CITY OF MILWAUKIE

PLANNING COMMISSION MINUTES

City Hall Council Chambers
10722 SE Main Street
www.milwaukieoregon.gov

September 28, 2021

Present:	Lauren Loosveldt, Chair Joseph Edge, Vice Chair Greg Hemer Adam Khosroabadi Robert Massey Jacob Sherman	**Staff:**	Brett Kelver, Senior Planner Laura Weigel, Planning Manager Justin Gericke, City Attorney Beth Britell, Civil Engineer Jennifer Garbely, Assistant City Engineer
Absent:	Amy Erdt		

(00:14:00)
1.0 Call to Order — Procedural Matters*

Chair Loosveldt called the meeting to order at 6:30 p.m. 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.*

(00:14:32)
2.0 Information Items

Laura Weigel, Planning Manager announced Brett Kelver's promotion to Senior Planner.

(00:15:16)
3.0 Audience Participation

No information was presented for this portion of the meeting.

(00:16:46)
4.0 Hearing Items

(00:16:49)
4.1 DR-2021-001, Coho Point Redevelopment

Brett Kelver, Senior Planner, shared the staff report. The applicant proposed a six-story mixed-use building. The building featured 195 multifamily units, 7,000 sqft of commercial space, and 81 parking stalls in structured parking on the lower level. The proposed development necessitated a Natural Resource review, Willamette

Greenway review, Downtown Design review, and Transportation Facilities review. The applicants requested a building height variance, off-site mitigation of natural resource disturbance, parking quantity modification, and a variance for building setbacks.

Kelver noted the parking requirements for the development. One parking space per unit is required for the multifamily portion of the development (195 spaces for 195 units), and no parking is required for the proposed commercial uses. However, there a by-right reduction of 25% is allowed for buildings in the Downtown Mixed-Use zone (DMU), and up to an additional 10% for bike parking facilities beyond the minimum required. After the allowable reductions are considered, a total of 139 spaces are required. The applicant proposed 81 spaces, necessitating a parking quantity modification request to allow the additional reduction of 58 spaces. The proposed transportation demand management (TDM) program provided by the applicant included active marketing and incentives for car-free living that may include rent reduction, TriMet passes, or ride/bike share passes. Additionally, the implementation of the TDM will be monitored and tracked by the applicant. Kelver also noted the City's downtown parking management strategy and its ability to change timed on-street parking and enforce residential permit parking to offset any stress added by the proposed development.

Kelver presented the approval criteria for the design review and variances (setbacks and building height). The proposal responds well to the approval criteria with its step-down design, interface with natural area, preservation of key views, minimal shadowing, and public benefits of the walkway and downtown revitalization. The approval criteria for the downtown design review primarily focus on consistency with the applicable design standards and guidelines. The applicant originally presented to the Design and Landmarks Committee (DLC) in 2019, and the DLC recommended approval of the development to the commission after a formal design review meeting earlier this month.

The staff recommendation was to approve the various applications with the conditions of approval included with the staff report. Staff suggested another condition of approval that the applicant must provide additional detail to the City outlining strategies and benchmarks for monitoring the TDM program.

Commissioner Hemer asked where the 100-year floodplain line extends to and if the bottom two stories of the building were in the floodplain. **Kelver** responded that part of the development includes a cut and fill process where land would be added or "filled" to raise the base grade of the building above the floodplain. A proportionate amount of land would then be removed or "cut" from the adjacent stream to prevent flooding. **Commissioner Sherman** asked if there was any margin between the 100-year floodplain and the lowest occupied space. **Beth Britell, Civil Engineer,** responded that there is a full story between the base elevation and the habitable space of the building. Electrical and mechanical facilities will be located at a flood protected elevation; the first story

of the building is parking. **Commissioner Sherman** asked if there were other locations considered for the cut and fill process. **Kelver** responded that the compensatory cut should be performed as close to fill as possible. **Britell** noted that because the water is currently a lake the location of the cut is immaterial. **Commissioner Hemer** asked how the development will affect the removal of Kellogg dam. **Britell** further noted that the permits can only be based on the current floodplain and not on the future floodplain given potential dam removal. **Kelver** responded that the current plans will not adversely affect the removal of Kellogg dam. **Vice Chair Edge** asked to see where the creek flows into the dam. **Kelver** used an aerial image to show where the creek flows into the dam and fish ladder. **Jennifer Garbely, Assistant City Engineer,** noted that the cut portion of the natural resource mitigation is designed such that potential future dam removal would be made easier.

Commissioner Khosroabadi asked whether the water channel was further restricted by the development and if on-site natural resource mitigation was happening. **Kelver** responded that the channel will not be narrowed and even widened in some parts. He noted that there is limited room for on-site mitigation but that the applicants will be performing off-site mitigation contiguously along Kellogg Creek in Dogwood Park, adjacent to the development site. **Commissioner Hemer** asked if part of what is considered Dogwood Park is being lost given that it is technically the Adams Street right-of-way (ROW). **Kelver** responded that the Adams Street ROW will be more hardscaped but still publicly accessible.

The applicant team shared a presentation showing the building design, landscape design, and habitat restoration. The presentation showed the proposed building articulation, building height, parking, affected natural resources areas, and the design process. The proposed building articulation features several different types of building materials to provide a varied façade. The design features traditional architectural styles facing Main and Washington Streets and modern architectural elements as the building turns towards McLoughlin Boulevard and Dogwood Park. The building height was revised after the 2019 meeting with the DLC. The current design received unanimous support from the DLC.

The applicant team noted that the below-grade parking level will be accessible to the public and features a public elevator to further increase accessibility. Mitigation plantings will be placed along Dogwood Park directly adjacent to the proposed development site. The courtyard area will contain a water feature that will catch and filter storm water runoff.

Commissioner Sherman asked how the proposed design aligns with the Dogwood Park master plan. **Chair Loosveldt** asked if consideration had been given to softening the retaining wall and what considerations were given to habitat in the area. **The applicant** responded that the retaining wall is a series of steel gabions that step up. The rocks will be covered by various plantings that will

provide a habitat for animal life in the area. They further responded that their proposed plan does consider and connect Dogwood Park to the development site.

Commissioner Khosroabadi asked if the applicant planned to work with the North Clackamas Watersheds Council. **The applicant** responded that the topic had not come up; however, they are open to working with them.

Commissioner Sherman asked what would be used to incentivize car-free living at the site. **The applicant** responded that a combination of financial incentives would be used, noting rent reduction, Tri Met passes, and car/bike share passes as possible incentives. Further, they noted that the conditions of approval are designed such that the methods can be agreed upon by staff and the applicant once the development project is closer to finalization. **Kelver** noted that the language in the conditions of approval is designed to be flexible so that adjustments can be made as necessary.

Commissioner Khosroabadi asked whether the height variance affected the number of units. **The applicant** responded that the number of units had decreased somewhat since the origin of the project; however, the building height variance does not change the square footage of the proposed development.

Heather Koch, representing the **North Clackamas Parks and Recreation District**, commented that the District would like to review landscape plans for the site going forward.

The Planning Commission discussed the approval criteria. **Vice Chair Edge** and **Commissioner Khosroabadi** stated that they would vote to approve the application with the conditions of approval stated in the staff report. **Commissioner Hemer** stated that he would not vote to approve the application as presented because of the parking variance requested. **Commissioner Sherman, Commissioner Khosroabadi,** and **Vice Chair Edge** noted their support for the parking variance, in part due to the TDM program discussed in the staff report. **Commissioner Sherman** proposed adding "which the City shall share publicly at least once a year" to the language of the added condition of approval presented during the staff presentation. **Vice Chair Edge** stated that sharing updates to the TDM is important; however, a condition of approval is not the right place to require it. **Laura Weigel, Planning Manager,** stated that the City would support sharing updates publicly in tandem with the downtown parking management strategy. **Justin Gericke, City Attorney,** noted that the information is public regardless of if it is widely available or not.

DR-2021-001, Coho Point Redevelopment, was approved with the findings and added conditions of approval presented in the staff presentation with a 5-1 vote.

(02:47:44)

5.0 Planning Department Other Business/Updates

Commissioner Hemer thanked the Planning Department for their exemplary customer service.

Vice Chair Edge shared that the Oak Lodge Governance Report will be releasing soon.

Commissioner Hemer requested the Engage: Milwaukie information be included in the Planning Commission packet for the October 12 meeting.

Commissioner Sherman asked when the Measure 56 notification was going out for the middle housing hearing. **Weigel** responded that the notification process will be discussed on October 12.

(02:55:14)

6.0 Planning Commission Committee Updates and Discussion Items

No information was presented for this portion of the meeting.

(02:55:14)

7.0 Forecast for Future Meetings:

October 12, 2021	1. Public Hearing: PD-2021-001, Hillside PD 2. Public Hearing: Middle Housing Code – Hearing #1
October 21, 2021	1. Work Session: Joint meeting with NDA's
October 26, 2021	1. Public Hearing: VR-2021-014, 23rd Ave Property Line Adjustment 2. Public Hearing: Middle Housing Code – Hearing #2

Meeting adjourned at approximately 9:14 p.m.

Respectfully submitted,

Will First, Administrative Specialist II

CITY OF MILWAUKIE

AGENDA

September 28, 2021

PLANNING COMMISSION

milwaukieoregon.gov

Zoom Video Meeting: due to high rates of community COVID-19 transmission, 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) 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. 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-80) and follow the Zoom webinar login instructions.

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

2.0 **Information Items**

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

4.0 **Hearing Items**

4.1 Coho Point Redevelopment

Summary:	Construct a six-story mixed use building, with restaurant and retail space on the ground floor and 195 multifamily units on the ground floor and above.
Applicant:	Coho Point LLC (represented by Jones Architecture)
Address:	11103 SE Main St
File:	DR-2021-001 (master file)
Staff:	Senior Planner Brett Kelver

5.0 **Planning Department Other Business/Updates**

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

7.0 **Forecast for Future Meetings**

October 12, 2021	Hearing: Middle Housing Code Work Session: Joint meeting with NDA's
October 26, 2021	Hearing: Middle Housing Code Hearing: VR-2021-014, 23rd Ave Property Line Adjustment
November 9, 2021	No items are currently scheduled for this meeting.

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.
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.
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 or phone at 503-786-7502. To request Spanish language translation services email 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 o llame al 503-786-7502. Para solicitar servicios de traducción al español, envíe un correo electrónico a 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 Kolias, Senior Planner
Brett Kelver, Senior Planner
Will First, Administrative Specialist II

CITY OF MILWAUKIE

To: Planning Commission

Through: Laura Weigel, Planning Manager

From: Brett Kelver, Senior Planner

Date: September 21, 2021, for September 28, 2021, Public Hearing

Subject: **Master File:** DR-2021-001
Applicant/Owner: Coho Point LLC
Applicant's Representative: Jones Architecture
Address: 11103 SE Main St
Legal Description (Map & Tax Lots): 1S1E35AD, lots 1100, 1200, 1300, 1301, 1302
NDA(s): Historic Milwaukie, Island Station

ACTION REQUESTED

Approve the land use applications associated with master file #DR-2021-001 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 mixed-use building on the Coho Point site at 11103 SE Main St.

BACKGROUND INFORMATION

The proposal is to construct a six-story mixed-use building on a site in downtown Milwaukie, with commercial space (restaurant and retail) on the ground floor and 195 multifamily units above (see Figure 1). Off-street parking will be provided within the structure, and a public-access pedestrian walkway will connect Main Street to McLoughlin Boulevard via the Adams Street right-of-way.

Figure 1. Rendering of proposed building



The subject property, the northwest portion of which was previously

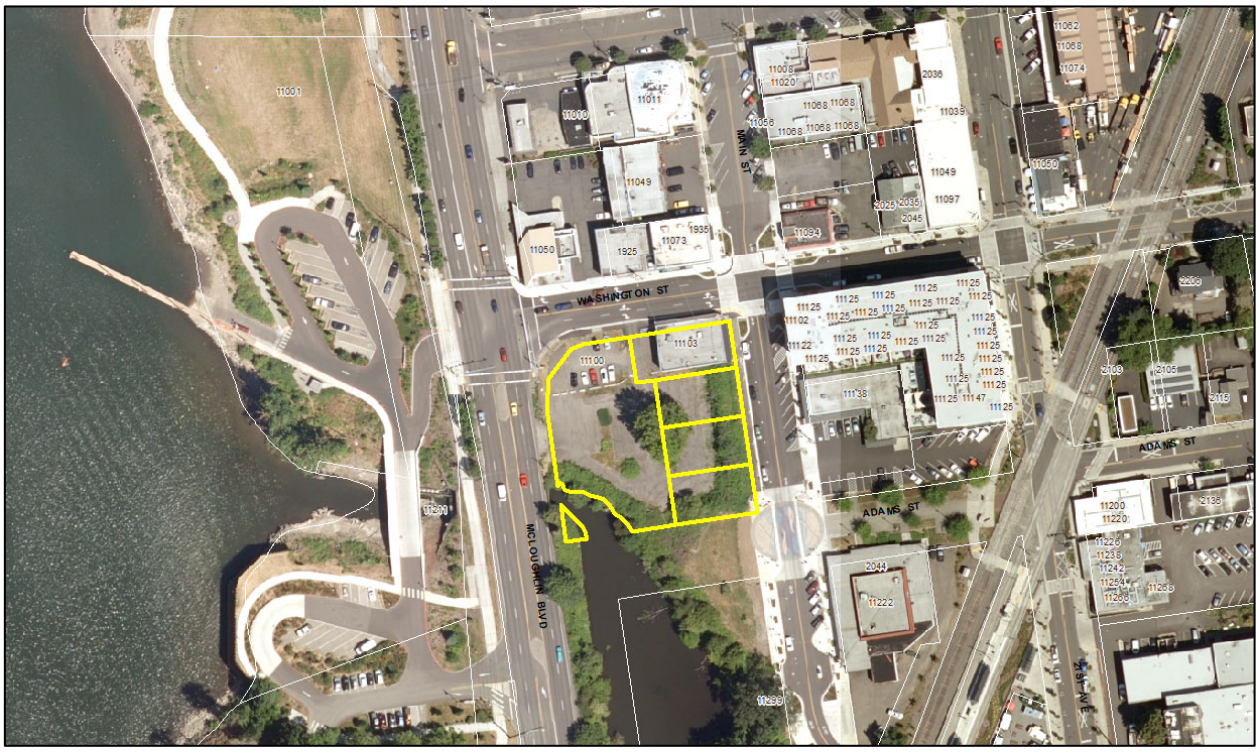
developed with the Cash Spot pawnshop, was acquired by the City in 2006. It was recognized as a gateway location by the Moving Forward Milwaukie project and identified in the South Downtown Plan as a development opportunity site. However, the site's location adjacent to Kellogg Creek presents several challenges. A large portion of the site is within the 100-year floodplain, requiring a significant amount of fill to ensure that any new building meets all applicable standards for floodplain development. That includes balancing the new fill with at least an equal amount of excavation ("cut") to maintain the site's overall flood storage capacity. Likewise, a large portion of the site near the creek is designated as Water Quality Resource (WQR) and/or Habitat Conservation Area (HCA). The City's code discourages disturbance of these natural resource areas and requires on-site mitigation when they are impacted.

In April 2017, the City Council decided to make the property available for redevelopment through a public-private partnership and launched a request for qualifications process to solicit proposals for a five-story mixed use building with at least four floors of housing over retail. Black Rock LLC (the applicant, referenced as Coho Point LLC for this project) was selected and entered into a development agreement with the City, including an arrangement for the developer to utilize the Adams Street right-of-way to construct an on-site public-access pedestrian walkway between Main Street and McLoughlin Boulevard and to establish a landscaped transition to Dogwood Park. This application represents an important milestone in bringing to fruition the City's vision for the site's redevelopment.

A. Site and Vicinity

The site, which is located at 11103 SE Main St, is approximately 0.94 acres (approximately 40,820 sq ft) and is comprised of five underlying tax lots (see Figure 2). The northeastern-

Figure 2. Site and vicinity



most tax lot is currently developed with a commercial building, but the rest of the site is vacant. The subject property is a full block, with Main Street to the east, Washington Street to the north, McLoughlin Boulevard to the east, and Adams Street to the south. Kellogg Creek forms the southwest border of the site. The undeveloped right-of-way in Adams Street effectively functions as part of Dogwood Park to the south.

B. Zoning Designation (see Figure 3)

The site is at the southern end of Milwaukie's downtown area, most of which is zoned Downtown Mixed Use (DMU) except for the nearby parks—Dogwood Park and Milwaukie Bay Park to the northwest (across McLoughlin Boulevard)—which are zoned Open Space (OS).

Figure 3. Zoning



C. Comprehensive Plan Designation

Town Center (TC)

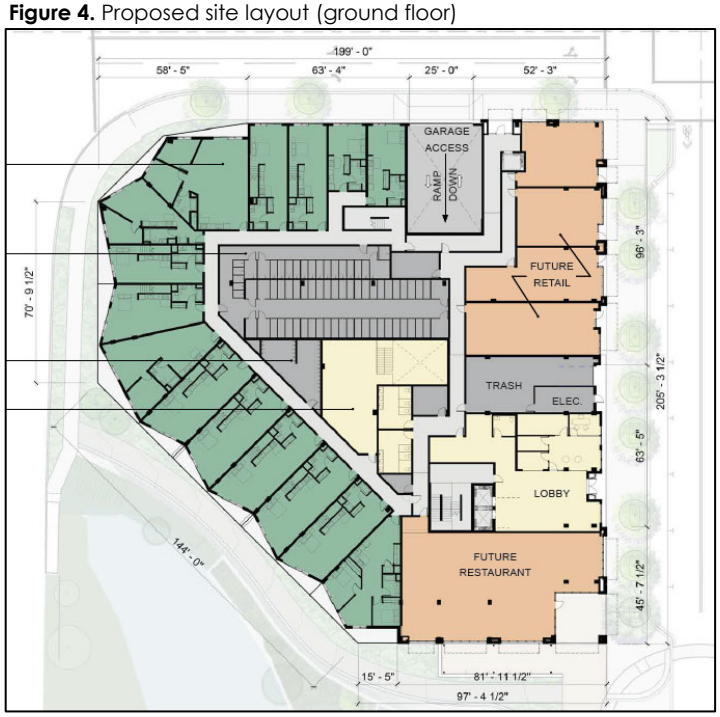
D. Land Use History

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

E. Proposal

The proposal is to construct a six-story mixed-use building in downtown Milwaukie, with approximately 7,000 sq ft of commercial space (restaurant and retail) on the ground floor and 195 multifamily units on the ground floor and above (see Figure 4). The project includes disturbance to designated natural resource areas on the site and fill within the floodplain, with a variance requested to allow most of the required natural resource mitigation to be provided off site within the adjacent Adams Street right-of-way and Dogwood Park. A parking quantity modification is proposed to lower the required number of off-street parking spaces beyond the by-right reductions allowed in the underlying DMU zone. Additional variances are requested to the building height limitation (to allow one extra story) and the zero-setback-building requirement. The project requires

Figure 4. Proposed site layout (ground floor)



review for consistency with the downtown design standards/guidelines as well as with the Willamette Greenway conditional use criteria.

