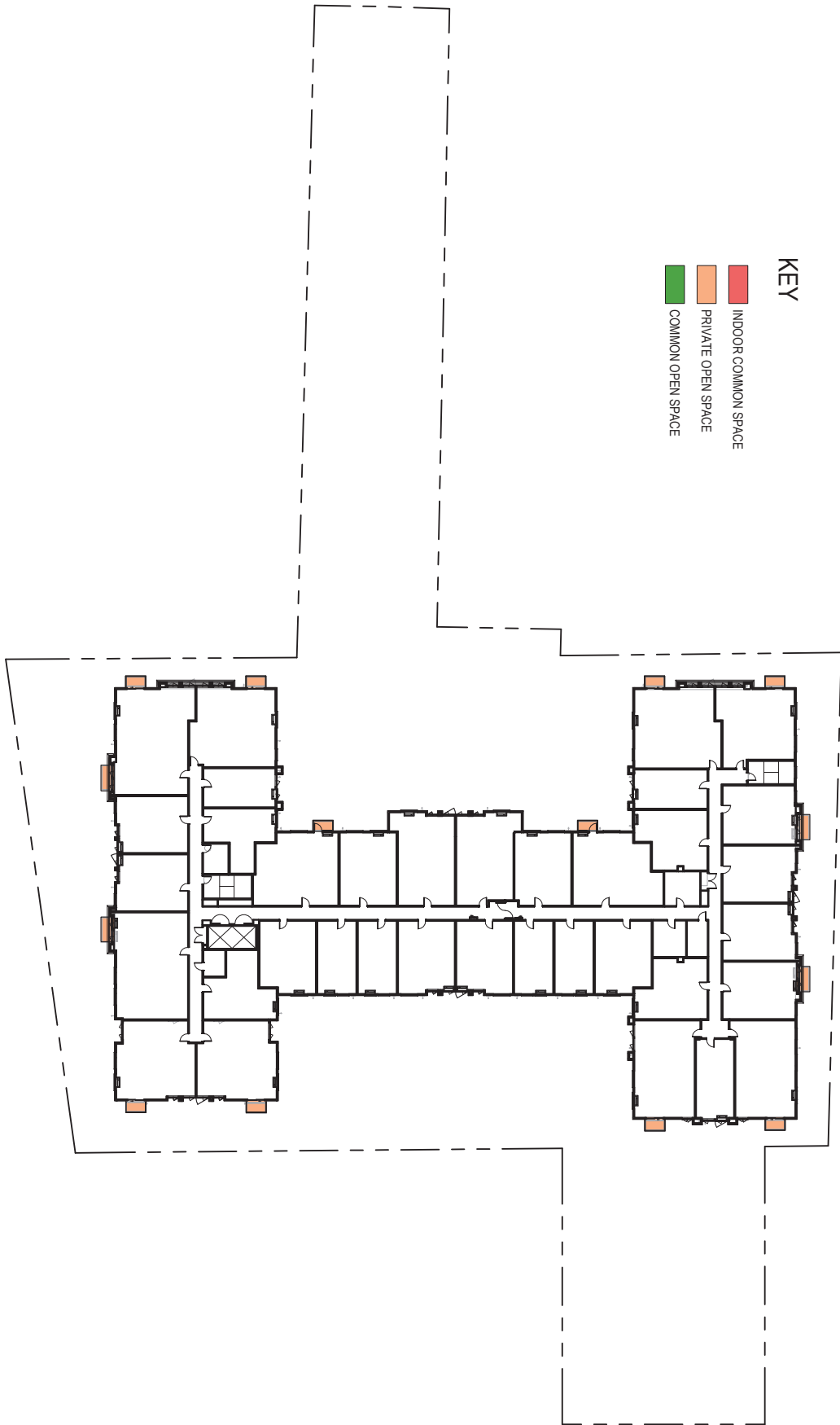
- INDOOR COMMON SPACE
- PRIVATE OPEN SPACE
- COMMON OPEN SPACE



**KEY**

- INDOOR COMMON SPACE
- PRIVATE OPEN SPACE
- COMMON OPEN SPACE





**KEY**

- INDOOR COMMON SPACE
- PRIVATE OPEN SPACE
- COMMON OPEN SPACE

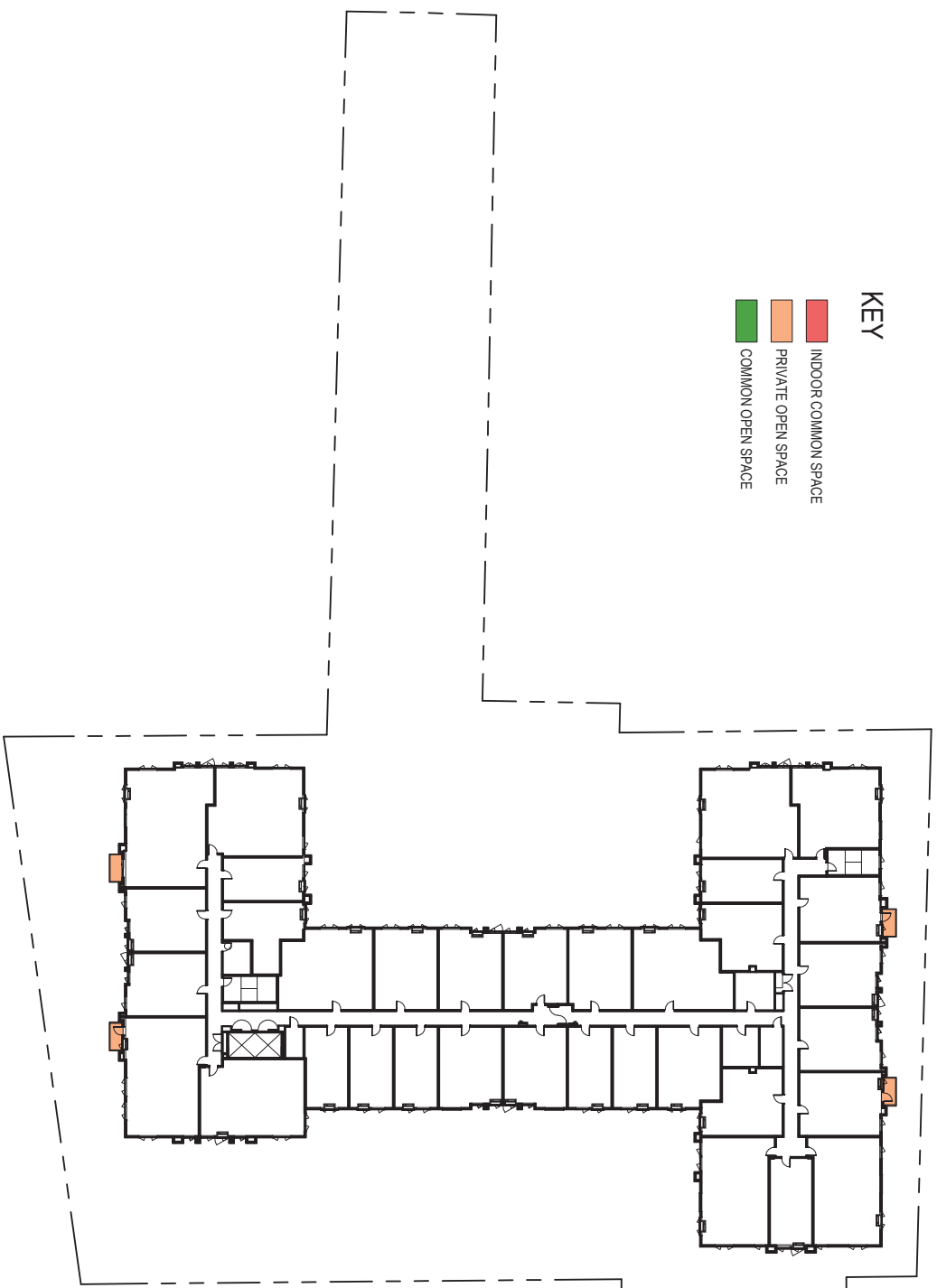


**KEY**

- INDOOR COMMON SPACE
- PRIVATE OPEN SPACE
- COMMON OPEN SPACE

**KEY**

- INDOOR COMMON SPACE
- PRIVATE OPEN SPACE
- COMMON OPEN SPACE



**SUMMARY**

REQUIRED - 50 SQ FT PER UNIT  
178 UNITS 8 900 SF MIN

OUTDOOR OPEN SPACE	
UNIT TERRACES (PRIVATE)	4,543 SF
UNIT BALCONIES (PRIVATE)	1,440 SF
COMMON TERRACES (ROOF)	3,440 SF
<b>TOTAL</b>	<b>9,423 SF</b>

**NOT COUNTED IN TOTAL REQUIRED SQ FT**  
COMMON TERRACES (GROUND) 2,598 SF

INDOOR OPEN SPACE	
FITNESS	1,900 SF
CLUB ROOM LEVEL 1	625 SF
CLUB ROOM LEVEL 2	1,300 SF
LOBBY	900 SF
<b>TOTAL</b>	<b>4,725 SF</b>

**TOTAL ALL OPEN SPACE** **14,148 SF**

MMC-19.508.4.G OPEN SPACE COMPLIANCE LEVEL 06 C31

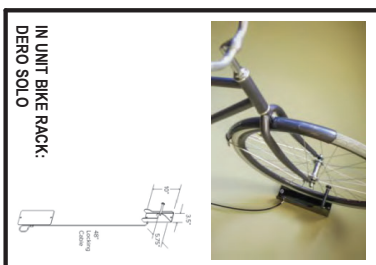
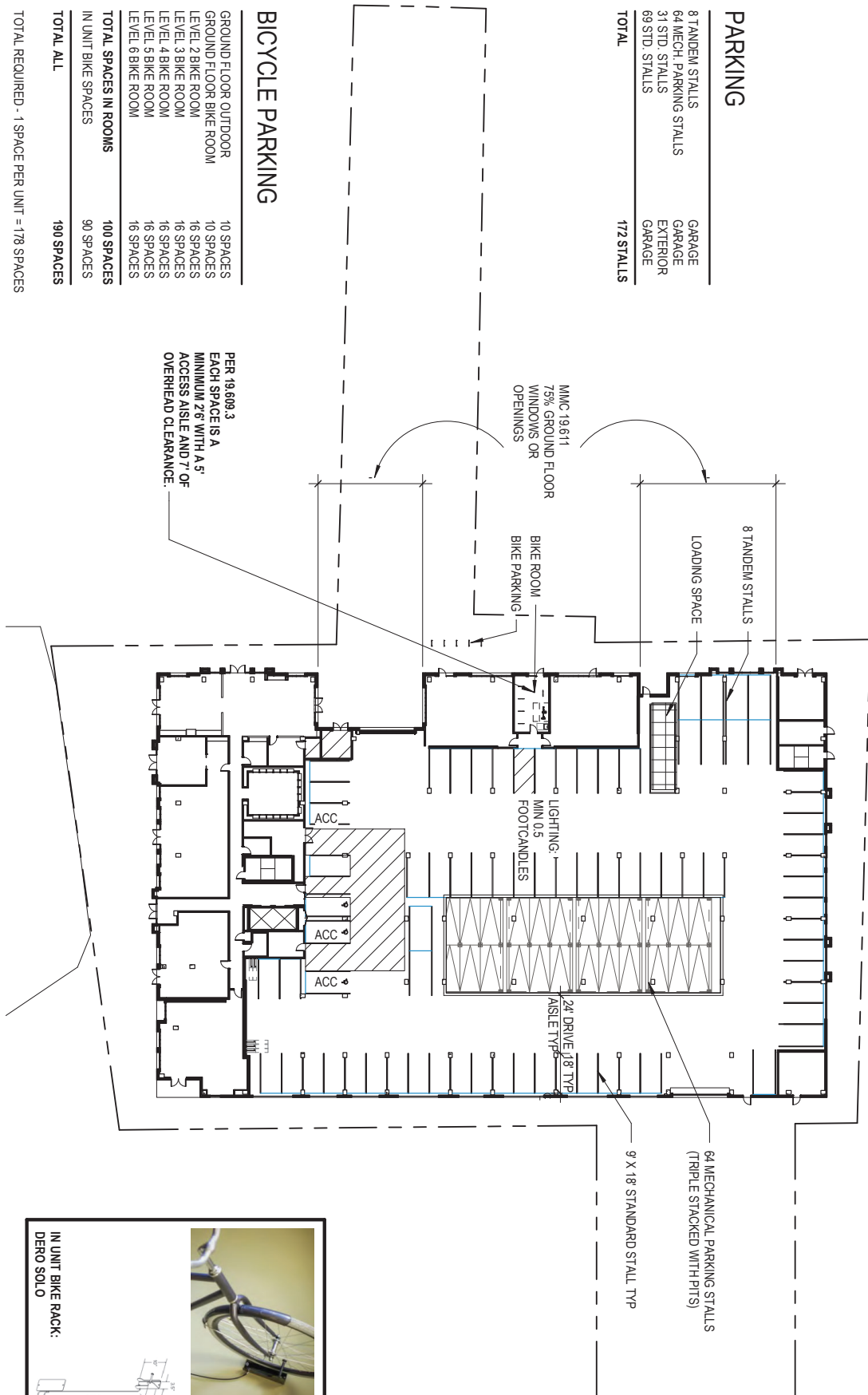
### PARKING

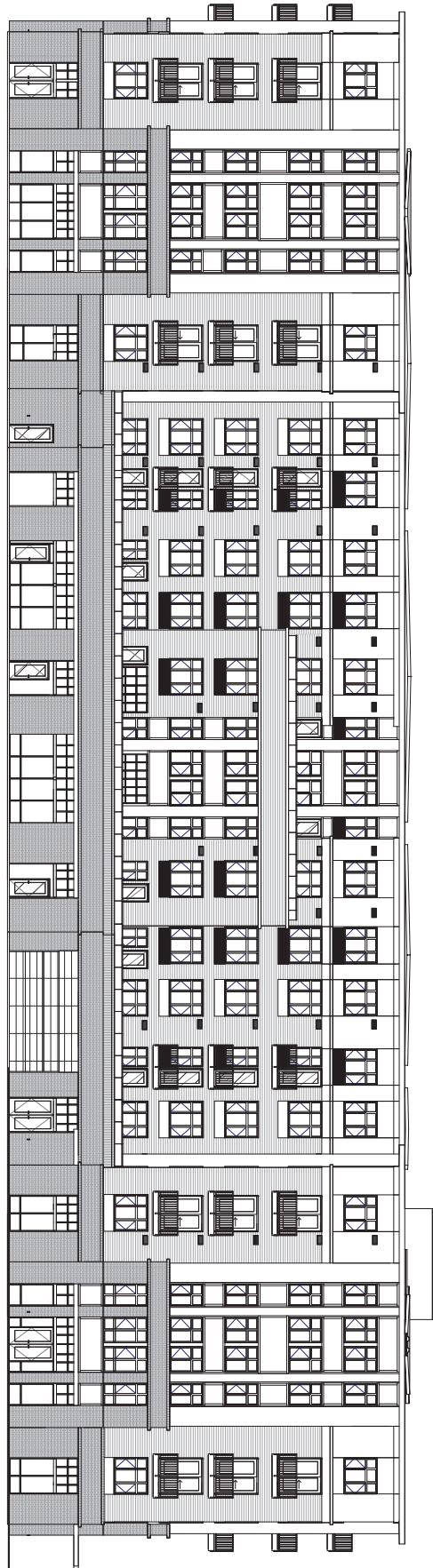
8 TANDEM STALLS	GARAGE
64 MECH. PARKING STALLS	GARAGE EXTERIOR
31 STD. STALLS	GARAGE
69 STD. STALLS	
<b>TOTAL</b>	<b>172 STALLS</b>