The project requires approval of the following applications:

1. Downtown Design Review (land use master file #DR-2021-001)
2. Willamette Greenway Review (WG-2021-001)
3. Natural Resource Review (NR-2021-002)
4. Variance Request (VR-2021-002)
5. Parking Quantity Modification (P-2021-001)
6. Transportation Facilities Review (TFR-2021-001)

See Attachment 3 for the applicant's submittal materials. See Attachment 4 for a review of the applicant's transportation impact study by DKS, the City's on-call traffic consultant. See Attachment 5 for a review of the applicant's natural resource report by ESA, the City's on-call natural resources consultant.

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. Is the requested modification to the required parking quantity a justifiable one?

B. Is the proposed off-site mitigation adequate for the disturbance to the natural resources on the site?

C. Do the building's design and the overall project's public benefits warrant the granting of the requested height variance?

Analysis

A. Is the requested modification to the required parking quantity a justifiable one?

The proposed development is a mixed-use building, with commercial spaces and 195 multifamily units. In the DMU zone, nonresidential uses are exempt from off-street parking requirements, while multifamily residential units in the DMU require one off-street parking space per unit. However, the code allows by-right reductions to the parking requirements for different scenarios, including where light rail or other frequent public transit service is available. For uses in the DMU zone, parking can automatically be reduced by 25% (per MMC Subsection 19.605.3.B.2.c). For every six bicycle parking spaces provided beyond the

minimum number required, vehicle parking in the DMU zone can be further reduced by 5%.[1]

With 195 vehicle parking spaces as the baseline requirement, 195 bicycle parking spaces are also required. The proposed development includes 237 bicycle spaces, or 42 more than the minimum. That translates to an allowed reduction of seven spaces for bike parking (42 ÷ 6 = 7). The DMU-based reduction of 25% translates to a reduction of 49 spaces (0.25 x 195 = 48.75, rounded up to 49). As proposed, the new development is allowed a total reduction of 56 spaces, resetting the minimum required parking to 139 spaces.

Beyond the by-right reductions, the applicant has proposed to further reduce vehicle parking by almost 60 spaces, providing a total of 81 parking spaces within the ground floor of the new building. Furthermore, the City's development agreement for the site includes an arrangement to make 40 of the 81 spaces available during weekdays for downtown-employee parking managed through the current permit system. That means that during the daytime Monday through Friday, only 41 spaces will be available to building residents for parking.

The proposal for such a significant reduction in off-street parking for new housing downtown reflects a growing trend across the region and many other parts of the country. Town centers and urban cores are at the foreground of this shift as places where land is even more of a commodity, where light rail and other public transit services are more readily available, and where development codes emphasize improved walkability. Ride-share services (e.g., Uber, Lyft) continue to increase the feasibility of living in smaller cities and suburban areas without a personal vehicle. Other mobility options such as bike-share and scooter programs are also likely to come online in Milwaukie in the coming years. Overall, as more residential units are built downtown, the demand for more amenities and services will drive new business development that will improve downtown livability and make it more possible to live without a vehicle.

The applicant has provided a Transportation Demand Management (TDM) program outlining the principles designed to make the proposed parking arrangement work. This includes active marketing that promotes the new development as one that encourages car-free living, with incentive options for residents who do not have a vehicle. The TDM document presents a menu of incentives that residents who do not have a designated parking space could choose from: an annual TriMet pass, car-share/ride-share services, reduced rent, or membership in a bike-share or scooter program. Depending on the needs and lifestyles of individual residents, one incentive may be more appropriate and useful than another. The TDM incentives are all part of the effort to diminish the need for parking.

The TDM document provides several strategies for parking-management actions that can be utilized to make the proposed parking arrangement function efficiently. Building

[1] The allowed reduction for extra bike parking is actually 10%, but since the total maximum reduction allowed in the DMU zone is 30% and projects get an automatic 25% reduction just for being in the DMU zone, only 5% more is available through the bike parking reduction.

management can institute a vehicle registry that, along with usage monitoring, will help them ensure that the parking structure is used only by authorized vehicles. This effort will also enable building management to enforce the rules and respond more effectively to complaints about resident vehicles parking off site. Signage and other communication materials will publicize the restricted nature of the parking structure and point directly to building management to report questions or concerns. By charging market-rate prices for tenant parking and implementing the other points of the TDM program, the goal will be to have the parking structure fully occupied and not overflowing onto public streets.

In addition to the TDM program, another critical aspect to allowing reduced parking is the City Council strategy for downtown parking management adopted in September 2018 (https://www.milwaukieoregon.gov/sites/default/files/fileattachments/ordinance/93841/r82-2018_with_final_plan_document.pdf). The document includes a summary of existing on- and off-street parking capacity downtown, estimates of future parking demand, and 28 recommended strategies for managing that demand. The strategies are intended to "improve the efficiency of the City's parking system and provide a solid foundation for decision-making and accommodating future growth." Chief among the strategies is a confirmation that the City will take an active role in managing parking, including by enforcing restrictions and facilitating the creation of new parking supply.

The development agreement between the City and the applicant does not entitle residents of the new building to special use of on-street parking spaces. As the manager of the on-street parking system, the City can adjust the days and hours of parking limits as needed in response to the changing downtown environment and any conflicts that may arise over time. Although the site is relatively far from the nearest residential streets in the downtown area, there is an official process in place that neighbors can use to establish a residential parking permit program if on-street parking by building residents becomes a problem.

The TDM program is key to making the proposed parking arrangement work, and staff believes it presents a reasonable approach. The City's sustainability goals, as expressed in the newly updated Comprehensive Plan, are supportive of a shift away from total dependence on personal vehicles, and the management tools are in place to make the proposed arrangement a success. The City's commitment to actively managing the parking system (e.g., through enforcement, residential permit programs, facilitation of shared parking arrangements, etc.) will provide the pressure necessary to make the TDM successful.

B. Is the proposed off-site mitigation adequate for the disturbance to the natural resources on the site?

To make reasonable use of the subject property, which is adjacent to Kellogg Creek and therefore includes some overlapping natural resource designations, disturbance of the Water Quality Resource (WQR) and Habitat Conservation Area (HCA) on the site is unavoidable. The footprint of the new building and adjacent public-access walkway connecting Adams Street to McLoughlin Boulevard leaves very little WQR/HCA area on the site where mitigation can occur. Furthermore, the requirement to balance cut (excavation)

and fill within the floodplain, along with the proposal to provide much of the necessary cut within the Adams Street right-of-way and Dogwood Park, results in additional disturbance of off-site WQR and HCA resources that also requires mitigation.

Most of the subject property has long been paved or covered with buildings, so the WQR and HCA resources being disturbed are already in poor condition and do not presently provide much native vegetation or shade along Kellogg Creek. The public/private-partnership nature of this project provides an opportunity to maximize new development on the subject property by essentially transferring the "disturbance rights" of the Adams Street right-of-way and Dogwood Park to the Coho Point site. This arrangement will improve a contiguous stretch of riparian area adjacent to the primary point of impact.

The applicant's natural resource report, prepared by Pacific Habitat Services (PHS), provides a mitigation plan with hundreds of native-species tree and shrub plantings within the Adams Street right-of-way and in the riparian areas of Dogwood Park. These planting areas are generally categorized as being in Class A ("Good") condition due to the presence of at least 50% tree canopy coverage and at least 80% overall vegetation (trees, shrubs, and ground cover). However, the existing vegetation is comprised of many non-native and invasive species (e.g., English hawthorn, Himalayan blackberry, Norway maple, clematis) and lacks species diversity and more native trees. The PHS report suggests that the proposed mitigation will improve the ecological function of this portion of the riparian corridor, by improving species diversity and increasing shade. ESA, the City's on-call natural resources consultant, reviewed the PHS report and concurred with its overall assessment (see Attachment 5 for the ESA memo). ESA noted that the proposed mitigation would maintain some ecological functions and would improve others by increasing native plant coverage, tree and shrub numbers, and structural and species diversity.

The challenge of developing a site as constrained as the subject property is met in this case by capitalizing on the opportunity to expand the project area to include creek-side lands that would benefit from restoration. A narrow strip of on-site WQR at the base of the proposed retaining wall will be replanted, so the vegetated corridor in this area will remain intact and be improved as a result of this project.

C. Do the building's design and the overall project's public benefits warrant the granting of the requested height variance?

The proposed development will provide 195 units of needed housing in downtown Milwaukie, which is consistent with the goals and policies of the City's Comprehensive Plan. The design takes a small site with challenging constraints (floodplain, natural resources) and creatively produces a combination of housing units and commercial spaces that will help revitalize the downtown in a key location next to a public park and plaza (see Figure 5). The height variance allows the new building to include structured off-street

parking on the lower level, preserving valuable floor area for additional dwelling units, on a site with no excess space for surface parking beyond the building footprint.

Figure 5. Rendering—view of southwest elevation (McLoughlin Blvd and Adams St)



The added height makes the project feasible and allows the building to maintain enough distance from the adjacent Kellogg Creek to provide a publicly accessible pedestrian walkway between Adams Street and McLoughlin Boulevard. This will enhance the connection between the public plaza in south downtown and Milwaukie Bay Park at the Willamette River. The mitigation plantings that will extend into Dogwood Park will significantly improve the riparian corridor, laying the groundwork both for the future removal of the Kellogg Dam and the planned future bicycle path that will run along the creek and under the McLoughlin Boulevard bridge.

In one respect, the requested height variance is not really providing an additional floor, since part of the fifth story has essentially been taken from the McLoughlin Boulevard side of the building and added to the Main Street façade, adding to the urban feel of that frontage. The step-down design, which pulls the building mass back as it approaches the creek, presents a softer edge against the natural resource area and opens the building to more views of the creek and Willamette River. This makes the building more interesting and more responsive to the physical aspects of the site. For these and the other reasons noted above, staff and the Design and Landmarks Committee recommend approval of the requested height variance (see Attachment 6).

CONCLUSIONS

Staff recommendation to the Planning Commission is as follows:

1. Approve the application for downtown design review (file #DR-2021-001) to allow the proposed six-story mixed-use building.
2. Approve the application for Willamette Greenway conditional use review (WG-2021-001).
3. Approve the application for natural resource review (NR-2021-002) to allow significant disturbance of the WQR and HCA resources on the site and in the areas of floodplain excavation.
4. Approve the three requests for variances: (1) from the DMU development standard requiring a 0-ft building setback, (2) to allow off-site mitigation for WQR disturbance, and (3) to allow one additional story above the maximum allowed building height (VR-2021-002).
5. Approve the proposed parking quantity modification to reduce the number of required off-street parking spaces (P-2021-001).
6. Approve the application for transportation facilities review (TFR-2021-001) to confirm that public improvements are provided as necessary and appropriate.
7. Adopt the attached Findings and Conditions of Approval.

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 Title 18 Flood Hazard Regulations
- MMC Section 19.304 Downtown Zones (including Downtown Mixed Use DMU)
- MMC Section 19.401 Willamette Greenway Zone
- MMC Section 19.402 Natural Resources
- 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 19.905 Conditional Uses
- MMC Section 19.907 Downtown Design Review
- MMC Section 19.911 Variances (incl. 19.911.6 Building Height Variance in DMU zone)
- 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.

The 120-day timeline for providing a final decision on these applications, which includes any appeals to the City Council, is November 16, 2021, in accordance with the Oregon Revised Statutes and the Milwaukie Zoning Ordinance. However, as required by MMC Subsection 19.911.6.C.1, the applicant has waived the time period in which the application must be decided.

COMMENTS

Notice of the proposed development was given to the following agencies and persons on August 27, 2021: City of Milwaukie Community Development, Engineering, Building, Public Works, and Police Departments; City Attorney; Historic Milwaukie Neighborhood District Association (NDA); Island Station NDA; Clackamas Fire District #1 (CFD#1); ESA (City's on-call natural resources consultant); Clackamas County Department of Transportation & Development; Metro; Oregon Department of Transportation (ODOT); TriMet; Oregon State Marine Board; Oregon Department of Fish and Wildlife; Oregon Department of State Lands; Oregon Parks and Recreation Department; North Clackamas Parks and Recreation Department; North Clackamas School District; and NW Natural.

Public notice of the September 7 design review meeting was sent to property owners and current residents within 300 ft of the site on August 27, 2021; notice of the September 28 public hearing was sent to the same list of affected property owners and residents on September 8, 2021.

Peer review of the applicant's natural resource report was provided in a memo from ESA (see Attachment 5) and was incorporated into the findings for MMC Section 19.402. The Engineering Department coordinated with Planning staff to craft the findings for MMC Chapter 12.16 and MMC Chapter 19.700.

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

- **Sandra Jones, resident at Axletree Apartments, 11125 SE 21st Ave:** The new building will ruin the view of the river for at least half of the Axletree residents. Concerns related to potential impacts during the construction process: accessibility of the Axletree garage entrance (on Washington Street), safety and availability of the adjacent streets and sidewalks, and utility disruptions. Question about whether the building managers will keep the sidewalks and areas around the building clean in the context of the houseless population. There is not enough on-street parking for the visitors of downtown residents, and the addition of 190-plus units will not help.

  Staff Response: *(1) The Axletree building is five stories tall, as allowed by the zoning code (three stories plus two for meeting height-bonus standards). Even it was only five stories tall as allowed by code, the proposed building would effectively block views of the river for most of the Axletree units. The potential of development to impact other properties is to be expected in dense downtown areas. (2) Most of the concerns raised have to do with potential impacts during construction, not with the land use approval process. Sidewalks, driveway accesses, and utilities beyond the project will not be impacted for any significant period of time (if at all) during construction. (3) The applicant has been informed of the concern about ongoing maintenance of the sidewalks and public areas around the building, which is the responsibility of the building's management team. (4) As discussed in this report, the City has an adopted downtown parking management strategy that will help ensure that on-street parking remains reasonably available for those who would use a vehicle to visit downtown businesses or residents at downtown apartment buildings.*
- **Alex McGladrey, Lieutenant – Deputy Fire Marshal, CFD:** The property is in an area with public water supply, and there are no site conditions that would prevent the applicant from constructing the proper [fire] access. Fire department access and water supply are reviewed in accordance with the 2019 edition of the Oregon Fire Code.

ATTACHMENTS

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

	Public Copies	E-Packet
1. Recommended Findings for Downtown Design Review in Support of Approval	☐	☒
2. Recommended Conditions of Approval	☐	☒
3. Applicant's Submittal Materials (received April 20, 2021, unless otherwise noted)		
a. Project Narrative (updated Aug 25, 2021)	☒	☒
b. Response to Completeness Letter (received Aug 25, 2021)	☒	☒
c. Drawings (updated Aug 25, 2021, including calculations for window glazing)	☒	☒
d. Preliminary Drainage Report	☒	☒
e. Floodplain Analysis (updated Aug 25, 2021)	☒	☒
f. Natural Resource Report (updated Sept 21, 2021)	☒	☒
g. Transportation Impact Analysis	☒	☒
h. Transportation Demand Management Program (received Aug 25, 2021)	☒	☒

	Public Copies	E-Packet
i. Parking Stall Standards	☒	☒
j. LEED Scorecard	☒	☒
k. Preapplication Report	☒	☒
l. Application Forms (original received January 28, 2021)	☒	☒
4. DKS Transportation Review (prepared for City on April 19, 2021)	☒	☒
5. ESA review of natural resource report (prepared for City on Sept 2, 2021)	☒	☒
6. Summary of DLC Recommendations (from design review meeting held September 7, 2021—includes design review checklist completed by staff)	☐	☒
7. Comments Received	☐	☒

Key:
Public Copies = materials posted online to application website (https://www.milwaukieoregon.gov/planning/dr-2021-001).
E-Packet = meeting packet materials available one week before the meeting, posted online at https://www.milwaukieoregon.gov/bc-pc/planning-commission-80.

Recommended Findings in Support of Approval
Master File #DR-2021-001, Coho Point Development

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, Coho Point, LLC, has applied for approval to construct a six-story mixed-use building on the five lots that comprise the Coho Point site at 11103 SE Main St. The site is in the Downtown Mixed Use (DMU) zone. The land use application master file number is DR-2021-001, with accompanying applications for Willamette Greenway review, natural resource review, variances, parking quantity modification, and transportation facilities review.

2. The subject property is approximately 0.94 acres (approximately 40,820 sq ft) and is comprised of five underlying tax lots. The northeastern-most tax lot is currently developed with a commercial building, but the rest of the site is vacant. The subject property is a full block, with Main Street to the east, Washington Street to the north, McLoughlin Boulevard to the east, and Adams Street to the south. Kellogg Creek forms the southwest border of the site. The undeveloped Adams Street right-of-way effectively functions as part of Dogwood Park to the south.

   The proposal is to construct a six-story mixed-use building in downtown Milwaukie, with approximately 7,000 sq ft of restaurant and commercial space on the ground floor and 195 multifamily units on the ground floor and above. The project includes disturbance to designated natural resource areas on the site and fill within the regulatory floodplain, with a variance requested to allow the required natural resource mitigation to be provided within the adjacent Adams Street right-of-way and Dogwood Park. A parking quantity modification is proposed to lower the required number of off-street parking spaces beyond the by-right reductions allowed in the underlying DMU zone. Additional variances are requested to the building height limitation (to allow one extra story) and the zero-setback-building requirement. The project requires review for consistency with the downtown design standards/guidelines as well as with the Willamette Greenway conditional use criteria.

3. The proposal is subject to the following provisions of the Milwaukie Municipal Code (MMC):
   - MMC Chapter 12.16 Access Management
   - MMC Title 18 Flood Hazard Regulations
   - MMC Section 19.304 Downtown Zones (including Downtown Mixed Use DMU)
   - MMC Section 19.401 Willamette Greenway Zone
   - MMC Section 19.402 Natural Resources
   - 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 19.905 Conditional Uses
- MMC Section 19.907 Downtown Design Review
- MMC Section 19.911 Variances (incl. 19.911.6 Building Height Variance in DMU zone)
- 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 September 28, 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 arterial and collector streets. New driveways accessing arterial streets must be spaced at least 600 ft from the nearest intersection; the minimum spacing requirement for collector streets is 300 ft. In non-residential districts, driveways must be at least 10 ft from the side property line. 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 three streets: Main Street and Washington Street are collector streets, and McLoughlin Boulevard is an arterial. The site also has frontage on Adams Street, but the right-of-way is not and will not be developed as a street. Main Street and Washington Street are under the jurisdiction of the City; the Oregon Department of Transportation (ODOT) has jurisdiction of this section of McLoughlin Boulevard. The proposed new building will be accessed by a single accessway onto Washington Street, located approximately 135 ft from the intersection with McLoughlin Boulevard and approximately 65 ft from the intersection with Main Street.