### BICYCLE PARKING

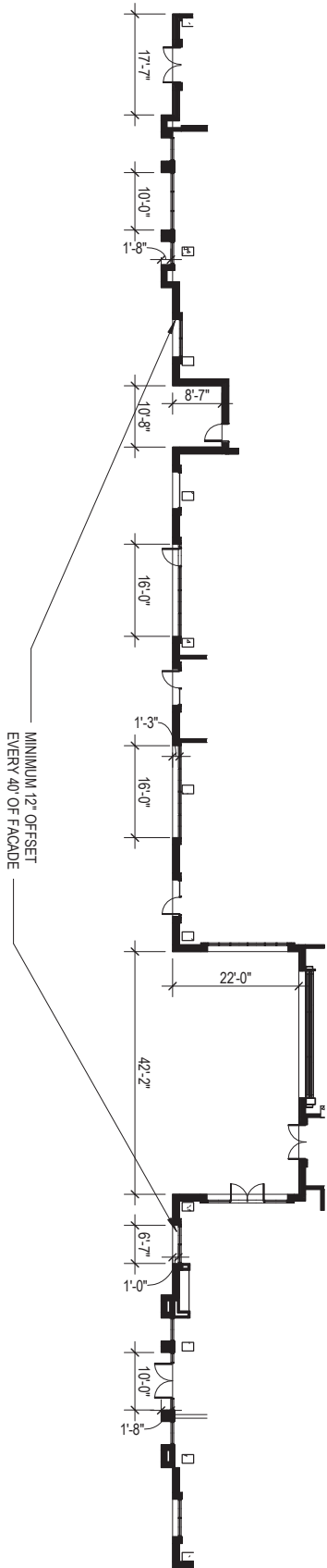
GROUND FLOOR OUTDOOR	10 SPACES
GROUND FLOOR BIKE ROOM	10 SPACES
LEVEL 2 BIKE ROOM	16 SPACES
LEVEL 3 BIKE ROOM	16 SPACES
LEVEL 4 BIKE ROOM	16 SPACES
LEVEL 5 BIKE ROOM	16 SPACES
LEVEL 6 BIKE ROOM	16 SPACES
<b>TOTAL SPACES IN ROOMS</b>	<b>100 SPACES</b>
IN UNIT BIKE SPACES	90 SPACES
<b>TOTAL ALL</b>	<b>190 SPACES</b>

TOTAL REQUIRED - 1 SPACE PER UNIT = 178 SPACES





WEST ELEVATION



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 Suite 310  
 Portland, OR 97214  
 503.274.2010 **phone**  
 503.274.2024 **fax**

[www.esassoc.com](http://www.esassoc.com)

# memorandum

date July 16, 2021

to Brett Kelper, AICP (City of Milwaukie)

from John Vlastelicia

subject Natural Resource Review for Kellogg Bowl Redevelopment Project  
 10306 SE Main Street (Assessor Map 1S1E25CC, Tax Lots 401 & 402)  
 City of Milwaukie Land Use File #DR-2021-003

Thank you for asking Environmental Science Associates (ESA) to provide peer review assistance to the City of Milwaukie for the Kellogg Bowl Redevelopment Project located at 10306 SE Main Street. This memorandum summarizes our review of land use application materials related to Water Quality Resource (WQR) areas regulated by Milwaukie Municipal Code (MMC) Section 19.402 (Natural Resources).

This memorandum is formatted to address the review tasks identified by the City in your request for ESA's services (scoping letter from Brett Kelper to Sarah Hartung, June 14, 2021). The City-requested tasks are identified in **bold**, followed by our responses.

**Task 1. Review the applicant's initial submittal materials, particularly the natural resource review report prepared by AKS Engineering & Forestry.**

Response: ESA reviewed project land use application materials made available through the City's Planning Department web site at <https://www.milwaukieoregon.gov/planning/dr-2021-003>. We reviewed the Natural Resource Management Plan prepared by AKS Engineering & Forestry (AKS), dated May 27, 2021. In addition, we reviewed the land use application narrative, plan set, and preliminary stormwater report, all of which were prepared by AKS and are part of the land use case file.

**Task 2. Site Visit – Visit the site to assess existing conditions and verify that the applicant's description of existing conditions is accurate and thorough.**

Response: ESA visited the Kellogg Bowl site on July 2, 2021. The site visit involved walking the property to assess existing conditions with the AKS Natural Resource Management Plan report in hand. ESA generally observed site conditions to be consistent with those described in report narrative and shown on report figures. The subject property is essentially developed entirely with the Kellogg Bowl building and paved vehicle access and parking areas.

**Task 3. Comment on the following aspects of the applicant’s natural resource review report:**

**a. WQR Boundary**

- **Confirm the applicant’s demarcations of the WQR boundaries for the site (to the northeast and south), based on the identification and characterization of the protected water features, as well as the report’s classification of the existing condition of the WQR (i.e., Good, Marginal, or Degraded).**

Response:

Off-Site Pond with On-Site WQR: The AKS natural resources report identifies the vegetated corridor for one primary protected water feature – an off-site pond – extending onto the southern portion of the site (tax lot 401). ESA observed the northern perimeter of the pond to be defined by a vertical concrete retaining wall that approximates the southern property line of tax lot 401 and the southern boundary of the Kellogg Bowl parking lot. A chain link fence extends along the top of the concrete retaining wall.

ESA agrees with the AKS determination of the vegetated corridor (VC) boundary as a 50-foot offset from the vertical pond/parking lot retaining wall, which reasonably represents a “top of bank” location. As the slope of the parking lot within 50 feet of the pond retaining wall is relatively flat (slope <25%), the 50-foot width is consistent with the parameters of MMC Table 19.402.15. ESA also concurs with the classification of the on-site portion of the WQR as “poor” condition for water quality and wildlife habitat, based on the fact that the area is entirely paved and meets the following MMC Table 19.402.11.C definition of Class C “poor” condition: *Combination of trees, shrubs, and ground cover are less than 80% present and/or less than 25% canopy coverage in vegetated corridor.*”

Off-Site Intermittent Stream with Off-Site WQR: The AKS report briefly documents their determination that the WQR for an intermittent stream located northeast of the site – which is identified on the City’s Natural Resources Administrative Map – does not extend onto the site, noting simply on report page 2 that “field verification has confirmed that the VC is off-site and outside of the planned off-site limit of disturbance associated with the project on SE 23<sup>rd</sup> Avenue.” The report does not identify details of what was involved in that field verification. However, the Existing Conditions sheet of the land use plan set (Sheet P-03) shows the water feature to the northeast and an approximate vegetated corridor boundary line, and it includes a statement in Note #9 that “off-site ordinary high water mark (OHWM) boundary shown was delineated by AKS Engineering & Forestry, LLC on February 3, 2021 and was professionally surveyed by AKS on February 4, 2021.” The AKS survey and plans identify the intermittent stream discharging to an 18-inch stormwater pipe inlet; the pipe location appears to be consistent with City of Milwaukie Stormwater System mapping that shows a stormwater main draining flows westward from the inlet – north of the Kellogg Bowl property – to the Johnson Creek drainage.

The AKS natural resource report shows on Figure 7 the off-site VC boundary for the off-site stream. While the report does not describe the basis for the VC boundaries, it appears they are drawn as 50- to 80-foot offsets from OHWM, depending on the adjacent slope. Topographic survey contours included on Figure 7 indicate slopes may exceed 25% within about 30 feet of the intermittent stream before lessening to <25% beyond that. The AKS report figures appear to recognize the breaks in

slopes with the appropriate VC widths. Based on the survey data for the intermittent stream and the adjacent slopes, and on City of Milwaukie Stormwater System maps that show piped flows north of the site, the AKS determination that the WQR for the off-site stream does not extend onto the Kellogg Bowl property appears to be accurate.