As proposed, the driveway approach on Washington Street will be approximately 24 ft wide. The current standard for distance from intersection is not met, and an access spacing modification is required. As discussed in Finding 12-c, the required Traffic Impact Study (TIS) determined that at the proposed access location there would be minimal impacts from queuing cars, provided the access had a restricted left-turn egress. A condition restricting left-turn egress has been established to support the requested access spacing modification.

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

5. MMC Title 18 Flood Hazard Regulations

MMC Title 18 provides standards intended to minimize public and private losses due to flood conditions in specific areas. The regulations established in MMC Title 18 do this in part by controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters; controlling filling, grading, dredging, and other development which may increase flood damage; and preventing or regulating the construction of flood barriers which will unnaturally divert

flood waters or which may increase flood hazards in other areas. As per MMC Section 18.16.030, a floodplain development permit is required prior to any construction or development within the flood management area.

The subject property includes flood hazard and flood management areas as identified on the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA) and acknowledged by the City for the purposes of implementing MMC Title 18. Current FEMA mapping provided by the applicant shows that the elevation of the base flood (also known as the "100-year floodplain") on the subject property is 36.3 ft (NAVD 88). The City's adopted floodplain maps also identify a 1996 flood elevation of 38.0 ft, which establishes the regulatory design flood elevation for the subject property. More than half the area of the subject property is at or below the design flood elevation, and the proposed development will impact the flood management area.

MMC Chapter 18.20 establishes provisions for flood hazard reduction.

a. MMC Section 18.20.010 Alteration of Watercourses

MMC 18.20.010 requires that the flood-carrying capacity within the altered or relocated portions of watercourses must be maintained. This includes the floodway, which is the channel of a watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Encroachments within floodways, including fill and new construction, are prohibited unless they are part of an approved fish enhancement project or unless a certified professional civil engineer provides a hydrologic and hydraulic (H&H) analysis demonstrating that the encroachment will not increase flood levels during a base flood event. An approved Conditional Letter of Map Revision (CLOMR) must be provided prior to the approval of a floodplain development permit.

According to the submittal materials, the proposed development includes excavation from within the identified floodway boundary. The applicant has provided an H&H analysis prepared by a certified professional civil engineer. The H&H analysis confirms that the proposed floodway excavation will not increase flood levels during a base flood event. As required, an approved CLOMR will be provided prior to the City's approval of a floodplain development permit.

This standard is met.

b. MMC Section 18.20.020 Compensatory Storage (Balanced Cut and Fill)

MMC 18.20.020 establishes requirements for compensatory storage, also referred to as "balanced cut and fill." Where the placement of fill or structures will displace more than ten (10) cubic yards of flood storage area, the development must be done in such a way as to maintain or increase flood storage and conveyance capacity and not increase design flood elevations. All fill placed at or below the design flood elevation must be balanced by at least an equal volume of material ("cut") in a hydraulically equivalent location, not including areas that will be filled with water in two-year

rainstorm conditions or are designated for Habitat Conservation Area (HCA) mitigation.

Excavation to balance a fill must be located on the same parcel as the fill unless it is not reasonable or practicable to do so. In those cases, the excavation may be located in the same drainage basin and as close as possible to the fill site subject to the following:

(1) The proposed excavation and fill will not increase flood impacts for surrounding properties as determined through H&H analysis;

(2) The proposed excavation is authorized under applicable municipal code provisions including MMC Section 19.402 Natural Resources; and

(3) Measures to ensure the continued protection and preservation of the excavated area for providing balanced cut and fill must be approved by the City.

The proposed development includes the placement of approximately 3,440 cubic yards of material within the regulatory floodplain and the removal of approximately 3,575 cubic yards, which provides more than the required balance. Due to site constraints and in agreement with the City, a majority of the cut will be off-site with some excavation occurring outside the boundary of the regulatory floodplain, provided within the immediately adjacent undeveloped Adams Street public right-of-way and Dogwood Park (an improved public park).

The applicant's H&H analysis confirms that the proposed cut and fill will not increase flood impacts for surrounding properties. The proposed grading of the slope of the cut area, beginning slightly above the ordinary high-water mark and going to the new gabion wall, will be approximately two percent. This will be closer to a more natural condition than the current floodplain and will provide more flood storage during frequent storm events.

The H&H analysis notes that the proposed cut and fill will not increase flood impacts to surrounding properties. As discussed in Finding 8, the cut and fill aspects of the proposed development are approvable in accordance with the applicable subsections of MMC Section 19.402. The cut areas include overlapping Water Quality Resource (WQR) and HCA designations, and some of the proposed natural resource mitigation is within areas of cut. Where the WQR and HCA overlap, the WQR is the more regulated resource and the one that requires mitigation in that location. The cut areas do not include areas where HCA-only mitigation is proposed.

The proposed gabion wall will ensure that the cut areas remain protected and preserved for purposes of providing compensatory storage over time. The WQR and HCA designations overlaying the cut areas will also serve to prevent unauthorized disturbance and preserve the intended balancing of cut and fill.

These standards are met.

The Planning Commission finds that the proposed development is consistent with the applicable standards of MMC Title 18.

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 and commercial uses such as eating and drinking establishments and retail-oriented sales.

      The proposed development is a mixed-use building with approximately 7,000 sq ft of commercial space intended for retail and restaurant uses as well as 195 multifamily dwelling units. These uses are allowed outright in the DMU zone.

      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. Lobbies for upper-floor units are permitted on the ground floor only if a commercial use is located along a majority of the property's street frontage. Live/work units and rowhouses are not permitted on Main Street.

      The proposed development is a mixed-use building, with approximately 7,000 sq ft of commercial space and the lobby entrance for 195 multifamily units along the Main Street frontage. The subject property is south of Scott Street and has no dwelling units along the Main Street ground-floor frontage; the ground-floor units are located on the Washington Street, Adams Street, and McLoughlin Boulevard frontages. No live/work units or rowhouss are proposed.

      This standard is met.

   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 is established in MMC Table 19.304.4.B.1 and Figure 19.304-3 and applies to nonresidential development, including mixed-use buildings. For mixed-use developments, residential floor space is included in the calculation of minimum FAR. An FAR bonus is available for structured parking in accordance with the provisions of MMC Subsection 19.611.4, at the ratio of 0.5 sq ft of floor area above the maximum per 1 sq ft of structured parking provided.

The proposed development is a mixed-use building on a site approximately 0.94 acres in size (40,820 sq ft). As per MMC Table 19.304.4.B.1 and Figure 19.304-3, the minimum FAR for the subject property is 1:1 (40,820 sq ft) and the maximum is 4:1 (163,280 sq ft) before any bonuses. As discussed in Finding 11-g, the proposed building includes approximately 30,800 sq ft of structured parking, which provides a floor area bonus of 15,400 sq ft and brings the maximum floor area allowed for the site to 178,680 sq ft (i.e., an FAR of 4.38:1).

As proposed, the six-story building presents approximately 172,080 sq ft of floor area, for an FAR of 4.22:1.

This standard is met.

(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 majority of downtown, the base maximum building height is three stories or 45 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 78 ft in height, as measured from the base point defined in MMC Subsection 19.202.2.B.1. As a building that provides at least one story of residential use, it is allowed one additional story above the three-story base standard. The applicant has also indicated that the building will qualify for LEED certification (Silver), 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 five stories or 69 ft. A condition has been established to ensure that evidence of the necessary green building certification is submitted. A variance has been requested to allow the sixth story and is discussed in Finding 15-d.

As proposed, as condition, and with the approval of the building height variance discussed in Finding 15-d, 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.

The proposed building is a mixed-use building with frontage on Main Street. As proposed, the ground-floor height is 18 ft, and the interior floor area adjacent to Main Street (including that of the proposed retail spaces) is at least 30 ft deep.

This standard is met.

(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.

As identified on MMC Figure 19.304-5, the subject property has a 75% zero-setback requirement on its Main Street, Washington Street, and Adams Street frontages; the McLoughlin Boulevard frontage is subject to the maximum setback of 10 ft. The overall building concept brings the structure to the property lines, with a 19-ft-by-20-ft cutout at the Main/Adams corner that enhances the future restaurant use and opens onto the Adams Street plaza and Dogwood Park. This cutout, which constitutes a front setback, meets the requirements of MMC 19.304.5.H, as discussed below in Finding 6-c-8.

The McLoughlin Boulevard façade includes shallow angles that pull the building 6 to 7 ft from the edge of a proposed public walkway that effectively establishes the functional property line on that part of the site. However, the design's use of slight recesses along much of the Main/Washington/Adams façades, which articulate the storefront bays and emphasize material transitions, results in most of these façade lengths being set back 2 to 3 ft from the property line. A variance to the zero-setback standard has been requested and is discussed in Finding 15.

As proposed, and with the approval of 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.

The subject property has four frontages: Main Street, Washington Street, Adamas Street, and McLoughlin Boulevard. MMC Figure 19.304-6 indicates that the subject

property's Main Street frontage is subject to the 90% frontage occupancy standard, which only has to be met on the Main Street frontage. As proposed, 100% of the Main Street frontage is occupied by the building, as defined in conjunction with the build-to line and allowed setbacks discussed above in Finding 6-c-4. In fact, given that the proposal is essentially for whole-block development, all four of the frontages are 100% occupied by the building.

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. If a development is on the corner of Main Street and another street, the primary entrance must be oriented toward Main Street. If the development is on the corner of McLoughlin Boulevard and another street, the primary entrance may be oriented toward either street.

The proposed mixed-use building is a whole-block development with frontage on four streets and multiple entries. The entrance to the residential portion of the proposed building is on Main Street. The various commercial storefronts also have their entrances on Main Street, including the corner storefronts at Main/Washington and Main/Adams.

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. All nonresidential uses are exempt from the off-street parking requirements.

The proposed building provides 195 multifamily residential units and approximately 7,000 sq ft for commercial use. No off-street parking is required for the proposed commercial use. The applicant has proposed a parking quantity modification to reduce the minimum number of required parking spaces. The proposed modification and the requirements of MMC 19.600 are addressed in Finding 11.

As proposed, and with the approval of the parking quantity modification discussed in Finding 11, 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 Finding 6-c-4, the proposed building includes a 19-ft-by-20-ft cutout at the Main/Adams corner and is set back by a few feet along most of its Main Street, Washington Street, and Adams Street frontages. As per the variance approved as discussed in Finding 15, the minor building setbacks serve as articulation and emphasize material transitions and do not constitute open space. The setback area of the Main/Adams cutout is a patio/plaza that is bounded on two sides by the proposed restaurant and is 100% available as open space, including for outdoor seating. It is at grade with the adjacent sidewalk and provides a connection between the building and the larger plaza in the Adams Street right-of-way.

As proposed, and in conjunction with the setback 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 south of Harrison Street and is not adjacent to any residentially zoned properties.

This standard is not applicable.

(10) MMC Subsection 19.304.5.J Residential Density

There are no minimum density requirements when residential units are developed as part of a mixed-use building. Maximum density is effectively controlled by FAR requirements and building height limitations.

The proposed development is a six-story mixed-use building with 195 multifamily units and approximately 7,000 sq ft of commercial space. The FAR requirements and building height limitations are discussed above in Findings 6-c-1 and 6-c-2, respectively, in conjunction with a building height variance discussed in Finding 15-d.

As proposed, and with the approval of the building height variance discussed in Finding 15-d, 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 include curb, sidewalks, asphalt paving in the street, bicycle racks, streetlights, and street trees. A condition has been established to ensure that all street improvements are consistent with the applicable standards of MMC 19.700 and the Public Works Standards.

As conditioned, 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.

As new development in the DMU, the design standards of MMC 19.508 are applicable to the proposed development. As discussed in Finding 9, the applicable standards of MMC 19.508 are met or are addressed with conditions of approval as needed.

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

7. MMC Section 19.401 Willamette Greenway Zone

MMC 19.401 establishes standards for the Willamette Greenway overlay designation.

The western half of the subject property is within the Willamette Greenway zone as shown on the City's zoning map.

a. MMC Subsection 19.401.5 Procedures

MMC 19.401.5 establishes procedures related to proposed uses and activities in the Willamette Greenway zone. Development in the Willamette Greenway zone requires conditional use review, subject to the standards of MMC Section 19.905 and in accordance with the approval criteria established in MMC Subsection 19.401.6.

The construction of a new structure constitutes "development" as defined in MMC Subsection 19.401.4 and is subject to the conditional use review standards of MMC 19.905 (discussed in Finding 13) and the approval criteria of MMC 19.401.6.

b. MMC Subsection 19.401.6 Criteria

MMC 19.401.6 establishes the criteria for approving conditional uses in the Willamette Greenway zone.

(1) Whether the land to be developed has been committed to an urban use, as defined under the State Willamette River Greenway Plan

The State Willamette River Greenway Plan defines "lands committed to urban use" in part as "those lands upon which the economic, developmental and locational factors have, when considered together, made the use of the property for other than urban purposes inappropriate."

The subject property is in the heart of Milwaukie's south downtown area and is zoned DMU for mixed-use development. The site has previously been developed for commercial use (including one retail building that has since been demolished), and a portion of the property is currently developed with a commercial building and off-street surface parking area. The land is committed to an urban use.

(2) Compatibility with the scenic, natural, historic, economic, and recreational character of the river

Although the subject property is not adjacent to the Willamette River it does abut Kellogg Creek, a tributary that empties into the Willamette approximately 300 ft west of the site. The proposed building design steps back in height as it approaches the creek and river, reducing the mass where it is closest to the natural resource area. Along the southwestern edge of the new building, a public access pedestrian path will connect Main Street to McLoughlin Boulevard (via the Adams Street right-of-way) and an entrance to Milwaukie Bay Park. As proposed, the development is compatible with all relevant aspects of the character of the river.

(3) Protection of views both toward and away from the river

Although the subject property is not adjacent to the Willamette River, it is visible from the river and is located between the river and the mixed-use Axletree building across Main Street to the east. Development of the site is allowed as discussed throughout these findings, so some impact on views toward the river from private property such as the Axletree site is inevitable. The Axletree building is five stories tall, and five stories are allowed outright (including bonuses) for the proposed building, so private views will be impacted simply by virtue of the development allowed by code.

There are public views of the river available along Washington Street and from the Adams Street right-of-way and Dogwood Park. The proposed development will not impact views along the Washington Street corridor, and the proposed public pathway along the southwestern side of the new building will preserve a view toward the river along the creek. Although the currently broad angle of sight will be somewhat reduced, the river will remain highly visible from the public plaza at Main Street and Adams Street as well as from Dogwood Park. The step-back design as the building approaches the creek and river will provide river views for more units within the new building than a design with uniform height.

Looking from the river toward downtown, the proposed building will obviously be visible and will eclipse the Axletree building, but the view of most of downtown Milwaukie will remain unchanged as seen from the water.

(4) Landscaping, aesthetic enhancement, open space, and vegetation between the activity and the river, to the maximum extent practicable

The proposed development includes a public access pedestrian walkway from Main Street McLoughlin Boulevard (via the Adams Street right-of-way), in addition to a landscaped rooftop terrace on the façades adjacent to the creek and river. The steep slope between the building and the creek necessitates the use of a gabion retaining wall to shore up the site and limits the space available for more landscaping below the pedestrian walkway. But the proposed development includes plantings along the pedestrian walkway itself as well as enhancement (mitigation) plantings along the creek in the Adams Street right-of-way and Dogwood Park.

(5) Public access to and along the river, to the greatest possible degree, by appropriate legal means

The subject property is not adjacent to and does not provide direct access to the Willamette River. The proposed public walkway between Main Street and McLoughlin Boulevard (via the Adams Street right-of-way) will establish a valuable connection to one of the entrances to Milwaukie Bay Park and will provide better visual access to Kellogg Creek below.

(6) Emphasis on water-oriented and recreational uses

The subject property does not have direct access to the Willamette River, but the proposed public walkway between Main Street and McLoughlin Boulevard (via the Adams Street right-of-way) will improve access to the water-oriented and recreational amenities of Milwaukie Bay Park.

(7) Maintain or increase views between the Willamette River and downtown

As noted above in Finding 7-b-3, there are public views of the river available along Washington Street and from the Adams Street right-of-way and Dogwood Park. The proposed development will not impact views along the Washington Street corridor, and the proposed public pathway along the southwestern side of the new building will preserve a view toward the river along the creek. Although the currently broad angle of sight will be somewhat reduced, the river will remain highly visible from the public plaza at Main Street and Adams Street as well as from Dogwood Park. The step-back design as the building approaches the creek and river will provide river views for more units within the new building than a design with uniform height.

Looking from the river toward downtown, the view of most of downtown Milwaukie will remain unchanged as seen from the water.

(8) Protection of the natural environment according to regulations in Section 19.402

The subject property includes designated Water Quality Resource (WQR) and Habitat Conservation Area (HCA), and the proposed development will disturb involves significant WQR and HCA disturbance. The proposed development's compliance with the applicable requirements of MMC Section 19.402 are addressed in Finding 8.

(9) Advice and recommendations of the Design and Landmarks Committee (DLC), as appropriate

The subject property is within the Downtown Mixed Use (DMU) zone and requires downtown design review and review for a building height variance, as discussed elsewhere in these findings. As noted in Finding 16, the DLC held a design review meeting on September 7, 2021, and voted unanimously to recommend approval of the proposed design and the requested building height variance. The DLC provided a few minor recommendations related to the design, as noted in Finding 16.

(10) Conformance to applicable Comprehensive Plan policies

The Natural Resources and Environmental Quality element in the Milwaukie Comprehensive Plan is intended to protect, conserve, and enhance the quality, diversity, quantity, and resiliency of Milwaukie's natural resources and ecosystems. This element features goals and policies related to awareness and education; water quality and resources; flora and fauna habitat; healthy urban forest; sustainable design and development; and air, noise, and light quality. The Natural Resources and Environmental Quality element includes the following relevant adopted policies:

- Support efforts to restore Kellogg and Johnson Creeks and their tributaries and restore a free-flowing Kellogg Creek at the Kellogg Dam site
- Require a detailed analysis of how development will avoid impacts to natural resources
- Regulate floodplains to protect and restore associated natural resources and functions and increase flood storage capacity
- Improve stormwater detention and treatment standards through the use of best available science, technology, and management practices to meet water quality standards and achieve wildlife habitat protection
- Protect habitat areas for native and non-invasive naturalized plants and wildlife, considering impacts to habitat connectivity when reviewing development proposals
- Protect and enhance riparian vegetation
- Incorporate sustainable and low-impact building and site planning technologies, habitat-friendly development strategies, and green infrastructure into City codes and standards

The proposed development involves significant disturbance to the designated WQR and HCA natural resources on the site. As discussed in Finding 8, the proposal includes an assessment of impacts and a plan for mitigation. As discussed in Finding 5, the proposed development involves fill within the regulatory floodplain and demonstrates how flood storage capacity will be increased. The stormwater management aspect of the proposal includes a planter facility at the second-story level to treat roof runoff and pervious

surface materials for plaza and other hardscape areas. The mitigation plan involves planting hundreds of native-species trees and shrubs in four distinct areas within the riparian corridor, improving the stream bank and enhancing the connectivity of habitat along a significant length of the creek. The mitigation contributes to the larger and longer-term effort to improve conditions in advance of the future restoration of a free-flowing Kellogg Creek.

The Willamette Greenway element is intended to protect, conserve, enhance, and maintain the lands and water that comprise the City's portion of the Willamette River Greenway in a manner that recognizes the unique natural, scenic, historical, economic, and recreational qualities that exist along the river. This element features goals and policies related to the greenway boundary, greenway design plan, land use review process, natural resource protection, recreation, public access and view protection, and downtown. This element includes the following relevant adopted policies:

- Utilize the Willamette Greenway overlay zone in combination with underlying land use designations to manage uses and implement City objectives for the greenway
- Protect and conserving natural resources within the greenway, including increasing the tree canopy
- Support the removal of the Kellogg Dam and restoration of a free-flowing Kellogg Creek through revegetation of riparian areas with native species
- Connect City bicycle and pedestrian trail systems with the trail system through the greenway
- Evaluate proposals for new development for their effect on visual access to the river and Kellogg Creek from publicly owned land and the public right-of-way[1]
- Provide safe pedestrian connections between downtown Milwaukie and the river

The western half of the subject property is within the Willamette Greenway overlay zone, and the proposed new development requires the review against the applicable criteria of MMC 19.401.6 as part of the City's effort to implement its greenway objectives. As noted above, the proposal involves disturbance of designated natural resource areas and includes a mitigation planting plan that will revegetate the riparian corridor and increase the tree canopy as part of the larger effort to remove the Kellogg Dam and restore Kellogg Creek as a free-flowing stream. The excavation proposed within the regulatory floodplain to balance fill for the building footprint will not preclude the construction of a future bike path adjacent to the creek and under the McLoughlin

[1] However, Policy 4.6.4 clarifies that, "Enhancing riparian vegetation along Kellogg Creek to improve aquatic habitat conditions for native species will be a higher priority than maintaining or improving views of the creek."

Boulevard bridge after Kellogg Dam is removed. As discussed above in Finding 7-b-3, the proposed development will not have significant impacts on public views of the river and creek. Over time, the riparian area plantings will grow to obscure views of the creek, but the Comprehensive Plan policies favor the health of the natural area over the view. And the proposed public access pedestrian walkway through the site between Main Street and McLoughlin Boulevard (via the Adams Street right-of-way) will establish a new safe connection between downtown Milwaukie and the river.

The Housing element is intended to provide safe, affordable, stable housing for Milwaukie residents of every socioeconomic status and physical ability. This element features goals and policies related to equity, affordability, sustainability, and livability. The Housing element includes the following relevant adopted policies:

- Allow and encourage the development of housing types that are affordable to low- or moderate-income households
- Incentivize, and where appropriate require, new housing development projects to include features that increase energy efficiency, improve building durability, use sustainably produced materials, manage stormwater naturally, and/or employ other environmentally sustainable practices
- Allow for a reduction in required off-street parking for new development within close proximity to light rail stations and frequent bus service corridors
- Implement land use and public investment decisions and standards that encourage creation of denser development in centers, neighborhood hubs, and along corridors
- Require that multi-unit housing units have access to an adequate amount of usable open space, either on site or adjacent to the site

The proposed mixed-use building will provide 195 multifamily units. As per the development agreement between the City and the applicant, a minimum of 10% of the units will be restricted to households earning no more than 80% of the area median income or less for a period of no less than 30 years. In order to qualify for one of the stories proposed above the base maximum height of three stories, the applicant has proposed to ensure that the building is LEED certified as a green building. The subject property is less than 500 ft from the downtown Milwaukie light rail station, and the proposed development is eligible for a 25% reduction in parking as allowed by MMC Subsection 19.605.3.B as discussed in Finding 11-b-3. The proposal is the result of an initiative by the City to facilitate the development of dense housing and commercial activity in the downtown core. As discussed in Finding 9-g, the proposed design provides more than the minimum required amount of usable open space with a combination of private patios, shared amenity rooms, and common rooftop terrace. Building residents also have access to the adjacent Dogwood Park.

The Urban Design and Land Use element is intended to promote the design of private development and public spaces and facilities to enhance community livability, environmental sustainability, social interaction, and multimodal connectivity. This element features goals and policies related to design, livability, and process. The Urban Design and Land Use element includes the following relevant adopted policies:

- Allow for a variety of dense urban uses in multistory buildings that can accommodate a mix of commercial, retail, office, and higher density residential uses
- Provide a high-quality pedestrian environment that supports safe, convenient access to the area's multiple transportation modes
- Encourage development that takes advantage of proximity to and views of the Willamette River and the Willamette Greenway
- Ensure that buildings are designed with storefront windows and doors, weather protection, and details that contribute to an active, pedestrian-oriented streetscape
- Support uses that contribute to the vibrancy of the downtown area, including special events and outdoor uses such as farmers markets and festivals
- Allow for vertical landscaping or green roofs to substitute for ground landscaping in situations where sites are constrained
- Use a two-track development review process to ensure that new nonresidential development projects are well designed, providing a clear and objective set of standards as well as an optional discretionary track that allows for greater design flexibility

The proposed development is a six-story mixed-use building with 195 multifamily units and approximately 7,000 sq ft of commercial (restaurant and retail) space, all of which will boost the effort to revitalize downtown Milwaukie. The site design includes a public access pedestrian walkway connecting Main Street to McLoughlin Boulevard (via the Adams Street right-of-way), which links the south downtown to Milwaukie Bay Park and the Trolley Trail. The stepped-back configuration of the upper floors provides views of the Willamette River and Kellogg Creek to multiple units within the new building. The primary retail-focused façade on Main Street presents storefront windows, canopies, and articulated design details that build on the urban, pedestrian-focused streetscape furthered by the recent construction of the Axletree building across the street. The building cutout at the Main/Adams corner, which houses the entrance to a future restaurant, connects the building to the public plaza adjacent to Dogwood Park and will feed into the various special events and farmers market activity occurring in the "festival street" aspect of that part of Main Street. Vertical-landscaped metal screens obscuring the parking structure façade along the Washington Street and McLoughlin Boulevard

frontages provide additional greenery where there is little room for conventional landscaping. The Type III discretionary track for downtown design review allows an opportunity to present a design that is consistent with the purpose and intent of the City's downtown design standards and guidelines, even if it does not exactly meet every single standard.

The Parks and Recreation element is intended to provide for the recreational needs of city residents and includes an adopted policy to ensure that bicycle trails, sidewalks, and walking trails provide convenient access to parks and natural areas.

The proposed development includes improved connections to two public parks. The public access pedestrian walkway proposed along the southwestern side of the building, linking Main Street to McLoughlin Boulevard through the site (via the Adams Street right-of-way) will bring pedestrians to a public sidewalk where they can safely cross McLoughlin Boulevard and access Milwaukie Bay Park and the Trolley Trail. At the Main/Adams corner of the new building, the proposed plaza in the Adams Street right-of-way opens directly into the northern portion of Dogwood Park.

The Economic Development element is intended to support a vibrant, inclusive, and environmentally sustainable local economy and includes an adopted policy to facilitate the development of housing that meets the needs of local employees across a wide range of price ranges and housing types.

The proposed development is the result of the City's effort to facilitate the development of new housing units and new commercial spaces in the downtown core. The proposed six-story mixed-use building will provide 195 multifamily residential units, at least 10% of which will be income-restricted to households at 80% or less of the area median income. The new commercial spaces (approximately 7,000 sq ft in total) offer new locations for business activity that will enliven a gateway location of the downtown.

(11) The request is consistent with applicable plans and programs of the Division of State Lands

The proposed activity is not inconsistent with any known plans or programs of the Department of State Lands (DSL). The proposed development does not include excavation or fill below the ordinary high-water mark or within waters of the State. No permits from DSL or the Army Corps of Engineers are required.

(12) A vegetation buffer plan meeting the conditions of MMC Subsections 19.401.8.A through C

The subject property is not directly adjacent to the Willamette River and does not include a vegetation buffer area as described in MMC 19.401.8.A.

The Planning Commission finds that the proposed activity meets all relevant approval criteria provided in MMC 19.401.6.

c. MMC Subsection 19.401.8 Vegetation Buffer Requirements

MMC 19.401.8 establishes requirements for a buffer strip of native vegetation along the river, between the river and a location 25 ft upland from the ordinary high-water line. The vegetation buffer is to be preserved, enhanced, or reestablished, except for development otherwise allowed by the zoning code.

The subject property is adjacent to Kellogg Creek but is not adjacent to the Willamette River.

The Planning Commission finds that this standard is not applicable.

The Planning Commission finds that the proposed development meets all applicable standards of the Willamette Greenway zone.

8. 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.

The subject property is adjacent to Kellogg Creek along its southwestern boundary. A dam just west of the site makes the creek more of a small lake at this location. The City's NR Administrative Map shows both WQR and HCA designations on the subject property.

As presented in the applicant's natural resource report, the proposed development includes approximately 27,310 sq ft (0.63 acres) of WQR disturbance (approximately 16,900 sq ft permanent and 10,400 temporary) and approximately 2,590 sq ft (0.06 acres) of HCA disturbance (2,310 sq ft permanent and 280 sq ft temporary), for a total disturbance of approximately 29,900 sq ft (0.69 acres). At that scale, the proposed activity is not listed as exempt according to the standards outlined in MMC 19.402.4.

The Planning Commission finds that the requirements of MMC 19.402 are applicable to the proposed activity.

b. 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.

The scale of disturbance proposed within the identified WQR area on the subject property exceeds the levels allowed by Type I and II review, as provided in MMC 19.402.6 and 402.7,

respectively. As such, the activity is subject to Type III review and the discretionary process established in MMC 19.402.12.

The Planning Commission finds that the proposed activity is subject to Type III review.

c. 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 that provides the information required by MMC 19.402.9. The plan shows a different WQR boundary than is shown on the mitigation plan and other figures related to natural resources. A condition has been established to require that the construction management plan be revised to be consistent with other plan sheets in showing the WQR boundary.

As conditioned, the Planning Commission finds that the construction management plan provides sufficient information for natural resource protection.

d. 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 and general standards for required mitigation (e.g., plant species, size, spacing, and diversity). MMC Subsection 19.402.11.B.6 requires all mitigation vegetation to be planted on the applicant's site within the designated natural resource area being disturbed, or in a contiguous area. For any allowed WQR disturbance, off-site mitigation is not allowed; for HCA disturbance, off-site mitigation is allowed within an area contiguous to the HCA if documentation is provided showing the applicant has sufficient authority to conduct and maintain the vegetation.

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, including sediments, temperature, and nutrients; for Class B "Marginal" and Class C "Poor" WQR conditions, the table requires restoration and mitigation with native species using a City-approved plan.

Based on existing conditions, the applicant's natural resource report categorized the WQR in the northern portion of the project area (along the east bank of the creek adjacent to the subject property itself) was Class B ("Marginal"), while the WQR in the southern portion of the project area (on the east bank adjacent to the Adams Street ROW and Dogwood Park) was categorized as Class A ("Good"). As mitigation for WQR and HCA disturbance (both

permanent and temporary), the applicant has proposed plantings (native trees, shrubs, and ground cover) in four areas totaling approximately 23,740 sq ft along the east bank. Some of the mitigation area is located within a narrow strip along the base of the new retaining wall on the subject property, but most of the mitigation will occur beyond the subject property boundary within the adjacent Adams Street right-of-way and Dogwood Park. A variance for off-site mitigation has been requested and is discussed in Finding 15.

As proposed, the mitigation plantings will meet the minimum requirements for size, species, spacing, etc., as established in MMC Subsection 19.402.11.B. The applicant also proposes to remove non-native invasive plants and has provided a stormwater management plan that will meet City requirements for runoff rates and water quality.

ESA, the City's consultant for on-call natural resource services, evaluated the applicant's natural resources site assessment and concluded that the condition of the northern portion of the WQR was more accurately categorized as Class C ("Poor") because it contains less than 25% tree canopy. ESA also concluded that the proposed mitigation plantings are appropriate and adequate for the planting locations, including with regard to number, species, size, diversity, and spacing. According to ESA's review, the proposed mitigation will improve some of the functions and values of the WQR and will at least not diminish others.

As proposed, and as discussed in Finding 15 regarding the variance to allow off-site mitigation, the Planning Commission finds that the applicable development standards of MMC 19.402.11 are met.

e. 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 report prepared by Pacific Habitat Services (PHS). PHS is an environmental consulting firm based in the Portland metro area (Wilsonville) with many years of experience in providing environmental and

natural resource analyses. The natural resource report includes an assessment of ecological functions, inventory of vegetation, and impact evaluation consistent with the required components listed above. The report also provides a mitigation plan for permanent and temporary impacts to the WQR and HCA.

The natural resource report explains that there are no viable alternatives to the proposed development. It considers an alternative building footprint that avoids all WQR and HCA disturbance and notes that the reduction in building size would result in a project that is economically less viable than other comparable developments downtown. The applicant's narrative concludes that the proposed development is the most practicable alternative that results in the least impact to the natural resources on the site.

The Planning Commission finds that the applicant's materials are sufficient for purposes of reviewing the proposed activity against the approval criteria of MMC Subsection 19.402.12.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 subject property is adjacent to Kellogg Creek along its southwestern boundary, which results in WQR and HCA designations extending at least 50 ft into the site from the top of bank. Given that the subject property is within the downtown core where dense development is expected and allowed, the loss of site area where development is restricted significantly impacts project viability. As discussed above in Finding 8-e-1, there is no real feasible alternative to impacting as much of the WQR and HCA on the site as is proposed.

- 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.

  As noted above, the proposed development represents the minimum level of impact to the WQR and HCA resources on the site. As discussed below, the proposed mitigation will minimize impacts by enhancing the riparian corridor in an area contiguous to the subject property.

- 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.

The applicant's submittal includes a mitigation plan for the proposed WQR and HCA disturbance. Native trees, shrubs, and ground cover will be planted within four distinct areas within the riparian corridor, improving the stream bank and enhancing the connectivity of habitat along a significant length of the creek. A total of approximately 29,900 sq ft of WQR and HCA area will be permanently or temporarily disturbed, with mitigation plantings installed in an area totaling approximately 23,740 sq ft.

ESA's review of the applicant's natural resource report concluded that the proposed mitigation plantings are appropriate and adequate for the planting locations, including with regard to number, species, size, diversity, and spacing. According to ESA's review, the proposed mitigation will maintain some of the ecological functions of the WQR and will improve others by increasing native plant coverage, tree and shrub numbers, and structural and species diversity.

As proposed, 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 the proposed development meets the applicable discretionary review standards of MMC 19.402.12.

f. MMC Subsection 19.402.15 Boundary Verification and Map Administration

MMC 19.402.15 establishes standards for verifying WQR and HCA boundaries and for administering the City's Natural Resource (NR) Administrative Map.

WQR locations 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 Administrative 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 natural resource report prepared by Pacific Habitat Services includes a detailed topographic map showing the boundaries of the WQR using the provisions of MMC Table 19.402.15. In addition, the submittal materials include a field verification of the HCA on the site and sufficient information and analysis to satisfy the requirements of the detailed HCA boundary verification process outlined in MMC 19.402.15.A.2.b.

The Planning Commission finds that the City's NR Administrative Map will be adjusted to reflect the accurate location of the WQR on the site, based on the detailed information

provided by the applicant with respect to the ordinary high-water line and adjacent slopes along Kellogg Creek. The HCA boundary will be adjusted on the NR Administrative Map to reflect the applicant's detailed verification, accounting for areas of approved permanent HCA disturbance resulting from the proposed development.

The Planning Commission finds that, as conditioned, the proposed development, including disturbance of the designated natural resource areas on the subject property, meets all applicable standards of MMC 19.402.

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 mixed-use building. The findings for each of the applicable design elements are provided in Table 9, below.

Table 9
Building Design Standards

A. BUILDING FAÇADE DETAILS

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

Standard	Findings
The following standards apply to nonresidential and mixed-use buildings: ***Vertical Building Façade*** ***Nonresidential and mixed-use buildings two stories and above shall provide a defined base, middle, and top.*** ***a. Base*** ***The base extends from the sidewalk to the bottom of the second story or the belt course/string course that separates the ground floor from the middle of the building. The building base shall be defined by providing all of these elements:*** ***1) The street-facing ground floor shall be divided into distinct architectural bays that are no more than 30 ft on center. For the purpose of this standard, an architectural bay is defined as the zone between the outside edges of an engaged column, pilaster, post, or vertical wall area.***	The proposed development is a six-story mixed-use building with restaurant and commercial space on the ground floor and 195 multifamily units above. The building has four primary façades: the east façade faces Main Street, the south façade faces the Adams Street right-of-way, the southwest and west façades face McLoughlin Boulevard, and the north façade faces Washington Street. Due to changes in grade (generally dropping from east to west), the ground level of the east façade is higher than that of the west elevation by approximately one story. Step backs at various levels of the building utilize the grade changes to minimize the building mass. **Vertical Building Façade—Base:** 1) The applicant's submittal materials indicate that only the Main Street (east) ground-floor façade provides distinct architectural bays that are no more than 30 ft on center. However, it appears that all four ground-floor façades are in fact divided into architectural bays that meet this standard.

A. BUILDING FAÇADE DETAILS

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

Standard	Findings
2) The building base shall be constructed of brick, stone, or concrete to create a "heavier" visual appearance.	2) The ground-floor corners of Main Street/Washington Street and Main Street/Adams Street are constructed of or clad in brick. Where the basement level is visible above ground (along the north, west, and south façades), its concrete construction is visible. The other short façade length of the ground floor (east façade, between the brick-clad columns) is clad in wood with aluminum storefront windows. This standard is not met. Address of purpose statement (for Building Façade Details) and applicable design guidelines: Approximately 85 ft of the nearly 205-ft east façade (Main Street) is clad in wood with aluminum storefront, sandwiched between the two brick corners. On the north (Adams Street) and south (Washington Street) façades, brick cladding is used at the Main Street corners and wood cladding extends to and around the west (McLoughlin Boulevard) elevation. That variety is in the spirit of the Architecture guideline for Wall Materials, which, while encouraging the use of materials that create a sense of permanence, also promotes the use of varied but compatible cladding materials. Because the façades on Main Street, Washington Street, and Adams Street include both commercial and residential uses, the use of brick to delineate one use (commercial) and wood another (residential entry to the building) creates interest and differentiates the two uses. The proposed design is consistent with the purpose of this design element and the applicable design guidelines.
3) Weather protection that complies with the standards of Subsection 19.508.4.C. ***4) Windows that comply with the standards of Subsection 19.508.4.E.***	3 & 4) As proposed, the base does not comply with the applicable design standards for Weather Protection or Windows and Doors standards. Consistency with the respective purpose statements and relevant design guidelines is addressed below for each of those design elements.