#### b. Impacts

- **Consider and comment on the proposal to have the new building encroach into a portion of the vegetated corridor. Even though the existing WQR on the site is a paved parking lot, are there particular impacts to the ecological function of the protected water feature that will result from having a three-dimensional structure occupy a portion of the vegetated corridor?**

Response: The AKS report includes a brief text assessment of water quality impacts from the proposed project. The report does not quantify impacts to the WQR in terms of area (square footage) converted from parking lot to building and does not specifically address each of the seven functions and values listed in MMC 19.402.1.C.2 as contributing to water quality and fish and wildlife habitat. ESA's review of overall project impacts to functions and values, considering the proposed development and mitigation, is summarized in response to Item 3d of this memorandum.

With respect to new building encroachment, the existing Kellogg Bowl building is set back between about 145 feet and 175 feet from the adjacent off-site pond. Small wildlife may use the parking lot adjacent to the pond to move from one side of the pond to the other. Birds are able to use the space above the parking lot to fly between trees along the pond and trees along the tax lot 401 eastern and western perimeters north of the pond. Waterfowl that use the pond (ESA observed ducks in the pond on the July 2<sup>nd</sup>, 2021 site visit) may access the pond from the Kellogg Bowl parking lot side, which is fairly open. The proposed apartment building would be set back between about 17 and 40 feet from the pond. The 6-story building encroachment into the WQR would reduce the physical space available for birds and small mammals to move within the WQR on the north side of the pond.

#### c. Alternatives Analysis

- **Is the applicant's analysis of alternative scenarios reasonable with respect to each scenario's projected impacts to the WQR?**
- Response: The alternatives analysis presented in the AKS report identifies two site layout alternatives to the proposed site plan: one that would maintain the WQR for parking use and not introduce new building encroachment, and one that would introduce more encroachment into the WQR than the proposed plan (no landscape buffer). The analysis is set up to explain why an alternative with less impact to the WQR is not feasible and how the proposed site plan is not the alternative with the greatest potential impact to the WQR.

Alternatives analyses are clearest when a project's need, purpose, and constraints are clearly defined. The AKS report does not clearly define the purpose and need, but it alludes to the idea that there is a need for more housing within the City of Milwaukie by stating that the project not proceeding "would be a public loss of needed housing for the City." It also indicates that the key constraint to reducing encroachment into the WQR is economic viability and return on investment (i.e., the project will not move forward if the number of rentable apartments is reduced from what is proposed), although the basis for economic viability is not presented.

With respect to each alternative’s projected impacts to the WQR, the AKS report describes impacts at a high level, noting that the alternative with no landscape buffer “has a greater environmental impact than the proposed project” and that the proposed project, with the removal of a 10-foot wide strip of pavement and the addition of native shrubs and trees, “will provide a functional benefit.” While those statements are reasonable, the overall impact analysis could benefit from additional details.

**d. Mitigation**

- **Review the proposed mitigation shown on the overall landscaping plan (Sheet P-11 in the larger plan set) and consider the related narrative. Does the proposed mitigation sufficiently address the requirements established in MMC Table 19.402.11.C for WQR areas?**

Response:

MMC Table 19.402.11C identifies the following mitigation requirements for “poor condition” WQR impacts:

- Restore and mitigate disturbed areas with native species from the Milwaukie Native Plant List, using a City-approved plan developed to represent the vegetative composition that would naturally occur on the site.
- Plant and/or seed all bare areas to provide 100% surface coverage.
- Inventory and remove debris and noxious materials.

The narrative in the AKS report includes a section on mitigation but states that “the project does not result in adverse impacts to the WQR, instead it increases ecological benefit; therefore compensatory mitigation is not required.” The report seems to present the landscaping plan on Sheet P-11 as an independent project element rather than mitigation for specific WQR impacts. The landscaping plan includes removal of a 10-foot wide strip of pavement along the southern property line and planting it with cascara trees and dull Oregon grape and flowering currant shrubs. The AKS report does not provide an area (square footage) of planting within the WQR, but it appears to be on the order of about 2,000 square feet (~196 feet by 10 feet).

It is difficult to determine how sufficiently the landscape plan meets the MMC requirement to “mitigate disturbed areas” when the report does not quantify WQR disturbance areas or recognize adverse WQR impacts from the proposed project. The report makes clear that the entire WQR on-site is already disturbed by pavement. One potential way to quantify new WQR disturbance would be to provide the square footage of new building encroachment into the 50-foot wide vegetated corridor. Planting an area equal to new building encroachment with native species could be one logical approach for clearly meeting MMC mitigation requirements. If the applicant believes something different or less is warranted, some rationale should be provided.

- **Are the numbers, species, and locations of proposed mitigation plantings sufficient and appropriate for the proposed impacts, especially given the specific nature of the protected water feature?**

Response: The species proposed for planting along the southern property line adjacent to the pond are all native and appear to be appropriate for the area, which is a level lot elevated above the pond. The selected species would provide suitable habitat and food sources for birds and small mammals that

could be impacted by building encroachment into the WQR. The proposed shrub spacing of 48 inches on-center meets MMC mitigation standards for shrub spacing.

The proposed tree spacing of approximately 20 feet does not appear to meet the MMC standards for tree spacing in 19.402.11.B.4, which require tree plantings to be spaced 8 to 12 feet on center. Also, the 10 proposed trees are all of a single species (cascara). The plant diversity standards of 19.402.11.B.5 require that if 10 or more trees are planted, no more than 50% of the trees are of the same genus.

- **In what ways will the proposed mitigation improve the ecological functions and values that have already been impacted by the existing development on the site as well as those that will be impacted by the proposed development? As part of your response, select one of the three following descriptions of how the existing ecological function and value of the WQR will be affected by the proposed development and mitigation, elaborating briefly to explain your answer: Improved, Unchanged, Degraded.**

- Response:

Ecological functions and values on the site have been impacted since at least the 1960s with the construction of the Kellogg Bowl development, which eliminated a perennial drainage that extended through the site, removed riparian vegetation and converted the site to impervious surface, and formed the adjacent pond to the south. The proposed development would further impact functions and values by introducing a new building that encroaches into the WQR. The proposed landscaping plan would improve some functions and values by removing pavement and re-introducing vegetation within a portion of the WQR adjacent to the pond. A summary of how the ecological functions and values listed in MMC 19.401.1.C.2 would be affected by the proposed development and mitigation is included in the table below.

Function/Value	Existing Site WQR Conditions	Project Effect	Rationale
Vegetated corridors to separate protected water features from development	The on-site WQR is currently an asphalt-paved parking lot. The existing Kellogg Bowl building is set back between about 145 and 175 feet from the adjacent off-site pond to the south. Small wildlife may use the parking lot adjacent to the pond as a means of moving from one side of the pond to the other, although habitat connectivity is impaired by fencing along the pond/parking lot retaining wall. Birds are able to use the space above the parking lot to fly between trees along the pond (off-site) and trees along the tax lot 401 eastern and western	Improved	The proposed apartment building would be set back between 17 and 40 feet from the adjacent pond, bringing structural development closer to the protected water feature. The 6-story building encroachment into the WQR reduces visibility and space available for birds and wildlife to move on the north side of the pond.  A 10-foot wide strip of vegetation would be added along the ~196-foot length of the southern property line. The proposed addition of trees and shrubs would add vegetation separation where there is none

Function/Value	Existing Site WQR Conditions	Project Effect	Rationale
	perimeters north of the pond. Waterfowl may access the pond from the Kellogg Bowl parking lot side.		currently, providing some wildlife habitat connectivity for both birds and small mammals along the pond perimeter.
Microclimate and shade	The WQR currently does not provide vegetation-related microclimate and shade functions, based on the absence of vegetation.	Improved	The removal of pavement and the addition of the landscaping strip along the southern property line, which will include native trees and shrubs, will provide some improvement of microclimate and shade functions. Direct shading of the pond water itself will be somewhat limited by the new vegetation's location on the north side of the pond, but replacing pavement with trees and shrubs would increase shade on the perimeter and improve temperature regulation functions of the WQR overall.
Streamflow moderation and water storage	The paved WQR currently provides very little in the way of streamflow moderation or water storage. The retaining wall for the Kellogg Bowl parking lot impounds streamflow and forms the pond.	Unchanged	The project will not substantially alter streamflow moderation and storage functions of the WQR for the adjacent pond. The reduction of ~2,000 square feet of pavement and the planting of native shrubs and trees, combined with stormwater detention, should reduce stormwater peak flows from the site to the City's stormwater system to some degree.
Water filtration, infiltration, and natural purification	Because it is entirely paved, the WQR currently provides no natural filtration, infiltration, or purification functions. Site stormwater is collected in area drains that are conveyed to a 36-inch diameter stormwater pipe that transects the site and discharges to the City's stormwater system.	Improved	The removal of ~2,000 square feet of pavement along the southern property line and its revegetation with trees and shrubs would provide some improvement of water filtration/infiltration functions in that area.  The overall site preliminary stormwater plan includes mechanical treatment systems (filter vaults) and underground