A. BUILDING FAÇADE DETAILS

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

Standard	Findings
b. Middle ***The middle of a building extends from the top of the building base to the ceiling of the highest building story. The middle is distinguished from the top and base of the building by use of building elements. The middle of the building shall be defined by providing all of the following elements:*** ***1) Windows that comply with the standards of Subsection 19.508.4.E.*** ***2) One of the following elements:*** ***a. A change in exterior cladding, and detailing and material color between the ground floor and upper floors. Differences in color must be clearly visible.*** ***b. Street-facing balconies or decks at least 2 ft deep and 4 ft wide for at least 25% of the length of the building.***	**Vertical Building Façade—Middle:** 1) All four façades meet the applicable standards for Windows above the base of the building—see the relevant discussion in the Windows section below. 2) For most of the total façade area on all sides, there is a change in exterior cladding and material color between the ground floor (mostly wood cladding with aluminum storefront) and the upper floors (metal cladding). However, at the corners of Main /Washington and Main /Adams, the brick cladding extends from the ground floor to upper floors. This standard is not met. Address of purpose statement (for Building Façade Details) and applicable design guidelines: The corners at Main /Washington and Main /Adams are brick between the ground floor and four of five upper floors. However, the taller ground-floor height and the storefront window pattern, along with the material change at the top floor (from brick to metal cladding), do provide distinctions between base, middle, and top. The design ties into the brick material palette of other existing historic downtown buildings and presents subtle demarcations of the tripartite structure, in accordance with the Milwaukie Character guidelines for Considering Context and Promoting Architectural Compatibility. It is also consistent with the Architecture guideline for Wall Materials, which promotes the use of varied but compatible cladding materials. The proposed design is consistent with the purpose of this design element and the applicable design guidelines.

A. BUILDING FAÇADE DETAILS

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

Standard	Findings
3) A change in wall plane of not less than 24 in deep and 24 in wide. Breaks may include, but are not limited to, an offset, recess, window reveal, pilaster, pediment, coursing, column, marquee, or similar architectural feature. ***4) Provide a step back of at least 6 ft for any street-facing portion of the building above the base maximum height as identified in Figure 19.304-4.***	3) Each of the four façades provides at least one change in wall plane that is at least 24 in deep. This standard is met. 4) Although the building does provide several step-back elements, it does not step back for all street-facing portions of the building above the base maximum height of five stories (three stories plus two bonus stories for residential uses and green building certification). This standard is not met. Address of purpose statement (for Building Façade Details) and applicable design guidelines: The applicant has requested a variance to add another one to two stories of building height to the base maximum height of five stories. Although the building steps back significantly along different lengths of the street-facing façades, it rises to the full proposed height along the east (Main Street) elevation to emphasize the primary corners at Main/Washington and Main/Adams. As the building generally steps down in height from east to west as it gets closer to Kellogg Creek and the Willamette River, it is consistent with the Milwaukie Character guidelines to Integrate the Environment and Consider View Opportunities. The Architectural guideline for Silhouette and Roofline, which pushes for the creation of interest and detail, is served by this staggered step-down height effect that begins with the full height along the Main Street façade. The proposed design is consistent with the purpose of this design element and the applicable design guidelines.
c. Top ***The top of the building extends from the ceiling of the uppermost floor to the highest vertical point on the roof of the building, and it is the roof form/element at the uppermost portion of the façade that visually terminates the façade. The top of the building shall provide roofs that comply with the standards of Subsection 19.508.4.F.***	**Vertical Building Façade—Top:** The roof does not comply with all of the applicable standards. Consistency with the purpose statement for Roofs and Rooftop Equipment and relevant design guidelines is addressed below for that design element.

A. BUILDING FAÇADE DETAILS

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

Standard	Findings
Horizontal Building Façade ***a. Horizontal datum lines—such as belt lines, cornices, or upper-floor windows—shall line up with adjacent façades if applicable.*** ***b. Significant breaks shall be created along building façades at least every 150 linear ft by either setting the façade back at least 20 ft or breaking the building into separate structures. Breaks shall be at least 15 ft wide and shall be continuous along the full height of the building. The area or areas created by this break shall meet the standards of Subsection 19.304.5.H.***	**Horizontal Building Facade** a) The proposed development will occupy the entire block, so there are no adjacent façades with which to line up horizontal datum lines. This standard is not applicable. b) The west, north, and east façades are all longer than 150 ft but do not include significant breaks. This standard is not met. Address of purpose statement (for Building Façade Details) and applicable design guidelines: The west façade (McLoughlin Boulevard) utilizes angled wall lines that present an eroded façade with up to 6 ft of setback at the deepest. The north façade (Washington Street) is broken up by the main entry to the parking structure, as well as by the gradual exposure of the concrete foundation (with the grade dropping from east to west). The east façade (Main Street) includes the brick-clad corners and many small articulations that pull that face of the building one to two feet back from the property line. These details all further the intent of the Architectural guideline for Wall Structure to break up the longitudinal dimensions of the proposed building, provide a human scale to the space of the street, and create visual interest. The proposed design is consistent with the purpose of this design element and the applicable design guidelines.

B. CORNERS

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

Standard	Findings
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): ***a. The primary entry to the building located within 5 ft of the corner.*** ***b. 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.*** ***c. The corner of the building cut at a 45° angle or a similar dimension "rounded" corner.*** ***d. A combination of special paving materials; street furnishings; and, where appropriate, plantings, in addition to the front door.***	The proposed building has three corners on public streets—Main/Washington, Main/Adams, and Washington/McLoughlin. **Main/Washington** The brick-clad façade at the corner extends up five stories and provides a projecting cornice that extends around the corner, separating the brick cladding from the metal cladding of the sixth story. At the ground level, a canopy also wraps around the corner to provide visual interest from the sidewalk. However, the grade change on Washington Street makes it impractical to provide a main building entry within 5 ft of the corner, and no cut or rounded dimension is proposed. A stormwater planting strip is proposed in the public right-of-way near the corner, but it is not in addition to special paving materials or street furnishings. This standard is not met. Address of purpose statement (for Corners) and applicable design guidelines: The use of brick cladding between the ground floor and the fifth story visually emphasizes the corner of the building and presents a strong architectural statement. In relation to the new Axletree building across Main Street to the east, which also presents a modern, multi-story design with a prominent visual corner at Main/Washington, the proposed design is consistent with the Milwaukie Character guidelines for Considering Context, Promoting Architectural Compatibility, and Using Architectural Contrast Wisely. Together, the two buildings provide a strong corner presence, with distinct but compatible design details. The proposed design is consistent with the purpose of this design element and the applicable design guidelines.

B. CORNERS

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

Standard	Findings
	Main/Adams As with the opposing corner at Main/Washington, the brick-clad façade at Main/Adams extends up five stories and provides a projecting cornice between the fifth and sixth stories, with canopies on both sides at the ground level. At the ground level, the corner is notched out at 90 degrees, providing a weather-protected space that serves to draw people into the building. Although not technically a 45-degree angle or rounded, the 90-degree notch serves a similar purpose to provide a visual connection between Main Street and the adjacent Dogwood Park. Special paving connects the corner to the adjacent landscaped pedestrian walkway leading from Adamas Street to McLoughlin Boulevard. This standard is met. **Washington/McLoughlin** The corner at Washington/McLoughlin is part of the residential majority of the building and has a different character than the two commercial corners. The corner is cut at a 45-degree angle to match the curve of the public right-of-way at the street, and a small entry to the main bike storage facility is located along the cut, though not within 5 ft of the true corner itself. A rooftop terrace at the corner provides additional visual interest. This standard is met.

C. WEATHER PROTECTION

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

Standard	Findings
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.*** ***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.*** ***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.*** ***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.***	**Minimum Weather Protection Coverage** 1) With two exceptions, all ground-floor building entries are weather protected with canopies. The entry to the residential lobby (on Main Street) is recessed approximately 5 ft behind the building façade. The entry to the bike storage area at the corner of Washington/McLoughlin does not have any weather protection. This standard is not met. In this case, there is no reasonable design rationale for not providing weather protection for the entry to the bike storage area, which will serve as a primary access for a significant number of residents. A condition has been established to ensure that some form of weather protection will be provided for the bike storage entry. As conditioned, this standard is met. 2) Along the Main Street and Adams Street façades, at least 50% of the ground-floor elevation abutting a sidewalk, civic space, or pedestrian walkway is covered with permanent weather protection. Along the sidewalk-abutting façades of Washington Street and McLoughlin Boulevard, well under 50% of the ground floor elevation has weather protection. This standard is not met. Address of purpose statement (for Weather Protection) and applicable design guidelines: The design's failure to meet the 50% protection standard is due in large part to the grade change that exposes the basement level of the building and elevates what is the ground floor at Main Street to a second-floor height at McLoughlin Boulevard. Unlike the commercial storefronts in the new building, those portions of the Washington Street and McLoughlin Boulevard façades adjacent to the basement level are not Places where Pedestrians are encouraged to Stop and View, as is encouraged by the Pedestrian Emphasis guideline of that same name. West of the Main/Washington corner of the building on Washington Street, the grade is not conducive to pedestrian lingering, and McLoughlin Boulevard and the Washington/McLoughlin intersection are too busy with vehicle traffic to provide a pedestrian-friendly

C. WEATHER PROTECTION

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

Standard	Findings
	environment. Except for over the entry to the bike storage area (as noted above), weather protection is not a priority along these portions of the Washington Street and McLoughlin Boulevard façades. The proposed design is consistent with the purpose of this design element and the applicable design guidelines. 3) As proposed, all canopies extend between 4 ft and 6 ft from the building façade. No canopies project more than 4 ft into the public right-of-way. This standard is met. 4) Due to the change in grade, there are technically no ground-floor dwellings. The commercial storefronts and residential lobby, whose entries are either covered by canopies or recessed, are at grade along the Main Street façade, while residential units at that same level are well above the ground-floor level because the grade drops moving from east to west (Main Street to McLoughlin Boulevard). This standard is not applicable.
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.***	**Weather Protection Design** The proposed canopies are flat, rigid structures that would extend perpendicular from the building façade at a minimum height of 10 ft. As proposed, the canopies are visually compatible with the building architecture. No signage is proposed at this time, but the 10-ft canopy height allows sufficient vertical clearance for any future proposed signage. This standard is met.

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 Milwaukie and the surrounding built and natural environment.***

Standard	Findings
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.***	According to the applicant's materials, the east façade (Main Street) is 73% primary materials (brick, wood), 23% secondary materials (metal panels), and 4% accent materials. The north façade (Washington Street) is 64% primary (two colors of brick, wood), 32% secondary (metal panels), and 4% accent materials. The south façade (Adams Street) is 66% primary (brick), 32% secondary (metal panels), and 7% accent materials. And the west façade (McLoughlin Boulevard) is 12% primary (wood), 88% secondary, and 1% accent materials. (Note: Accent materials for all façades consist of screening for Packaged Terminal Heat Pump (PTHP) units, ornamental metal screens over canopies, and the projecting cornice with flashing cap.) No prohibited materials are proposed. Address of purpose statement (for Exterior Building Materials) and applicable guidelines: The proposed materials that make up the bulk of the design (brick, wood, and metal panels) are compatible with other buildings downtown, particularly newer structures such as North Main Village and the Axletree apartments. The materials also complement the adjacent natural resources along Kellogg Creek/Lake. As a building that occupies an entire city block and has long façades on all sides, the design addresses the Milwaukie Character guidelines related to Considering Context, Promoting Architectural Compatibility and Using Architectural Contrast Wisely, which all relate to how a building fits into its surroundings, by providing a varied but compatible scheme of distinct "looks" along its multiple façades. Along at least three of its four sides, the building uses changes in color and materials to create an impression of two or three different attached buildings, but ones with a similar visual language. The Architecture design guideline pertaining to Wall Materials emphasizes the use of materials that create a sense of permanence, and the predominant materials (brick, wood, metal) do that. As proposed, the design is consistent with the purpose of this design element and the applicable design guidelines.

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
Main Street ***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.***	At the ground-floor level, the east elevation (facing Main Street) is approximately 43% windows, glazed doors, and/or other openings such as the overhead coiling door to the trash enclosure (approximately 1,325 sq ft of openings over 3,080 sq ft of wall area). This standard is not met.
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.*** ***b. Along McLoughlin Blvd the required coverage is 30%.***	The ground-floor level of the north elevation (Washington Street) is approximately 37% windows, glazed doors, and garage door opening (approximately 950 sq ft of openings over 2,750 sq ft of wall area). This standard is not met. The ground-floor level of the south elevation (Adams Street) is approximately 37% windows and glazed doors (approximately 530 sq ft of openings over 1,450 sq ft of wall area). This standard is not met. The ground-floor level of the west and southwest elevations (McLoughlin Boulevard) is approximately 39% windows and glazed doors (approximately 1,330 sq ft of openings over 3,400 sq ft of openings). This standard is met.

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
	Address of purpose statement (for Windows and Doors) and applicable guidelines: For the east elevation (Main Street), the design of the architectural bays separating the various storefronts, as well as the placement of some utility infrastructure (trash, electrical) along this façade, make it difficult to provide the prescribed 50% of openings. For the north elevation (Washington Street), the exposure of the basement parking garage (due to the grade change) and the need for some solid wall area in the residential units present challenges to meeting the standard. For the south elevation (Adams Street), the taller ground-floor height and the use of wider brick columns to help define the Main/Adams corner make it more challenging to meet the standard. Even if the prescribed glazing percentages are not exactly met, the design reflects the principles of the Architecture guideline for Corner Doors by presenting prominent entrances to the ground-floor retail and restaurant spaces at the corners of Main/Washington and Main/Adams. It also provides ample viewing opportunities into the ground-floor spaces (retail, restaurant, and apartment lobby), which invites engagement with those spaces as per the intent of the Retail and Commercial Doors aspect of the Architecture guidelines. As proposed, the design is consistent with the purpose of this design element and the applicable design guidelines.

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
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.***	The upper-floor level of the east elevation (Main Street) is approximately 31% glazing (approximately 3,860 sq ft of glazing for 12,365 sq ft of wall area). This standard is met. The upper-floor level of the north elevation (Washington Street) is approximately 31% glazing (approximately 3,080 sq ft of glazing for 9,930 sq ft of wall area). This standard is met. The upper-floor level of the south elevation (Adams Street) is approximately 30% glazing (approximately 1,725 sq ft of glazing for 5,745 sq ft of wall area). This standard is met. The upper-floor level of the west and southwest elevations (McLoughlin Boulevard) is approximately 31% glazing (approximately 3,655 sq ft of glazing for 11,800 sq ft of openings). This standard is met. On all four elevations, more than 60% of the upper-floor windows are vertically oriented. This standard is met.

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
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.*** ***b. All buildings with nonresidential ground-floor windows must 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.*** ***d. The bottom edge of windows along pedestrian ways shall be constructed no more than 30 in above the abutting walkway surface.*** ***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.*** ***f. Signs are limited to a maximum coverage of 20% of the required window area.***	The windows set within brick will be recessed at least 4 in. The windows set within wood cladding are not recessed but are aluminum framed and so offer a contrasting material. The windows set within the metal cladding are also not recessed and are a mixture of aluminum framed and vinyl, so some of those windows present a somewhat contrasting material (vinyl) while others are metal framed in metal and so do not meet this standard. Address of purpose statement (for Windows and Doors) and applicable guidelines: Despite not providing a recess or material contrast, the configuration and pattern arrangement of the metal-on-metal windows (which are upper-level windows) do add interest to each façade and allow for significant daylighting of interior space. The effect of remaining simple in appearance causes the metal cladding to recede and allows the brick façades to stand out more. This approach is consistent with the intent of the Architecture guideline related to Wall Materials, which aims to create a sense of permanence—this is achieved through the metal-on-metal windows receding and allowing the more permanent-appearing brick façades to stand forward. As proposed, the design is consistent with the purpose of this design element and the applicable design guidelines. As proposed, the nonresidential windows will 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. Primary entrances to the retail and restaurant spaces are located on the Main Street and Washington Street façades. The bottom edge of windows along the pedestrian walkways in front of the commercial storefronts (along the Adams Street, Main Street, and Washington Street façades) are less than 30 in above the average grade.

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
	As proposed, the ground-floor windows in the nonresidential portions of the building will allow views into storefronts, working areas, and/or lobbies. Signage is not part of the proposed development and will be reviewed as applied for in the future. As proposed and as conditioned where necessary, the applicable standards are met. Where the standards are not met, the design is consistent with the purpose of this design element and the applicable design guidelines.
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.***	No prohibited window elements are proposed. This standard is met.

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
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.***	The building has multiple roof levels, and all roofs are flat and have either a parapet or a projecting cornice. This standard is met.
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. ***c. All hip or gabled roofs exposed to view from adjacent public or private streets and properties shall have a minimum 4/12 pitch.*** ***d. Sloped roofs shall have eaves, exclusive of rain gutters, that project from the building wall at least 12 in.***	Although the cornices project 3.5 ft, some of the proposed parapets are less than 12 in high. This standard is not met. Address of purpose statement (for Roofs and Rooftop Equipment) and applicable guidelines: Despite not meeting the prescribed standards, the parapets do create a visually interesting condition at the top of each façade of the building. The building massing steps down toward the adjacent natural resources (i.e., as it nears Kellogg Lake/Creek and the Willamette River). This creates a complex roofline that includes some parapets that are set at only 6 in above the roof to maintain the horizontal datum line of the adjacent window sills. The design is consistent with the Integrate the Environment and Consider View Opportunities aspects of the Milwaukie Character guideline, as the roof steps down in acknowledgement of the nearby river and lake/creek and maintains views for various levels of the building. Likewise, the varied roofline and parapet heights create an interesting profile that is consistent with the aim of the Silhouette and Roofline aspect of the Architecture guideline. As proposed, the design is consistent with the purpose of this design element and the applicable design guidelines. The standards for sloped roofs are not applicable to this flat-roof design.

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
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.*** ***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.***	The proposed design includes rooftop solar panels, which do not require screening. This standard is met. The proposed elevator overrun extends only 10 ft above the top of the roof. This standard is met. All other roof-mounted mechanical equipment is no more than 10 ft high, is set back at least 10 ft from the roof edge, and is surrounded by rooftop solar panels. The solar panels provide adequate screening of the mechanical equipment. The applicable standards are met.
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.***	The design includes a 10-ft-tall trellis over one of the roof decks. This standard is met.

G. OPEN SPACE

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

Standard	Findings
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.***	The proposed mixed-use building provides 195 units, requiring a minimum total of 9,750 sq ft of private or common open space. Since the site is adjacent to Dogwood Park, a 50% reduction in open space is allowed, resulting in a total of 4,875 sq ft of open space being required. The design provides a total of just over 8,650 sq ft of open space, comprised of unit patios/terraces, amenity rooms, and landscaped roof terrace (5th floor). This standard is met.
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.*** ***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.***	Open space intended for common use by tenants includes a courtyard area on the 2nd floor and a landscaped rooftop terrace on the 5th floor. These standards are met.

G. OPEN SPACE

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

Standard	Findings
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.*** ***2) The private open space provided shall be 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.*** ***4) Balconies may project up to a maximum of 4 ft into the public right-of-way.***	Private open spaces include unit patios or terraces that are contiguous with the relevant units. No balconies are used for common entrances or exits, and no balconies project more than 4 ft into the public right-of-way. The applicable standards are met.
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.***	As noted above, the subject property is adjacent to Dogwood Park (across the Adams Street right-of-way), which is a public park with modest improvements. The proposed development is entitled to an open space credit of 50%, which reduces the minimum required open space from 9,750 sq ft to 4,875 sq ft. This standard is met.

The Planning Commission finds that, as proposed and as conditioned where necessary, the design meets the applicable standards; or, where a particular standard is not met, the design is consistent with the purpose of that design element and the applicable design guidelines.

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 a request for height bonuses to add two stories of building height, one of which is based on the new building qualifying for a LEED 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 is a six-story mixed-use building with 195 multifamily residential units and approximately 7,000 sq ft of commercial space.

       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 three 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. As per MMC Subsection 19.304.5.G.3, all nonresidential uses in the DMU are exempt from the off-street parking requirements.

The proposed development would establish 195 multifamily residential units. A minimum of 195 off-street spaces are required; a maximum of 390 spaces are allowed. A total of 81 parking spaces are proposed; exemptions and by-right reductions to the quantity requirements are discussed below in Finding 11-b-3.

(2) MMC Subsection 19.605.2 Quantity Modifications and Required Parking Determinations

MMC 19.605.2 establishes a process for modifying the minimum and maximum parking ratios listed in MMC Table 19.605.1.

(a) MMC Subsection 19.605.2.B Application

The application for a parking determination must include a description of the proposed uses of the site and identification of factors specific to the proposed use and/or site (e.g., proximity of transit, parking demand management programs, etc.) that affect parking demand. Additionally, the application must provide data and analysis to support the determination or modification request (i.e., parking demand information from professional literature, parking standards for similar uses in other jurisdictions, and parking quantity and use data from similar existing developments). The Planning Manager may waive any of the specific data analysis requirements if the information is not readily available or relevant, as long as sufficient documentation is provided to support the request.

The applicant has included a description of the site and addressed the factors specific to the site, including proximity to transit and a site-specific Transportation Demand Management (TDM) program. Given that the City has a downtown parking management strategy (adopted in September 2018), the Planning Manager has waived the requirement for new specific data analysis. The downtown parking management strategy itself is based on the collection and analysis of parking demand and usage data from Milwaukie to assess the actual-use dynamics and access characteristics of the on- and off-street parking systems in the downtown area. The strategy reflects the City's intention to actively manage parking with the expectation that continued growth will impact the existing parking supply downtown. The Planning Manager's waiver is also based on the TDM program included with the applicant's submittal materials, which outlines the principles designed to make the proposed parking arrangement work.

(b) MMC Subsection 19.605.2.C Approval Criteria

MMC Subsection 19.605.2.C.1 provides the baseline approval criteria for granting a parking modification, including a demonstration that the proposed parking quantities are reasonable based on the data and information that the Planning Manager has deemed relevant. In addition, MMC Subsection 19.605.2.C.2 requires that requests for modifications to decrease the amount of minimum required parking must demonstrate that (1) the use of transit, parking demand management programs, and/or special characteristics of the site users will reduce expected vehicle use and parking space demand for the proposed use or development, as compared with the standards in Table 19.605.1; (2) that the reduction of off-street parking will not adversely affect available on-street parking; and (3) that the requested reduction is the smallest reduction needed based on the specific circumstances of the use and/or site.

As noted above, the Planning Manager has determined that it is reasonable to ground an assessment of the proposed parking modification in consideration of the City's adopted downtown parking management strategy and the applicant's proposed TDM program. The subject property's location downtown, in close proximity to the Milwaukie light rail station and bus routes, with access to a public sidewalk network and bikeways like the Trolley Trail and Springwater Trail corridor, provides a number of alternatives to vehicle use and will help reduce the need for vehicle parking.

The applicant's TDM program outlines several principles for reducing parking demand for the new building, including active marketing that promotes the new development as one that encourages car-free living, with incentive options for residents who do not have a vehicle. The TDM document presents a menu of incentives that residents who do not have a designated parking space could choose from: an annual TriMet pass, car-share/ride-share services, reduced rent, or membership in a bike-share or scooter program. The TDM document provides several strategies for parking-management actions that can be utilized to make the proposed parking arrangement function efficiently, including a vehicle registry, usage monitoring, signage and communication materials, and market-rate pricing for tenant parking.

The building managers will implement the TDM program principles and work to ensure that the parking structure is used only by authorized vehicles and respond effectively to complaints about resident vehicles parking off site. The success of the City's parking management strategy will depend in part on a combination of consistent enforcement actions and targeted adjustments to parking regulations in response to the evolving parking situation downtown. Together, the TDM program and the City's downtown parking management strategy will ensure that the proposed reduction in parking for the new building will not adversely affect available on-street parking.

Based on the specific circumstances of the proposed use and the site and taken together with the implementation of the proposed TDM program and the City's downtown parking management strategy, the requested parking modification is effectively the smallest reduction needed for the proposed development to function as designed.

The Planning Commission finds that the proposed parking modification satisfies the applicable approval criteria.

As proposed, the Planning Commission finds that the minimum required off-street parking for the proposed use can be modified as proposed, to 81 spaces.

(3) 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%.

For the proposed 195 multifamily residential units, the applicant has proposed a by-right reduction to the minimum required parking quantity, in addition to a parking quantity modification to further reduce the number of required spaces. With the 25% reduction allowed for being in the DMU zone, the project qualifies for a reduction of 49 spaces. With the bike storage rooms distributed throughout the new building (both in the parking garage and on every floor), the project provides 237 bicycle parking spaces where 195 are required, resulting in 42 extra spaces and qualifying the project for an additional reduction of seven vehicle spaces.

In total, the proposed development is entitled to a by-right reduction of 56 spaces, bringing the adjusted minimum requirement down to 139 spaces.

As proposed, and as per the by-right reductions allowed and the approval of the proposed parking quantity modification to further reduce the minimum number of required parking spaces, 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. These standards are intended primarily for outdoor parking areas, though some of the standards are applicable to parking structures as well.

MMC Subsection 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 22-ft drive aisles. MMC Subsection 19.606.3 establishes various design standards, including requirements related to paving and striping, wheel stops, pedestrian access, internal circulation, and lighting.

The proposed development includes 81 structured parking spaces configured as 90°-angle spaces. Approximately half of those spaces are 9 ft wide and 18 ft deep; the other half are reduced-width stalls that are either 8.5 ft wide (six stalls) or 8.75 ft wide (34 stalls). All stalls are 18 ft deep, and the drive aisles are at least 24 ft wide. As discussed below in Finding 11-g, the dimensions of structured parking spaces may be reduced if the applicant can demonstrate they can still safely accommodate parking and maneuvering. Paving, striping, and wheel stops are provided throughout the parking garage.

As proposed, and as discussed below in Finding 11-g, the Planning Commission finds that the applicable 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, including for multifamily housing and commercial uses. Unless otherwise specified, the number of bicycle parking spaces is at least 10% of the minimum required vehicle parking for the use. For multifamily residential development with four or more units, MMC Subsection 19.609.2 requires a minimum of one 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 requires that each bicycle parking space 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 mixed-use building in the DMU zone, 195 bicycle spaces are required, one for each of the 195 multifamily residential units; no bicycle parking is required for the approximately 7,000 sq ft of commercial space, as no vehicle spaces are required for nonresidential uses in the DMU. At least 98 of the bike spaces must be covered or enclosed.

As proposed, a total of 237 bicycle parking spaces will be provided within the new building, distributed among bike storage rooms in the parking garage and on every floor. The bike parking will be provided through wall-mounted racks that are securely anchored to the wall and designed to allow the bike frame and one wheel to be locked. As proposed, the bike parking

space dimensions are 1.5 ft wide by just over 4 ft deep/long, vertically staggered by 8 in from one rack to the next. A condition has been established to ensure that the proposed racks are installed in such a way that the minimum dimensional standards are met.

The Planning Commission finds that the proposed bicycle parking exceeds the minimum number of required spaces, is all within the building and covered/enclosed, and, as conditioned, that the other 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 with 20 or more required parking spaces.

The proposed development is a mixed-use building in the DMU zone, with 195 multifamily residential units and approximately 7,000 sq ft of commercial space. In the DMU zone, no off-street parking is required for nonresidential uses. 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, all of the 81 proposed off-street parking spaces are located within the parking garage within the lowest level of the new building. As noted in Finding 11-c, approximately half of the parking stalls are less than 9 ft wide—34 stalls are 8.75 ft and six stalls are 8.5 ft wide. The applicant has requested an allowance of reduced dimensions for these 40 narrower parking stalls, noting that the City of Portland and City of Seattle require a minimum width of 8.5 ft.

As addressed elsewhere in these findings, the parking garage, 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 portion of the new building

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 parking garage is located within the lowest level (basement) of the new building and, due to grade changes, is at least partially visible on three sides (from Washington Street, McLoughlin Boulevard, and the Adams Street right-of-way). On each of these three sides, the parking structure has openings for at least 75% of each façade length, in between supporting columns. A vertically planted metal screen is proposed along each of the three above-grade sides of the parking garage.

There are no minimum building setbacks in the DMU zone. The primary entrance to the parking garage (the driveway at Washington Street) opens onto a public sidewalk. There is an entrance to the bike storage room from the sidewalk at the Washington/McLoughlin corner of the building. 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 parking garage is approximately 30,800 sq ft in area, which qualifies the proposed development for an additional 15,400 sq ft of floor area toward the FAR calculations, as discussed in Finding 6-c-1.

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

As proposed, and as conditioned where necessary, 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 mixed-use building with approximately 7,000 sq ft of commercial space and 195 multifamily residential units. 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 December 17, 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 use on the site (office building) 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. Lancaster Mobley, the applicant's traffic consultant, prepared the TIS that was included with the applicant's larger submittal for the proposed mixed-use building.

The TIS concluded that the proposed development would not prevent the various nearby intersections studied from continuing to operate at an acceptable level of service through the 2022 AM and PM peak hours. The new single access point at a new driveway on Washington Street would not meet the 300-ft spacing requirement for collector streets, so an access spacing modification would be required as discussed in Finding 4. Due to the proximity of the new Washington Street accessway to both McLoughlin Boulevard and Main Street, the TIS evaluated several possible turning-movement restrictions and found that none of the options would significantly impact nearby intersection operations. And the TIS analyzed queuing at

the driveway and concluded that queues entering the parking structure during the AM and PM peak hours will rarely exceed one car and so should present only infrequent traffic delays.

DKS's assessment recommended that turning movements from the Washington Street driveway be limited to right-in, right-out, and left-in only turns. DKS also recommended that minimum AASHTO (American Association of State Highway and Transportation Officials) for sight distance be met at the accessway and that safety mirrors be installed so exiting drivers can see approaching pedestrian traffic around the garage threshold. A condition has been established to ensure that DKS's recommendations are incorporated into the decision.

As submitted, and with a condition established to ensure that sufficient mitigation measures are in place, the applicant's TIS 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 applicant's TIS concluded that the proposed development would result in an increase in AM peak hour trips (from 9 to 58), PM peak hour trips (from 9 to 86), and daily weekday trips (from 76 to 1,046). This significant increase in transportation impacts warrants the requirement to build frontage improvements on Main Street and Washington Street as discussed in Finding 12-f. The clear vision and safety improvements and turning-movement restrictions for the Washington Street driveway, noted in Finding 12-c, are requirements that allow the proposed development to function safely and avoid triggering the more extensive intersection improvements that might otherwise be required. The requirement to provide a public access easement for the future pedestrian/bicycle pathway along Kellogg Creek, noted in Finding 12-f-5, is in proportion to the addition of 195 residential units on the site, with limited on-site parking and a Transportation Demand Management program intended to reduce vehicle usage in favor of alternative modes.

Per the applicant's development agreement with the City as owner of the site, the on-site public-access pedestrian walkway to connect Main Street to McLoughlin Boulevard (via the Adams Street right-of-way) is part of the development proposal and is not an exaction subject to the rough proportionality standard.

As proposed and conditioned, 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 application was referred to ODOT, Clackamas County Department of Transportation and Development (DTD), TriMet, and Metro for comment.

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).

The proposed development includes new concrete sidewalk along the Main Street and Washington Street frontages. New curb and asphalt paving has already been installed as part of the South Downtown Project and will not be required except where the existing driveway is to be removed. An 8-ft-wide public access pedestrian walkway will be constructed between McLoughlin Boulevard and Main Street along the Adams Street right-of-way. As per the Public Area Requirements (PAR), street trees will be planted a minimum of every 40 ft and in accordance with the Milwaukie Street Tree List. As proposed, streetlights will be installed at existing street light bases. Per the applicability standards of MMC Subsection 19.702.1, bike racks will be installed in the public right-of-way as required in conjunction with the occupation of the various commercial spaces by specific uses.

As proposed, the development is consistent with all applicable standards of MMC 19.708.2.

(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 the completion of one new Americans with Disabilities Act (ADA) ramp on the southwest corner of Main Street and Washington Street, and two new ramps on the corner of Washington Street and McLoughlin Boulevard. As proposed, all sidewalks and the public access pedestrian walkway will be constructed in compliance with the City of Milwaukie Public Works Standards and the ADA requirements. Where it is not located within the public right-of-way, an easement for the pedestrian walkway is required.

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

(4) MMC Subsection 19.708.4 Bicycle Facility Requirements and Standards

MMC 19.708.4 provides standards for bicycle facilities, including a reference to the Public Works Standards.

No public bicycle facilities are proposed, and none are required at the time of development of the new building, which includes approximately 7,000 sq ft of commercial space. As noted above in Finding 12-f-2, the installation of bike racks in the public right-of-way in accordance with the PAR will be required as per MMC Subsection 19.702.1 in conjunction with the occupation of the various commercial spaces by specific uses.

As proposed, the development is consistent with all applicable standards of MMC 19.708.4.

(5) MMC Subsection 19.708.5 Pedestrian/Bicycle Path Requirements and Standards

MMC 19.708.5 provides standards for pedestrian and bicycle paths.

With an 8-ft width, the proposed public access pedestrian walkway between Main Street and McLoughlin Boulevard (via the Adams Street right-of-way) is designed as a sidewalk and not as a multiuse (pedestrian/bicycle) facility.

The Milwaukie Transportation System Plan (TSP) includes a project to establish an undercrossing of McLoughlin Boulevard along Kellogg Creek to make a pedestrian/bicycle connection between Milwaukie Bay Park and downtown Milwaukie. A design for the undercrossing and associated ped/bike path has not yet been developed, but an easement for the future path alignment is warranted by the scale of impact of the proposed development. A condition has been established to require a minimum 15-ft-wide public access easement on the subject property along Kellogg Creek at the base of the proposed new retaining wall.

As conditioned, this standard is met.

(6) MMC Subsection 19.708.6 Transit Requirements and Standards

MMC 19.708.6 provides standards for transit facilities.

None of the streets fronting the proposed development are classified as a transit route in the Milwaukie TSP.

These standards are not applicable.

As proposed, the development meets all applicable standards of MMC 19.708.

As conditioned, the Planning Commission finds that the proposed development meets the applicable public facility improvement standards of MMC 19.700.

13. MMC Section 19.905 Conditional Uses

MMC 19.905 establishes regulations for conditional uses, including standards for establishing uses identified as conditional uses in any overlay zones. As noted in Finding 7-a and as provided in MMC Subsection 19.401.5.A, activities within the Willamette Greenway zone that trigger Willamette Greenway review are subject to the provisions of Section 19.905 as conditional uses.

a. MMC Subsection 19.905.3 Review Process

MMC 19.905.3 establishes the process by which a new conditional use must be reviewed.

As noted in Finding 7-a, the proposed activity is development as defined for the Willamette Greenway zone and so requires review as a conditional use.

MMC 19.905.3.A requires that establishment of a new conditional use be evaluated through the Type III review process per MMC Section 19.1006.

b. MMC Subsection 19.905.4 Approval Criteria

MMC Subsection 19.905.4.A establishes the approval criteria for a new conditional use or a major modification to an existing conditional use.

(1) The characteristics of the lot are suitable for the proposed use considering size, shape, location, topography, existing improvements, and natural features.

The subject property is approximately 0.94 acres (40,820 sq ft) in size and is a full-block property located at a key location in the Downtown Mixed Use (DMU) zone, with proximity to a light rail station, bus service, and an extensive sidewalk system. The site has frontage on three developed streets (including Main Street) and an undeveloped public right-of-way adjacent to Dogwood Park. The subject property is adjacent to Kellogg Creek to the southwest, so a significant portion of the site is within the regulatory floodplain and includes designated natural resource areas. But the site is already developed with a commercial building and off-street parking area and previously included another commercial building that has been demolished. The proposed mitigation for floodplain development and natural resource disturbance will increase flood storage capacity and enhance the adjacent riparian corridor.

The Planning Commission finds that this standard is met.

(2) The operating and physical characteristics of the proposed use will be reasonably compatible with, and have minimal impact on, nearby uses.

The proposed development is a six-story mixed-use building with 195 multifamily residential units and approximately 7,000 sq ft of commercial space in the heart of downtown Milwaukie. The commercial storefronts, intended for retail and restaurant use, are all on Main Street and will contribute to the active and pedestrian-oriented streetscape that is the intention of the City's downtown development and design standards. The proposed development represents the type of dense, mixed-use activity

that is envisioned by the City's Comprehensive Plan, consistent with the development code, and compatible with nearby uses.

The Planning Commission finds that this standard is met.

(3) All identified impacts will be mitigated to the extent practicable.

The proposed development will have some impact on the floodplain, views of the Willamette River, natural resource areas, and traffic. These impacts and their mitigation are discussed in more detail in Findings 5, 7, 8, and 12, respectively. The proposal includes excavation sufficient to balance new fill in the regulatory floodplain and will increase flood storage capacity. Some impact to private views of the river is to be expected in a dense downtown core; views from the public right-of-way and Dogwood Park will not be significantly impacted. The riparian corridor along Kellogg Creek will be revegetated with native-species trees, shrubs, and ground cover that will maintain and improve the ecological functions of the natural resource area. A restriction on left-turn movements from the parking garage onto Washington Street will minimize impacts to vehicle circulation on Washington Street near the Washington/McLoughlin intersection.