Function/Value	Existing Site WQR Conditions	Project Effect	Rationale
			detention to meet local water quality and quantity treatment requirements. The effect on the pond will be negligible since stormwater discharges are not directed to the pond, but downstream benefits may be expected from bringing the site into compliance with current stormwater management requirements.
Bank stabilization and sediment and pollution control	The WQR does not currently feature natural stream banks or a VC that provides sediment or pollution control functions.	Unchanged	The project will not substantially affect these WQR functions. The retaining wall separating the pond from the site will remain in place.
Large wood recruitment and retention of natural channel dynamics	The natural channel dynamics of a former stream were impacted with the construction of the retaining wall that formed the pond in the 1960s.	Unchanged	The project will not substantially affect large wood recruitment potential or natural channel dynamics.
Organic material sources	Being entirely paved, the on-site WQR currently provides no source of organic material to the off-site pond.	Improved	The addition of trees and shrubs along the southern property line adjacent to the pond will introduce a source of organic material within the WQR, including food sources and structure for birds, insects, and small mammals.

Again, thank you for asking ESA to provide natural resources review assistance for the Kellogg Bowl Redevelopment Project at 10306 SE Main St. Please let me know if you have any questions or would like to discuss any of the information presented in this memorandum.

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**DLC Recommendations from Design Review Meeting  
July 8, 2021**

(Master File #DR-2021-003—Kellogg Bowl redevelopment)

**Weather Protection**

1. Recommendation to review the first-floor unit at the southeast corner of the building, which currently does not have a canopy.
2. Recommendation to revisit the main entry area, which is very close to the main parking garage entrance. The DLC understands that certain site constraints have limited options for locating the garage entrance, but the main pedestrian entrance feels like an afterthought. Consider extending the proposed pedestrian entry canopy over the parking garage entry so visual interest is drawn more to the canopy and less to the parking garage door.

**Exterior Building Materials**

1. The DLC was supportive of the proposed percentages of materials that deviated from the applicable standards.
2. Recommendation to provide additional information about the fiber cement lap siding and panels. It was suggested that a partial enlarged elevation be provided that highlights the transition points between materials, calls out where the shift occurs between horizontal lap siding and panels, and shows the intent for reveal locations within the panel portions of the siding.
3. Recommendation to provide at least a conceptual idea of what the metal grilles at the parking level look like, including any proposed patterns.
4. Recommendation to add a note to the elevations calling out where the Packaged Terminal Heat Pump (PTHP) units are located—it is not clear in the elevations provided.

**Windows and Doors**

1. The DLC approved the windows and doors as proposed. It was agreed that, while many of the windows have an overall square shape, the utilization of vertical mullions—as well as the vertical emphasis of the façade itself—creates an acceptable sense of verticality within the window system.

**Other**

1. Recommendation to provide information about exterior lighting. This element affects overall building aesthetics and also potentially affects the neighbors.
2. Recommendation to provide more in-depth info about how the area near the pond is being addressed.

3. Recommendation to provide further information about any Heating, Ventilation, and Air Conditioning (HVAC) equipment that will be placed on the roof. While a majority of the units have their own self-contained systems, the shared amenity spaces in the building will have rooftop equipment. The applicant team mentioned a probable placement of these rooftop units near the proposed elevator overrun. If screening will be needed for any of these items, it would be helpful to see what the applicant team has in mind for design.
4. Recommendation to document the existing Kellogg Bowl building to the greatest extent possible (drawings, photos, historical info, etc.) and make this information available to the public for future research purposes. It was revealed that the interior has already been largely dismantled, but many building components were salvaged. Perhaps some of these components could be repurposed within the new building (i.e., find a way to pay homage to the historically significant building that the new one will replace).
5. Recommendation to consider the question of providing future pedestrian connections through the site, particularly on the north side of the building where people are likely to cut through between 23<sup>rd</sup> Avenue and the Pietro's Pizza site.
6. Recommendation that the applicant work with east-side neighbors to arrange screening that is amenable to all.

Date: June 16, 2021

ATTACHMENT 7

To: Brett Kolver, Associate Planner City of Milwaukie

RE: DR-2021-003, Six Story Residential Building (Henley Place) at 10306 SE Main St

A land use plan review was conducted for the listed property. It has been determined that this property is in an area with public water supply. Fire apparatus access roads cannot route continuously around the exterior walls of the building due to site constraints. CFD accepted the application for alternative or modification of the 2019 Oregon Fire Code (pending Milwaukie Building Department approval) where the applicant proposed the following:

1. The building will be equipped with an approved NFPA 13 automatic sprinkler system throughout.
2. There are no combustible concealed attic spaces.
3. All stairway enclosures have a fire-resistance rating of not less than 2-hour.
4. The roof slope is essentially flat with a slope of 3/8" per foot (less than 33% slope).
5. Approved access is provided to the roof from all the stairways. The North and South stairways extend to the roof within a 2-hour enclosure and a compliant roof hatch.
6. Each stairwell is equipped with a standpipe; both standpipes terminate at the roof.

Fire department access and water supply are reviewed in accordance with the 2019 edition of the Oregon Fire Code (OFC).

When submitting plans for fire department access and water supply approval please include the following information:

- Fire apparatus access
- Fire lanes
- Fire hydrants
- Fire lines
- Available fire flow
- FDC location (if applicable)
- Building square footage
- Construction type
- Fire flow test per NFPA 291 no older than 12 months

Access and water supply plans can be submitted to Clackamas Fire District #1 via e-mail to [alex.mcgladrey@clackamasfire.com](mailto:alex.mcgladrey@clackamasfire.com) (503)742-2662.

For design assistance we provide additional information including the Fire Code Application Guide, please visit our new construction website at <http://www.clackamasfire.com/fire-prevention/new-construction-resources/>

**Note: This review is to determine if the project can be designed and constructed to meet the requirements of the Oregon Fire Code, and should not be considered approval of the design as submitted.**



CLACKAMAS FIRE DISTRICT #1

CLACKAMAS FIRE DISTRICT #1  
FIRE PREVENTION DIVISION  
PHONE 503-742-2660

APPLICATION FOR APPROVAL OF ALTERNATIVE TO OR MODIFICATION OF THE 2019 EDITION  
STATE OF OREGON FIRE CODE (OFC)

Date: 04/08/2021 Permit No.: DR-2021-03  
Project Name: Henley Place Project Address: 10306 SE Main Street, Milwaukie  
Owner's Name: Pahlisch Commercial Phone: 541.385.6762  
Owner's Address: 15333 SW Sequoia Parkway, Suite 190, Portland, OR 97224  
Applicant's Name: Natalie Albright, SERA Architects Phone: 503.445.7372  
Applicant's Address: 338 NW 5th Ave, Portland OR 97209  
Building Department Contact: \_\_\_\_\_

**NOTE TO APPLICANT:** Section 104.9 of the Oregon Fire Code grants the Fire Code Official the ability to consider alternatives to or modifications of the Code in unusual cases. It is the policy of Clackamas Fire District #1 that the use of these Sections of the Code be limited, and that individual cases be considered carefully within the context of the requirements of these provisions.

This application is specific to and limited to the project identified above.