The Planning Commission finds that this standard is met.

(4) The proposed use will not have unmitigated nuisance impacts, such as from noise, odor, and/or vibrations, greater than usually generated by uses allowed outright at the proposed location.

The proposed development is mixed-use building in downtown Milwaukie and will not generate any nuisance impacts greater than those usually generated for allowed uses in the DMU zone.

The Planning Commission finds that this standard is met.

(5) The proposed use will comply with all applicable development standards and requirements of the base zone, any overlay zones or special areas, and the standards in Section 19.905.

The subject property is in the DMU zone, with development standards provided in MMC Section 19.304 and discussed in Finding 6. A portion of the site is within the Willamette Greenway overlay zone, with standards provided in MMC Section 19.401 and discussed in Finding 7. The WQR and HCA natural resource areas that are designated on the site are regulated by MMC Section 19.402 and discussed in Finding 8. As new development in a downtown zone, the project is subject to downtown design review, including the standards of MMC Section 19.508 and the procedures of MMC Section 19.907 and MMC Section 19.1011; these are discussed in Findings 9, 14, and 16, respectively. The proposed development's compliance with the conditional use standards of MMC Section 19.905 are discussed in this finding, Finding 13.

As discussed throughout these findings, and as conditioned where necessary, the proposed development complies with all applicable development standards and

requirements of the base zone, any overlay zones, and the conditional use standards of MMC 19.905.

The Planning Commission finds that this standard is met.

(6) The proposed use is consistent with applicable Comprehensive Plan policies related to the proposed use.

The proposed development is consistent with applicable Comprehensive Plan policies, as discussed for the Willamette Greenway review presented in Finding 7-b-10.

The Planning Commission finds that this standard is met.

(7) Adequate public transportation facilities and public utilities will be available to serve the proposed use prior to occupancy pursuant to Chapter 19.700.

Public transportation facilities and public utilities are adequate and will be available to serve the proposed development as per the requirements of MMC Chapter 19.700, as discussed in Finding 12.

The Planning Commission finds that this standard is met.

The Planning Commission finds that the proposed development meets the approval criteria outlined in MMC 19.905.4.A for establishing a conditional use.

c. MMC Subsection 19.905.5 Conditions of Approval

MMC 19.905.5 establishes the types of conditions that may be imposed on a conditional use to ensure compatibility with nearby uses. Conditions may be related to a number of issues, including access, landscaping, lighting, and tree preservation.

The Planning Commission finds that no conditions related to the proposed development—a mixed-use building in the DMU zone—are necessary to ensure compatibility with nearby uses.

d. MMC Subsection 19.905.6 Conditional Use Permit

MMC 19.905.6 establishes standards for issuance of a conditional use permit, including upon approval of a major modification of an existing conditional use. The provisions include a requirement to record the conditional use permit with the Clackamas County Recorder's Office and provide a copy to the City prior to commencing operations allowed by the conditional use permit.

An advisory note has been included with the conditions of approval to outline the conditional use permit process.

The Planning Commission finds that the proposed development is consistent with the relevant standards established in MMC 19.905 for conditional uses.

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 new development that is not a stand-alone multifamily residential building, there are two options for review. For new development that meets the downtown design standards of MMC Section 19.508, Type II review is required. Type III review is required for new development that is unable to meet one or more of the downtown design standards of MMC 19.508.

As addressed in Finding 9, 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 September 7, 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 three variances: (1) to exceed the maximum allowed building setback, (2) to allow off-site mitigation for Water Quality Resource (WQR) disturbance, and (3) to exceed the maximum allowed building height.

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. Subsection 3-B establishes the Type II review process for limited variations to certain numerical standards. Subsection 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 most variance requests, including criteria for discretionary relief and economic hardship, according to the applicant's preference. The approval criteria for use exceptions, building height variances in the Downtown Mixed Use (DMU) zone, and building height variances in the General Mixed Use (GMU) zone are established in MMC Subsections 19.911.5, 19.911.6, and 19.911.7, respectively.

The requested building height variance is subject to the approval criteria provided in MMC 19.911.6 and is addressed in Finding 15-d. For the variance requests related to maximum building setback and off-site WQR mitigation, the applicant has elected to address the discretionary relief criteria.

MMC Subsection 19.911.4.B.1 provides the following approval criteria for Type III variances where the applicant elects to utilize the discretionary relief criteria:

(1) 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.

Maximum Building Setback: The requirement of MMC Subsection 19.304.5.D that buildings on certain downtown block faces be built to the front lot line (zero setback) for at least 75% of the frontage does not account for the prospect of a design providing shallow recesses for façade articulation. The proposed recesses are generally less than 2 ft deep and occur beneath the datum line set by the canopies, with the remaining ground-story wall area and the walls of upper floors set at the lot lines. The recesses articulate the storefront bays, wall material changes, and transitions between commercial uses and the residential lobby. They provide visual interest at the pedestrian level and serve as an engaging feature rather than an interruption. Without articulation, the long façades would seem monolithic and imposing along the ground floor.

The applicant's submittal materials include a more detailed description of the specific characteristics of the three frontages where the zero-setback requirement applies and explains how the requested variance benefits each. Along the Washington Street frontage, which includes a significant grade change that elevates the ground floor above the sidewalk level for part of the frontage, the requested setback provides space for a planted metal screen in front of the openings to the parking garage that would otherwise be visible below the residential portion of the ground floor. Along the limited Adams Street frontage, which includes commercial space at the Main/Adams corner and a short length of the residential part of the building, the residential section is set back approximately 6 ft to distinguish it from the commercial space and to provide space for an outdoor deck. The proposed public access pedestrian walkway along the Kellogg Creek alignment also pushes the building away from the property line near Adams Street. Along the Main Street frontage, the various recesses provide weather protection above commercial doors and the entrance to the residential lobby and help distinguish between the different uses.

Off-Site WQR Mitigation: The general standards related to mitigation for natural resource disturbance require on-site mitigation where WQR resources are concerned (MMC Subsection 19.402.11.B.6). One rationale for this restriction is to ensure that the contiguity of WQR areas is maintained and that the scale of WQR disturbance on a given site is not so grand as to preclude reasonable restoration of the resource. On most sites, there is no good opportunity to access adjacent WQR areas for mitigation purposes, whether due to existing development conditions or the interest or willingness of adjacent property owners to coordinate.

The subject property is currently owned by the City. Stemming from the goals and policies adopted in the City's Comprehensive Plan, the City identified the subject property as an opportunity site for facilitating the development of residential housing and commercial space for new businesses that would help revitalize downtown Milwaukie. While acknowledging the site's constraints related to the floodplain and natural resource areas, the City has set aggressive targets for the redevelopment of the

site. To achieve these goals, as much of the subject property as possible must be available for development, with mitigation for some impacts transferred beyond the property boundaries. In this case, the City is in a position to allow mitigation in the adjacent areas managed by the City, the Adams Street right-of-way and Dogwood Park.

The City has no plans to develop Adams Street as a regular street and instead has a vision for South Downtown that includes a public plaza where Adams Street ties in to the "festival street" aspect of Main Street. As the owner and steward of Dogwood Park, the City has an interest in revegetating and improving the riparian corridor along Kellogg Creek as part of a long-term effort to remove the Kellogg Dam and restore a free-flowing creek. The City's Transportation System Plan has identified a future project to establish a bike path that would run from Dogwood Park along the creek and underneath a reconstructed overpass for McLoughlin Boulevard.

The proposed off-site mitigation makes it economically feasible to redevelop the subject property and contributes positively to the City's other long-term efforts for improvement and revitalization in this part of downtown. A building footprint that avoided any disturbance of the WQR and Habitat Conservation Area (HCA) on the site would result in fewer units and would make the project economically infeasible. The proposed variance allows more of the subject property to be used for the new building, which increases the number of new housing units that can be provided. It also allows the construction of a public access pedestrian walkway between the building and Kellogg Creek, in an area that would otherwise be a mitigation planting area. The walkway provides a public benefit by connecting Main Street to McLoughlin Boulevard (and Milwaukie Bay Park) through the site via the Adams Street right-of-way. The variance effectively expands the project area to include the adjacent public right-of-way and park land, where the required WQR mitigation can still be provided in the immediate vicinity of the riparian area directly affected by the proposed development.

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.

(2) 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.

<u>Maximum Building Setback</u>: As noted above in the discussion of impacts and benefits, the proposed variance is reasonable and appropriate given the intended design outcomes for the new building. There are no negative impacts to surrounding properties, as the articulation that the shallow recesses and small setback areas provide do not create voids

or otherwise reduce the sense of urban enclosure. The recesses and setbacks provide a public benefit, as they prevent the façades from feeling monolithic, provide articulation that generates interest at the pedestrian level, and help differentiate between commercial and residential uses along each façade. The proposed variance allows the building to utilize a traditional storefront bay language and façade-articulation techniques that add to the new, denser urban pattern being established downtown with other new construction like the Axletree building.

Off-Site WQR Mitigation: The proposed variance is reasonable and appropriate, given the City's development goals for the subject property and the opportunity to make the adjacent right-of-way and public park part of the project area. By definition, the mitigation of impacts beyond the subject property results in new impacts on other properties. In this case, however, the impacts are mitigation plantings that will enhance the riparian corridor and improve the ecological function of the WQR. As steward of Dogwood Park, the City should be looking for opportunities to revegetate and improve the riparian corridor; the variance allows that needed work to be required as part of the proposed development instead of as a separate City project. Allowing off-site mitigation enables the subject property, which is zoned for development, to maximize its development potential. The adjacent public right-of-way and public park present a unique opportunity for restoration and enhancement of a contiguous section of riparian corridor.

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.

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

Maximum Building Setback: There are no negative impacts from this proposed variance. As noted and discussed above in this finding, the variance allows the building design to articulate the façades to establish a human scale at the pedestrian level, emphasize transitions in building materials, and differentiate between commercial and residential uses. There is no need for mitigation for this requested variance.

Off-Site WQR Mitigation: Between the on-site impacts and the off-site floodplain cut/fill balance discussed in Finding 5, the proposed development will temporarily or permanently disturb approximately 27,310 sq ft (0.63 acres) of WQR and 2,590 sq ft (0.06 acres) of HCA, for a total disturbance of approximately 29,900 sq ft (0.69 acres). As mitigation, the project includes revegetation of four distinct areas, partially on site but largely within the WQR portions of the adjacent Adams Street right-of-way and Dogwood Park totaling approximately 23,740 sq ft (0.55 acres). As discussed in Finding 8, this mitigation is appropriate and sufficient for the proposed WQR and HCA disturbance. No additional mitigation is necessary for the requested variance to allow the natural resource mitigation plantings to be located off site.

The Planning Commission finds that the requested variances will not result in any impacts that require mitigation beyond what is proposed.

The Planning Commission finds that the requested variances meet the approval criteria established in MMC 19.911.4.B.1 for Type III variances seeking discretionary relief.

d. MMC Subsection 19.911.6 Building Height Variance in the DMU Zone

MMC 19.911.6 provides a discretionary option for variances to maximum building heights in the DMU zone to reward buildings of truly exceptional design that respond to the specific context of their location and provide desired public benefits and/or amenities. The Type III building height variance is an option for proposed buildings that exceed the maximum heights or stories allowed through the bonuses specified in MMC Figure 19.304-4, MMC Subsection 19.304.5.B.3, and MMC Section 19.510.

The building height variance is subject to Type III review and approval by the Design and Landmarks Committee and the Planning Commission, in accordance with MMC Chapter 19.907 and MMC Section 19.1011. The building height variance will be consolidated with downtown design review. Because the building height variance provides substantial flexibility and discretion, additional time will be required for public input and technical evaluation of the proposal. To use this option, the applicant must sign a waiver of the 120-day decision requirement.

The proposed building is utilizing allowable bonuses (for residential development and green building) to qualify for two additional stories above the base maximum height of three stories. In addition, the applicant has requested a variance to add one more story to the design. The additional story is subject to the review procedures and approval criteria established in MMC 19.911.6 for building height variances in the DMU zone.

MMC Subsection 19.911.6.D establishes the following approval criteria for building height variance requests:

(1) Substantial consistency with the Downtown Design Guidelines.

As discussed in the findings for MMC Section 19.508 (Finding 9), the proposed design is substantially consistent with the downtown design standards and, where applicable, with the downtown design guidelines.

(2) The proposed height variance will result in a project that is exceptional in the quality of detailing, appearance, and materials or creates a positive unique relationship to other nearby structures, views, or open space.

With the height bonuses allowed by MMC Subsection 19.304.5.B.3, the proposed development is allowed five stories. To pull some of the building massing back from the adjacent Kellogg Creek and the nearby Willamette River, and in response to the grade change from east to west toward these natural resource areas, the design essentially takes that portion of the fifth story closest to the lake/creek and river and pushes it back toward the Main Street and Washington Street sides of the building. This helps reduce the building mass near the water, preserves views to the water for several of the upper stories of the building, and reinforces the urban edge of the development for the Main/Washington façades.

In addition, the steps in the massing and the inclusion of occupied roof decks require deeper structural members in some portions of the building. To provide these positive design features, the building height must be raised to allow for a livable floor-to-floor height on the upper floors and an appropriate ceiling height in the fifth story amenity space.

(3) The proposed height variance preserves important views to the Willamette River, limits shadows on public open spaces, and ensures step downs and transitions to neighborhoods at the edge of the DMU zone.

The one identified view corridor to the Willamette River in the vicinity of the subject property is along Washington Street. The proposed design would not impact views to or from the river along Washington Street. Although there are no neighborhoods adjacent to the site, the proposed step-backs at various levels of the building "erode" the mass away from the natural resource areas to the south, southwest, and west. This will minimize shadowing from the taller portion of the building onto the adjacent natural resource areas and public plaza to the south.

(4) The proposed height variance will result in a project that provides public benefits and/or amenities beyond those required by the base zone standards and that will increase downtown vibrancy and/or help meet sustainability goals.

The proposed development will provide 195 units of needed housing in downtown Milwaukie, which is consistent with the goals and policies of the City's recently updated Comprehensive Plan. The project takes a small site with several challenging constraints (floodplain, natural resources) and creatively provides a combination of housing units and commercial spaces that will help revitalize the downtown in a key location next to a public park and plaza. The height variance allows the new building to include structured off-street parking on the lower level, preserving valuable floor area for additional dwelling units, on a site with no excess space for surface parking beyond the building footprint. The added height makes the project feasible and allows the building to maintain enough setback distance from the adjacent Kellogg Creek to provide a public access pedestrian walkway between Adams Street and McLoughlin Boulevard, enhancing the connection between the public plaza in south downtown and Milwaukie Bay Park at the Willamette River.

The Planning Commission finds that the proposed building height variance meets the approval criteria of MMC 19.911.6.D and is approvable as proposed.

The Planning Commission finds that all of 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 September 7, 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 also recommended approval of the requested building height variance, as discussed in Finding 15-d. The DLC identified the following design review recommendations for consideration by the Planning Commission:

Weather Protection

- *Recommendation to require some form of weather protection for the bike storage entry at the Washington/McLoughlin corner of the building.*

Roofs & Rooftop Equipment

- *Suggestion to provide more detail about how rooftop mechanical equipment will be screened.*

Other

- *Suggestion to provide more detail about the plaza space at the Washington/McLoughlin corner of the building, such as plantings and any street furniture.*

17. The application was referred to the following departments and agencies on August 27, 2021:
    - Milwaukie Engineering Department
    - Milwaukie Building Department
    - Milwaukie Public Works Department (incl. Environmental Services)
    - Milwaukie Police Department
    - City Attorney
    - ESA (City's on-call Natural Resource consultant)
    - Historic Milwaukie Neighborhood District Association (NDA) Chairperson and Land Use Committee (LUC)
    - Island Station NDA Chairperson and LUC
    - Clackamas Fire District #1 (CFD)
    - Clackamas County Department of Transportation & Development
    - Metro
    - Oregon Department of Transportation (ODOT)
    - TriMet

- North Clackamas School District
- Oregon Department of Fish and Wildlife (ODFW)
- Department of State Lands (DSL)
- Oregon Parks and Recreation Department
- North Clackamas Parks and Recreation Department (NCPRD)
- Oregon State Marine Board
- NW Natural

The comments received are summarized as follows:

- **Sandra Jones, resident at Axletree Apartments, 11125 SE 21st Ave:** The new building will ruin the view of the river for at least half of the Axletree residents. Concerns related to potential impacts during the construction process: accessibility of the Axletree garage entrance (on Washington Street), safety and availability of the adjacent streets and sidewalks, and utility disruptions. Question about whether the building managers will keep the sidewalks and areas around the building clean in the context of the houseless population. There is not enough on-street parking for the visitors of downtown residents and the addition of 190-plus units will not help.
- **Alex McGladrey, Lieutenant – Deputy Fire Marshal, CFD:** The property is in an area with public water supply, and there are no site conditions that would prevent the applicant from constructing the proper [fire] access. Fire department access and water supply are reviewed in accordance with the 2019 edition of the Oregon Fire Code.

Recommended Conditions of Approval
Master File #DR-2021-001, Coho Point 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 August 25, 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 4, revise the applicable plan sheets to show a restricted left-turn egress movement for the Washington Street driveway.

    d. As per Finding 9-c, revise the applicable plan sheets to show some form of weather protection for the bike storage entry at the Washington/McLoughlin corner of the building.

    e. As per Finding 9-e, provide documentation to confirm that all nonresidential ground-floor windows have a visible transmittance (VT) of 0.6 or higher.

    f. As per Finding 10, provide confirmation of the necessary green building certification submittal.

    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 proposed wall-mounted racks provided in the various bike-storage rooms throughout the new building.

    h. As per Finding 11-g(2), provide a photometric plan that demonstrates lighting adequate to ensure motorist and pedestrian safety within the structured parking facility.

2. Prior to final inspection of the required building permit and issuance of a certificate of occupancy, the following must be resolved:

    a. Provide a narrative describing all actions taken to comply with these conditions of approval. In addition, describe any changes made after the issuance of development permits that are not related to these conditions of approval.

    b. As per Finding 10, submit documentation confirming that the necessary green building certification has been awarded.

c. Submit documentation from the project landscape designer attesting that all required site plantings and mitigation plantings have been completed in conformance with the approved site plans and with City standards.

d. Confirm that all required street improvements and Public Area Requirements (PAR) improvements have been installed and inspected.

e. In conjunction with the required City right-of-way (ROW) permit, provide an 8-ft-wide public access easement for the pedestrian walkway extending through the site between Main Street and McLoughlin Boulevard via the Adams Street right-of-way.

f. As per Finding 12-f-5, provide a minimum 15-ft-wide public access easement on the subject property for a future pedestrian/bicycle pathway along Kellogg Creek at the base of the proposed new retaining wall. If the location and alignment of the pathway have not been identified by the City in sufficient detail to enable the creation of an easement, then a valid and enforceable agreement with the City that binds the current and any future owner of the property to provide the easement when the City identifies the desired alignment will satisfy this condition.