A. Section 104.9: Alternate Materials, Alternate Design and Methods of Construction:

1. Pursuant to Section 104.9 of the Oregon Fire Code, the undersigned Applicant hereby requests approval of an alternative to Section 503 & Appendix D of the Code:

Water Supply for Firefighting (Section 507 and Appendix B)

Fire Department Access (Section 503 and Appendix D)

2. The undersigned Applicant proposes the following alternative to Section 503 & Appendix D of the Oregon Fire Code (provide a detailed description of your proposed alternative):

Please see attached documents.

3. For the following reasons, the applicant believes that the proposed alternative to Section 503 & Appendix D of the Oregon Fire Code complies with the provisions of the Code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this Code in quality, strength, effectiveness, fire resistance, durability, and safety.

Please see attached documents.

Applicant/Owner's Signature

*Natalie Albright*  
5.2 Page 632

Date: 4/6/21

**APPLICATION DETERMINATION**

Upon reasonable consideration, Clackamas Fire District #1 determines that the above application is:

Denied

Approved Without Conditions

Approved, Subject to the Following Conditions:

Date: April 20, 2021 Fire Marshal: *MJL*

**APPLICANT'S AGREEMENT TO ABIDE BY CONDITIONS**

The undersigned expressly acknowledges and agrees that acceptance of this application is based upon the proposed alternative(s), and is subject to these conditions which Clackamas Fire District #1 deems necessary in order to meet the intent of the Oregon Fire Code, specifically the fire access and/or water supply provisions. The undersigned agrees to comply with all conditions imposed by Clackamas Fire District #1.

**AGREED AND ACCEPTED:**

Owner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

(If Applicant is not the Owner or the Owner's Architect or Engineer)

Applicant Signature/Title: \_\_\_\_\_ Date: \_\_\_\_\_

8 April 2021

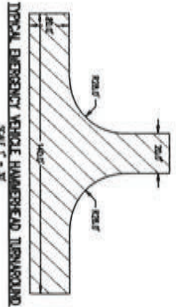
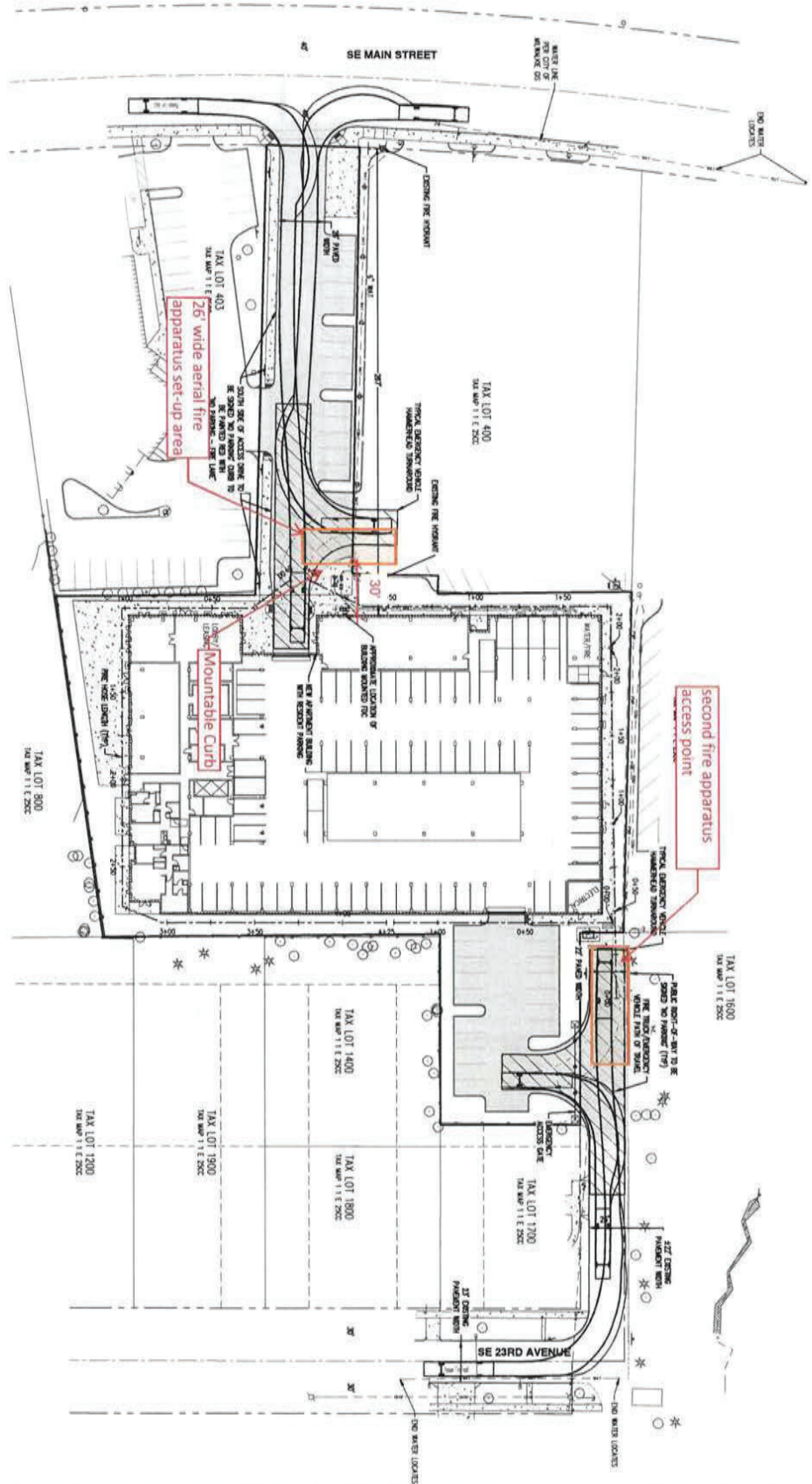


Natalie Albright  
 SERA Architects  
 338 NW 5<sup>th</sup> Ave  
 Portland, OR, 97209

Re: Henley Place Apartments  
 DR-2021-003

<b>CODE SECTION</b>	2019 Oregon Fire Code, Section 503 and Appendix D
<b>REQUIRES</b>	<p>Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility. Exceptions: 1.2 Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.</p>
<b>PROPOSED DESIGN</b>	<p>The proposed design is a 6-story residential multi-family building with 178 market rate units. There are 5 levels of Type III-A construction over 1 level of Type I-A construction. The Type III-A construction primarily houses R-2 occupancy apartment units, with secondary accessory spaces, R-2 ACC, servicing the units. The Type I-A construction is primarily an open parking garage at ground level, S-2 occupancy, with amenity spaces and building support, Type B occupancy and two apartment units, R-2 occupancy.</p> <p>This project site has two access points on opposite sides of the building: SE Main Street on the West and SE 23<sup>rd</sup> Avenue on the East. It is considered a "Flag-Lot" site as the access is from a drive saddled between two other properties. Fire access would be provided at these two drives with a hammerhead turnaround complying with Fire Code; Figure D103.3 as shown in the attached Exhibit A.</p> <p>Fire apparatus access roads cannot route continuously around the exterior walls of the building due to site constraints, so we are offering the following. These alternate measures follow the "Portland Fire &amp; Rescue: Fire &amp; Life Safety Requirements for Fire Department Access and Water Supplies."</p> <ol style="list-style-type: none"> <li>1. The building will be equipped with an approved NFPA 13 automatic sprinkler system throughout.</li> <li>2. There are no combustibile concealed attic spaces.</li> <li>3. All stairway enclosures have a fire-resistance rating of not less than 2-hour.</li> <li>4. The roof slope is essentially flat with a slope of 3/8" per foot (less than 33% slope).</li> <li>5. Approved access is provided to the roof from all the stairways. The North and South stairways extend to the roof within a 2-hour enclosure and a compliant roof hatch.</li> <li>6. Each stairwell is equipped with a standpipe; both standpipes terminate at the roof.</li> </ol>

	<p>7. Two fire separate and distinct apparatus access roads are provided at opposite ends of the building.</p> <p>8. The roof assembly will be upgraded to meet Class B.</p> <p>See attached Exhibits A and B.</p>
<p><b>REASON FOR ALTERNATE</b></p>	<p>The site geometry prohibits fire access roads extending through the site requiring an alternate means for fire apparatus access. Two access points are provided at either end of the site with compliant turnarounds.</p> <p>The building includes additional protection measures beyond the Alternate to Aerial Fire Apparatus Roads prescription. These provisions exceed the code required minimum, resulting in a higher level of building safety. We kindly request that this alternate means be granted.</p>



Pumper Fire Truck

Overall Length	40.000ft
Overall Height	9.750ft
Min Body Ground Clearance	0.650ft
Track Width	8.167ft
Lock-to-lock time	2.000
Max Wheel Angle	45.000



**P-08**  
EXHIBIT A

**PRELIMINARY FIRE ACCESS & WATER SUPPLY PLAN**  
**HENLEY PLACE**  
**PAHLISCH COMMERCIAL**  
**MILWAUKIE OREGON 5.2 Page 636**

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATA, OR 97053  
503.563.8151  
WWW.AKS-ENG.COM

ENGINEERING • SURVEYING • NATURAL RESOURCES  
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE





## Brett Kelter

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**From:** Lorence, Jeremy <Jeremy.Lorence@nwnatural.com>  
**Sent:** Thursday, July 8, 2021 11:56 AM  
**To:** Brett Kelter  
**Subject:** RE: [External]RE: DR-2021-003 Type III Land Use Application for 10306 SE Main St

This Message originated outside your organization.

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Hi Brett,

No comments from NW Natural. Thank you,

### Jeremy Lorence

NW Natural – East Metro Engineer  
Cell: 503.781.4467  
Office: 503.610.7693  
[Jeremy.Lorence@nwnatural.com](mailto:Jeremy.Lorence@nwnatural.com)

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**From:** Brett Kelter <KelterB@milwaukieoregon.gov>  
**Sent:** Wednesday, July 7, 2021 5:17 PM  
**To:** recker.richard@gmail.com; stevendorman3@msn.com; k1ein23@comcast.net; mlpark2001@gmail.com; valhubbard@comcast.net; Developmentengineering@clackamas.us; landusenotifications@oregonmetro.gov; ODOT\_R1\_DevRev@odot.state.or.us; developmentreview@trimet.org; Lorence, Jeremy <Jeremy.Lorence@nwnatural.com>; schwarz@nclack.k12.or.us; detchonc@nclack.k12.or.us; Jeremiah Sonne <SonneJ@milwaukieoregon.gov>  
**Subject:** [External]RE: DR-2021-003 Type III Land Use Application for 10306 SE Main St

**CAUTION:** This email originated outside NW Natural. Please do not click links or open attachments unless you recognize the sender and know the content is safe.

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Checking in to see if anyone has any comments to forward on to me regarding this land use application. The public hearing with the Planning Commission is set for July 27 and we'll be sending out the packet materials in a week or so. If you have comments you'd like to have included/reflected in the staff report, please let me know as soon as possible.

Thank you,

### BRETT KELVER

Associate Planner

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**From:** Tempest Blanchard <[BlanchardT@milwaukieoregon.gov](mailto:BlanchardT@milwaukieoregon.gov)>  
**Sent:** Tuesday, June 15, 2021 4:18 PM  
**To:** Kelly Brooks <[BrooksK@milwaukieoregon.gov](mailto:BrooksK@milwaukieoregon.gov)>; Steve Adams <[AdamsS@milwaukieoregon.gov](mailto:AdamsS@milwaukieoregon.gov)>; Jennifer Backhaus <[BackhausJ@milwaukieoregon.gov](mailto:BackhausJ@milwaukieoregon.gov)>; Laura Weigel <[WeigelL@milwaukieoregon.gov](mailto:WeigelL@milwaukieoregon.gov)>; Samantha Vandagriff <[VandagriffS@milwaukieoregon.gov](mailto:VandagriffS@milwaukieoregon.gov)>; Luke Strait <[straitl@milwaukieoregon.gov](mailto:straitl@milwaukieoregon.gov)>; Peter Passarelli <[PassarelliP@milwaukieoregon.gov](mailto:PassarelliP@milwaukieoregon.gov)>; Ann Ober <[OberA@milwaukieoregon.gov](mailto:OberA@milwaukieoregon.gov)>; Justin Gericke <[GerickeJ@milwaukieoregon.gov](mailto:GerickeJ@milwaukieoregon.gov)>; Alex McGladrey <[alex.mcgladrey@clackamasfire.com](mailto:alex.mcgladrey@clackamasfire.com)>; Mike Boumann <[mike.boumann@clackamasfire.com](mailto:mike.boumann@clackamasfire.com)>; recker.richard@gmail.com; stevendorman3@msn.com; k1ein23@comcast.net;

## Brett Kelper

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**From:** Cindy Detchon <detchonc@nclack.k12.or.us>  
**Sent:** Thursday, July 8, 2021 3:38 PM  
**To:** Brett Kelper  
**Subject:** Re: DR-2021-003 Type III Land Use Application for 10306 SE Main St

This Message originated outside your organization.

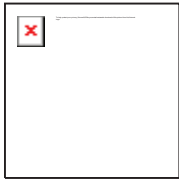
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No comments from NCSD.

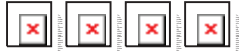
### Cindy Detchon

Assistant Superintendent of Operations, North Clackamas School District

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T: (503) 353-6000  
[detchonc@nclack.k12.or.us](mailto:detchonc@nclack.k12.or.us) - [www.nclack.k12.or.us/](http://www.nclack.k12.or.us/)  
12400 SE Freeman Way • Milwaukie, OR 97222



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On Wed, Jul 7, 2021 at 5:17 PM Brett Kelper <[KelperB@milwaukieoregon.gov](mailto:KelperB@milwaukieoregon.gov)> wrote:

Checking in to see if anyone has any comments to forward on to me regarding this land use application. The public hearing with the Planning Commission is set for July 27 and we'll be sending out the packet materials in a week or so. If you have comments you'd like to have included/reflected in the staff report, please let me know as soon as possible.

Thank you,

### BRETT KELVER

Associate Planner

---

**From:** Tempest Blanchard <[BlanchardT@milwaukieoregon.gov](mailto:BlanchardT@milwaukieoregon.gov)>  
**Sent:** Tuesday, June 15, 2021 4:18 PM  
**To:** Kelly Brooks <[BrooksK@milwaukieoregon.gov](mailto:BrooksK@milwaukieoregon.gov)>; Steve Adams <[AdamsS@milwaukieoregon.gov](mailto:AdamsS@milwaukieoregon.gov)>; Jennifer Backhaus <[BackhausJ@milwaukieoregon.gov](mailto:BackhausJ@milwaukieoregon.gov)>; Laura Weigel <[Weigell@milwaukieoregon.gov](mailto:Weigell@milwaukieoregon.gov)>; Samantha Vandagriff <[VandagriffS@milwaukieoregon.gov](mailto:VandagriffS@milwaukieoregon.gov)>; Luke Strait <[straitl@milwaukieoregon.gov](mailto:straitl@milwaukieoregon.gov)>; Peter Passarelli <[PassarelliP@milwaukieoregon.gov](mailto:PassarelliP@milwaukieoregon.gov)>; Ann Ober <[OberA@milwaukieoregon.gov](mailto:OberA@milwaukieoregon.gov)>; Justin Gericke <[GerickeJ@milwaukieoregon.gov](mailto:GerickeJ@milwaukieoregon.gov)>; Alex McGladrey <[alex.mcgladrey@clackamasfire.com](mailto:alex.mcgladrey@clackamasfire.com)>; Mike Boumann <[mike.boumann@clackamasfire.com](mailto:mike.boumann@clackamasfire.com)>; [recker.richard@gmail.com](mailto:recker.richard@gmail.com); [stevendorman3@msn.com](mailto:stevendorman3@msn.com); [k1ein23@comcast.net](mailto:k1ein23@comcast.net);

## Brett Kelter

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**From:** drwooldridge@vcsspx.com  
**Sent:** Thursday, July 8, 2021 5:50 PM  
**To:** Brett Kelter  
**Cc:** drfreeman@vcsspx.com  
**Subject:** Kellogg Bowl development - neighbor concerns

**This Message originated outside your organization.**

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Hi Brett,

I am one of the owners of the veterinary clinic located next door. We do have concerns re the parking restrictions, and the apparent potential for overflow parking from guests and tenants of the proposed apartment building.

Additionally, it appears that this development requires significant changes to the shared easement, and elimination of current parking spaces. We would like to continue to have option to use these parking spaces during our business hours.

It is also very apparent at this point that the Milwaukie Main Street electricity infrastructure that exists at this point will not support any development of this size. PGE has informed us that the current electrical supply will not support even our small permitted expansion.

Sincerely,

John Wooldridge & Kim Freeman, co-owners of Veterinary Cancer & Surgery Specialists, LLC

John D Wooldridge DVM, DACVS  
Veterinary Cancer & Surgery Specialists  
10400 SE Main Street  
Milwaukie, OR 97222  
ph 503.908.1492 | fax 503.850.4791  
[www.vcsspx.com](http://www.vcsspx.com)



# Oregon

Kate Brown, Governor

## Department of Transportation

Region 1 Headquarters  
123 NW Flanders Street  
Portland, Oregon 97209  
(503) 731.8200  
FAX (503) 731.8259

July 16, 2021

ODOT #11789

## ODOT Response

<b>Project Name:</b> Kellogg Bowl Redevelopment	<b>Applicant:</b> Pahlisch Commercial, Inc.
<b>Jurisdiction:</b> City of Milwaukie	<b>Jurisdiction Case #:</b> DR-2021-003
<b>Site Address:</b> 10306 SE Main St, Milwaukie, OR	<b>Legal Description:</b> 01S 01E 25CC <b>Tax Lot(s):</b> 00401
<b>State Highway:</b> OR 99E	<b>Mileposts:</b> 5.53

The site of this proposed land use action is in the vicinity of OR 99E (SE McLoughlin Blvd). ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

### COMMENTS/FINDINGS

ODOT has reviewed the submitted application materials for a multifamily development at the ~1.94-acre Kellogg Bowl site. The proposal includes a single six-story building with up to 178 units. Motor vehicle access is to be provided exclusively from SE Main Street. The application also proposes a zoning map amendment to change the northeastern portion of the site from R-5 to DMU.

The application materials include a Transportation Impact Study (TIS) completed by Kittelson & Associates and dated May 14, 2021. The TIS proposes a trip cap on the rezoned portion of the property in order to comply with the Transportation Planning Rule. The trip cap would limit future use and redevelopment on the rezoned area to an equivalent number of trips permitted under the existing R-5 zoning. ODOT supports the proposed trip cap of 18 daily, 1 weekday AM, and 2 weekday PM hour trips.

**Please send a copy of the Staff Report and/or Notice of Decision including conditions of approval to:**

ODOT Region 1 Planning  
Development Review  
123 NW Flanders St  
Portland, OR 97209

[ODOT\\_R1\\_DevRev@odot.state.or.us](mailto:ODOT_R1_DevRev@odot.state.or.us)

Development Review Planner: Kate Hawkins	503.731.3049 kate.w.hawkins@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 abraham.tayar@odot.state.or.us
District Contact: District 2B	d2bup@odot.state.or.us

## Brett Kelter

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**From:** Richard Recker <recker.richard@gmail.com>  
**Sent:** Tuesday, July 20, 2021 9:44 AM  
**To:** Brett Kelter  
**Cc:** Alison Wicks; Val Hubbard; gatesstudioswest  
**Subject:** Re: last call for NDA comments on Kellogg Bowl project  
**Attachments:** We sent you safe versions of your files; Henley Place Draft Comment.docx

Mimecast Attachment Protection has deemed this file to be safe, but always exercise caution when opening files.

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**This Message originated outside your organization.**

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Brett:

Attached you will find a final draft of the HMNDA comment on the proposed Henley Place development. I label it draft, as Val and Dave have yet to review the last round of edits. If there are further changes, we will make those edits and submit prior to the formal deadline [7/27].

I believe this draft is inline with the sentiments of our Association leadership and the Land Use and Development Committees, and we would like to see it included for consideration in the Commission and Council packets as such.

Thanks for your 'partnership' in getting all of our neighborhood input recognized in this process.

Appreciate you.

Rich

Rich Recker  
us we ours  
503.807.1653 Cell/Text

*E Pluribus Unum - Out of Many - One!*

On Tue, Jul 20, 2021 at 9:23 AM Brett Kelter <[KelterB@milwaukieoregon.gov](mailto:KelterB@milwaukieoregon.gov)> wrote:

I'll work with that. Thank you!

**BRETT KELVER, AICP**

Associate Planner

he • him • his

**The Historic Milwaukie NDA - Considering Henley Place  
DR-2021-003 10306 S.E. Main Street**

The Historic Milwaukie Neighborhood District Association [HMNDA] has a responsibility to engage our community in the review of proposed development projects and provide comment to the planning commission and, ultimately, the City Council. With support from City staff and cooperation from the developer, we have worked to inform our neighbors of the land use application development permit [DR-2021-003] being requested for redevelopment of the property 10306 S.E. Main Street and invited our neighbors to weigh in.

They have. They will.

Some of these comments reflected on the loss of Kellogg Bowl - the privately-held asset that occupied the space and ownership that lived into a mission to serve the community, which it did with distinction for generations. Some of the comments were better tuned to the formal process, centering on the proposed project and bringing forward issues, considerations, and ideas that offer specific, tangible input that can help this project be shaped and improved to be a better fit for the community.

Historically, the HMNDA also has exercised its role in representing the neighborhood in these processes, ranging from written and verbal comment on select aspects or implications of a particular project – to hiring professional representation to better explore the issues deeper. It is our job to assure the neighborhood’s voices are clearly heard and interests are well-served.

Henley Place is the first major development project being considered since the Pandemic and the season of pause and reflection that it has inspired in our world ever since. But under the current rules guiding development projects and with the limited tools and resources we have to examine, discern, and render input on the project, there is nothing to be said here that will cause the Planning Commission or the City Council to delay or reject the Henley Place project proposal.

We do, however, ask that you consider the following –

As we see more projects lining up behind Henley Place, we sense Milwaukie needs a fuller set of tools by which to gauge whether each project is an essential piece of a cohesive, connected, sustainable community that is globally-responsible and radically local.

Respectfully, we recognize efforts being made for our City to better express what new development we welcome here. The update to Milwaukie’s Comprehensive Plan includes right-minded steps that add to a tool box that were well overdue. However, periodic updates to a plan and process that originated generations ago, on older assumptions and limited data about how the world works and doesn’t will NEVER get our City to be the place our ancestors will thank us for.

We need a periodic assessment of all current enterprises and organizations, so that we have a complete and detailed inventory of those that make up the city now and how each measures up to the same contextual standards that NEW applicants are accountable to. With strategic context and data, we can better plan and communicate to those interested in joining our community – what we truly need and an order of prioritization of those needs. That information can help us promote development that expedites progress toward carbon neutrality, inclusiveness and justice, the assurance of self-sustainability and a meaningful place for each person to be nested and vested in Milwaukie, OR.

Mariame Kaba – an American activist and abolitionist-styled organizer in police and prison reform says that making gradual adjustments to a system that was likely inadequate or unjust from the very beginning will never serve us. She describes the first step in abolitionism as ‘imagining a different world’.

The City of Milwaukie, with the many epiphanies available to us about our world and trends toward the future, is wise to make and take the time to fully imagine a different, better community. The Historic Milwaukie NDA would be thrilled to welcome neighbors into a conversation to imagine a better Milwaukie – and come together in a vision that makes it clear who is welcome here and affirm the full set of timeless values that current and future residents have an obligation to live into every day.

Respectfully submitted – and in this Together,

Historic Milwaukie Neighborhood District Association