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. An application for replat is required to consolidate the underlying lots on the subject property. The application for preliminary replat approval must be submitted in conjunction with the submittal of associated development permits. The final plat must be recorded with Clackamas County prior to issuance of a final certificate of occupancy.
2. An approved Conditional Letter of Map Revision (CLOMR) is required prior to the City's issuance of a floodplain development permit.
3. 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.
4. Prior to commencement of any earth-disturbing activities, the applicant must obtain a City erosion control permit.

5. Obtain a City 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. Demonstrate that all constructed or installed Public Area Requirements (PAR) are consistent with the applicable standards and specifications established in MMC Chapter 19.700 and the Public Works Standards.

    f. The final site plan must be approved by the City Engineer prior to construction.

    g. Provide a 12-month Maintenance Bond upon completion of the construction.

    h. Provide a final approved set of electronic (PDF file) "As Constructed" drawings to the City of Milwaukie prior to final inspection.

6. Conditional Use Permit

    As per MMC Subsection 19.905.6, the City will issue a conditional use permit upon the approval of this application to establish a conditional use. The conditional use permit will include the following information:

    a. A description of the use that has been approved by the City.

    b. Restrictions and/or conditions of approval placed upon the use.

    c. Ongoing responsibilities required for the operation of the conditional use.

    d. Allowance for the transfer of rights and responsibilities upon change in ownership of either the use or the property containing the use.

    e. Procedures for review, revisions, and suspension of the conditional use permit.

    The applicant must record the conditional use permit with the Clackamas County Recorder's Office and provide a copy to the City prior to commencing operations allowed by the conditional use permit.

7. 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.

8. 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.



INDEX TO APPLICATION RESPONSE

PROJECT OVERVIEW
Basic Project Data ..... Page 3
Project Description ..... Page 4

BASE ZONE STANDARDS ..... Page 6

WILLAMETTE GREENWAY CONDITIONAL USE ..... Page 8

NATURAL RESOURCES ..... Page 12

SUPPLEMENTAL DEVELOPMENT STANDARDS ..... Page 23

CONDITIONAL USE REQUIREMENTS ..... Page 36

MILWAUKIE DOWNTOWN DESIGN GUIDELINES ..... Page 39

TYPE III VARIANCES ..... Page 45

MODIFICATION ..... Page 59

DRAWINGS (SEPARATE DOCUMENT, ATTACHED)

PRELIMINARY DRAINAGE REPORT (SEPARATE DOCUMENT, ATTACHED)

FLOODPLAIN HYDRAULICS ANALYSIS (SEPARATE DOCUMENT, ATTACHED)

NATURAL RESOURCE REVIEW (SEPARATE DOCUMENT, ATTACHED)

TRANSPORTATION IMPACT ANALYSIS (SEPARATE DOCUMENT, ATTACHED)

PRE-APPLICATION REPORT (SEPARATE DOCUMENT, ATTACHED)

COMPILED PARKING STALL STANDARDS (SEPARATE DOCUMENT, ATTACHED)

PRELIMINARY LEED SCORECARD (SEPARATE DOCUMENT, ATTACHED)

TRANSPORTATION DEMAND MANAGEMENT PROGRAM (SEPARATE DOCUMENT, ATTACHED)

BASIC PROJECT DATA

Applicant:	Coho, LLC 8191 N. Lombard St. Suite #113 Portland, OR 97203
Contact:	Jones Architecture – Ryan Scanlan 120 NW 9th Ave., Suite Portland, OR 97209 Phone: 503.477.9165 rscanlan@jonesarc.com
Location:	11103 SE Main Street, Milwaukie, OR 97222

BUILDING DATA

Base Zone	DMU
Tax Lot Numbers	11E35AD01200 11E35AD01300 11E35AD01302 11E35AD01301 11E35AD01100
Site Area:	42,541 SF
Built Site Area:	35,894 SF
Building Area:	172,077 SF
Stories, per MMC 19.200	6 stories
Zoning Use Types:	Multi-family Residential, Retail Sales, Restaurant

PROJECT DESCRIPTION

Coho Point is a new multi-family project in downtown Milwaukie. The building will house 195 dwelling units. The ground story will feature retail spaces oriented toward Main Street and a corner restaurant space with an outdoor seating area that overlooks Dogwood Park and Kellogg Creek.

Coho Point is located at the gateway to Milwaukie. It is a public-private partnership on a complex site within the floodplain. The site fronts two primary downtown streets as well as Dogwood Park and Kellogg Creek, creating a dynamic relationship between the urban goals for downtown development and need to embrace the valuable adjacent natural resources. This dynamic has been a primary factor in the building and site design. Additionally, the building's proximity to SE McLoughlin and the Willamette River introduces another set of design challenges in terms of site access. The City of Milwaukie is a partner in this project, and the project addresses goals identified in the Comprehensive Plan and the Housing and Residential Land Needs Assessment. In addition, the project incorporates the development of significant public amenities and improvements, including floodplain mitigation, Kellogg Creek bank improvements, improvements to Dogwood Park, an extended public pedestrian path connecting Main Street to McLoughlin and provisions for a future public bike path.

FLOODPLAIN MITIGATION

The site characteristics are unique, due to its location adjacent to Kellogg Creek and associated water quality resources and habitat conservation areas. In order to maximize the site and respond to City goals for housing and economic development in the downtown district, development in the floodplain is required. To address the permanent WQR and HCA impacts, the project includes mitigation in the Adams Street right-of-way and nearby Dogwood Park. These off-site mitigation measures have been developed in partnership with the City and provide permanent improvements to the adjacent publicly owned sites.

SITE DESIGN

The site design takes advantage of the rich cultural setting and natural beauty to create a project that blends into the natural surrounding and provides an amenity for its users and the public. As the building fronts SE Main Street and SE Washington Street, street tree plantings were chosen to provide large mature trees that would reinforce the building as a gateway development into Milwaukie. The landscape along Mcloughlin Boulevard is rich in texture and foliage and provides year round color. The site design takes advantage of the close proximity of Dogwood Park to the project. The park's open space, adjacent gabion structure and paved open space at the intersection of Main Street and Adams Street create a fluid form that softens the edge of the Adams Street right-of-way and provides pedestrian connection between Main Street and Mcloughlin Boulevard. With an addition of a patio space next to a future restaurant at the base of the building, there is an opportunity to activate this corner of the park along with supporting many of the events on Main Street including the Farmer's Market.

BUILDING DESIGN

In response to the City's projected housing needs, the building will provide 195 dwelling units with a variety of unit types and sizes. The introduction of these residential units to the downtown district will invigorate the district and support its growing economy. The site is well-suited for apartment dwelling because of its close proximity to multiple public transportation options and a well-used bicycle path that connects to the Springwater Corridor Trail. The site's location, with views to the Willamette River to the west and Kellogg Creek and Dogwood Park to the south, will be attractive for residents seeking access to both natural and urban amenities.

Tenant spaces for future retail and restaurant uses are included at the ground story. These spaces open to SE Main Street and will generate activity throughout the day and evening. The future restaurant space will be located on the southeast corner of the building to offer views of Dogwood Park and Kellogg Creek and support the activities of the nearby Farmer's Market.

The building design responds to the unique site characteristics. The building is situated so that the tallest portions face SE Main and SE Washington Streets, to create an urban edge oriented toward the rest of the downtown

area. The building's massing steps down on the park and river sides, to respect the natural areas and provide multiple view opportunities. Exterior material selections respond to the downtown context on the north and east facades, utilizing brick, aluminum storefront and high quality fiberglass windows. The south, southwest and west facades incorporate softer and less prominent materials and defer to the landscape.

The project offers a unique opportunity to address both urban design and development and substantial natural resource enhancement. Working in close partnership with the City has provided a means to achieve a significant mixed-use development with many long-term benefits.

BASE ZONE STANDARDS

19.304 DOWNTOWN ZONES

19.304.5A FLOOR AREA RATIO. Maximum FAR allowed by Table 19.304.4 is 4:1 plus bonus for structured parking (.5 SF of additional FAR for every 1 SF of structured parking).

Response: The proposed FAR is 3.71 : 1. This criterion is met.

Basement Area (does not include private garage)	*3,902 GSF*
Ground Story Area	*34,077 GSF*
Second Story Area	*30,062 GSF*
Third Story Area	*30,967 GSF*
Fourth Story Area	*30,967 GSF*
Fifth Story Area	*22,812 GSF*
Sixth Story Area	*19,290 GSF*
Building Area	*172,077 GSF*
Private Garage Area	*30,801 GSF*
Maximum FAR: 4 + Bonus	
FAR Bonus	*30,801 x 0.5 = 15,401*
Allowable FAR	*172,077 + 15,401 = 185, 565 SF*
	(172,077 / 185,565) x 4 = 3.71 FAR

19.304.5B.3 BUILDING HEIGHT BONUSES. 3 stories and 45' base height are allowed by Table 19.304.4. Height bonuses of 2 stories (5 stories max) and 24' (69' max) are available if two of the following incentives are included:

- 1 story or 25% of gross area in residential
- Lodging
- Green building certification
- Building height variance (Type III process)

Response: The building is mixed-use and includes several stories of multi-family residential area. The residential area is 72% of the gross building area. The building is pursuing LEED certification and is anticipated to reach Silver. A preliminary LEED Scorecard has been included with this application.

5 stories and 69' maximum height are allowed with the bonuses. The proposed building is 6 stories and 78' from the zoning base point. A Type III variance is requested for the additional height at the end of this narrative.

19.304.5C.2.b(1) FLEXIBLE GROUND FLOOR SPACE. Requires 14' minimum clear ceiling at 75% of the ground story.

Response: A 14' clear ceiling height is provided at the ground story. This criterion is met.

19.304.5C.2.b(2) FLOOR AREA ADJACENT TO MAIN STREET. Requires interior area adjacent to Main Street to be 20' deep minimum.

Response: The interior areas adjacent to Main Street are a minimum of 20' deep. This criterion is met.

19.304.5D.2.b STREET SETBACKS/BUILD-TO LINES. Requires 75% of the first floor to be built to the front lot line (zero setback) for Main Street, Washington Street and the Adams Street right-of-way.

Response: The Main Street frontage at the ground story is built to the lot line, with the exception of the restaurant entry area. The restaurant entry is set back 19'-0" from the Main Street lot line. This setback makes up 8% of the Main Street frontage and is allowed by 19.304.5D.2.b(1).

The remaining Main Street frontage includes recessed areas at entrances, storefront bays and wall material transitions. The recesses occur beneath the datum line established by the canopies. The remaining portion of the ground story wall above the datum line is built to the lot line. The recesses provide façade articulation, allow for appropriate construction detailing where different materials intersect and prevent doors from swinging over the right-of-way.

The lineal foot percentages of recessed areas beneath the canopy line along Main Street are as follows:

At lot line/0' 16%
<2' 50%
>2' (doors) 26%
19' (restaurant) 8%

The Washington Street frontage at the ground story is similarly built to the lot line at the ground story for the commercial portion of the building, with slightly recessed storefront bays and a recessed area at the garage entry/pedestrian door. The residential portion of the ground story (which is above the sidewalk level due to significant grade change) is also slightly recessed to differentiate the residential area and to allow space for plants to grow up the garage screen walls. These recesses occur beneath the same datum line as the Main Street recesses.

The lineal foot percentages of recessed areas along Washington Street are as follows (measured from the Main Street corner to the start of the ROW curve at McLoughlin per Figure 19.304-5):

At lot line/0' 8%
<2' 81%
>2' (doors) 11%

The commercial portion of the Adams Street ROW frontage is set 2-1/2" off the lot line for the full height of the building. This is due to the dimensions of a brick module. Extending the footprint all the way to the lot line would result in small slivers of brick at the Main Street/Adams Street corner.

The commercial storefront bays along Adams Street are slightly recessed from the brick face in the same manner as the Main and Washington Street facades and occur beneath the same datum line. The restaurant entry area is recessed 20'.

At the point where the building transitions to residential use along the Adams Street ROW, the ground story is set back approximately 6' to mark the change of use and to allow for a residential deck. As the Kellogg Creek bank turns and cuts across the property, the building geometry angles to the northwest, which results in a deeper setback that generally follows the line of the bank.

The lineal foot percentages of recessed areas along Adams Street ROW are as follows (measured to the point where the creek bank turns northwest per Figure 19.304-5):

At lot line/0' 0%
2-1/2" 18%
<2' 36%
>2' (residential) 29%

20' (restaurant/angled residential) 14%
>20' (far angled wall) 3%

This criterion is not met. A Type III variance is requested at the end of this narrative.

19.304.5E FRONTAGE OCCUPANCY. Requires 90% of the site frontage along Main Street and 75% of the site frontage along Washington Street to be occupied by a building.

Response: 100% of the site frontages along Main Street and Washington Street are occupied by the building. This criterion is met.

19.304.5F.c PRIMARY ENTRANCES. Requires that building entrances be oriented toward the sidewalk. If a development is on the corner of Main Street and another street, the main entrance shall be oriented towards Main Street.

Response: The residential lobby entrance, restaurant entrance, and retail entrances all open onto Main Street. This criterion is met.

19.304.5G OFF-STREET PARKING. Requires off-street parking per 19.600.

Response: *See 19.600 Section Responses below.*

OVERLAY ZONES AND SPECIAL AREAS

WILLAMETTE GREENWAY CONDITIONAL USE

19.401.6 Criteria

A. Whether the land to be developed has been committed to an urban use, as defined under the State Willamette River Greenway Plan;

Response: The zoning of the site is Downtown Mixed Use, which allows the proposed urban uses (residential, retail, restaurant). This criterion is met.

B. Compatibility with the scenic, natural, historic, economic, and recreational character of the river;

Response: The site is not located immediately adjacent to the river and therefore does not directly affect the scenic or recreational character of the river itself. The building and site development do include measures to improve and enhance the tributary Kellogg Creek and Dogwood Park with floodplain mitigation and landscaping design.

The site is adjacent to a WQR area, Kellogg Creek, which has associated vegetated corridors between 50 and 100 feet in width from the ordinary high water line, depending on the adjacent slopes. As described in response to MMC 19.402, impacts to the WQR area (vegetated corridors) are proposed to facilitate the development. These permanent impacts will be mitigated off-site within Dogwood Park and the Adams Street right-of-way adjacent to Kellogg Creek.

For all of the mitigation areas, native plants are being used per the City of Milwaukie's standards. In other areas, a combination of native, indigenous, and drought-tolerant plants is being utilized.

A new public pedestrian path to link SE Main St. to the river along the Kellogg Creek bank is incorporated into project scope. This is a significant public connection that will greatly improve the ability of the public to enjoy Kellogg Creek and access the Willamette River. Provisions have been included for a future public bike path to similarly connect SE Main St. to the river.

The building form and massing are in direct response to Kellogg Creek and the proximity of the river. Additional detailed descriptions of the project's design response to the natural environment are included in other parts of this narrative.

This criterion is met.

C. Protection of views both toward and away from the river;

Response: Washington Street is identified as a view corridor. This project will not block views along the view corridor. Additionally, the project includes the development of a new public pedestrian path to link SE Main St. to the river. This is a significant new public amenity that will offer opportunities to view the Willamette River. It will also provide views of Kellogg Creek and its associated wetland improvements. Provisions have been included for a future public bike path to similarly connect SE Main St. to the river, so additional views will be offered along the route of the bike path.

Views from the river toward the site will include the new path and the improved Kellogg Creek natural area. Views from the river will also include the new building. The building design strategy has taken into account the visibility of the building from the river, Dogwood Park, and the new path along Kellogg Creek. The building massing strategy are in direct response to the proximity of these resources and are designed to soften the view of the building from these areas. Similarly, the material palette for the facades facing the natural resources has been selected to visually recede and not compete with the resources. Planted screens have been added at the parking garage walls to soften the appearance of the building when viewed from the river, Dogwood Park and along the new pedestrian path.

In addition to the public views to and from the site, views to the river are provided from the building's interior as well as from multiple roof decks. Additionally, in response to early feedback, the restaurant has been relocated to the southeast corner of the building in order to maximize views of Dogwood Park and Kellogg Creek from the restaurant's outdoor seating area. Strategically locating the outdoor seating area in this location will help generate interest in the new public path and Kellogg Creek.

This criterion is met.

D. Landscaping, aesthetic enhancement, open space, and vegetation between the activity and the river, to the maximum extent practicable;

The site is not located immediately adjacent to the river and therefore does not directly impact the river itself. The building site design includes landscaping on the south, southwest and west sides, adjacent to the natural resources. Additionally, extensive floodplain mitigation is included at the banks of Kellogg Creek and the adjacent Dogwood park. A new public pedestrian path connecting SE Main St. to the river is included in the project scope. The path design incorporates smaller scale landscaping, quality materials and bollard lighting to aesthetically enhance the public experience. This criterion is met.

E. Public access to and along the river, to the greatest possible degree, by appropriate legal means;

Response: The site is not immediately adjacent to the river. Public access to the river is improved by the new public pedestrian path from SE Main St. This is a significant connection that will greatly improve the ability of the public to enjoy Kellogg Creek and the Willamette River. Provisions have been included for a future public bike path to similarly connect SE Main St. to the river. This criterion is met.

F. Emphasis on water-oriented and recreational uses;

Response: The site is not immediately adjacent to the river. Water-oriented and recreational uses are not appropriate for this site, nor allowed by the zoning. This criterion does not apply.

G. Maintain or increase views between the Willamette River and downtown;

Response: The views from the river to this area of downtown will be increased with the addition of the new public pedestrian path. The views will be improved by the extensive landscaping, bank improvements at Kellogg Creek, and planted screens along the river-facing sides of the building. The building design steps down toward the river and transitions to different building materials on the river facing sides in order to provide an attractive and varied view. Planted screens are included on the river facing sides of the building to further soften the building's edges. This criterion is met.

H. Protection of the natural environment according to regulations in Section 19.402;

Response: The site is adjacent to a WQR area, Kellogg Creek, which has associated vegetated corridors between 50 and 100 feet in width from the ordinary high water line, depending on the adjacent slopes. As described in response to MMC 19.402, impacts to the WQR area (vegetated corridors) are proposed to facilitate the development. These permanent impacts will be mitigated off-site within Dogwood Park and the Adams Street right-of-way adjacent to Kellogg Creek.

For all of the mitigation areas, native plants are being used per the City of Milwaukie's standards. In other areas, a combination of native, indigenous, and drought-tolerant plants is being utilized.

This criterion is met.

I. Advice and recommendations of the Design and Landmark Committee, as appropriate;

Response: This project will be presented to the Design and Landmark Committee. The presentation is anticipated for the DLC meeting on May 3, 2021. This criterion will be met.

J. Conformance to applicable Comprehensive Plan policies;

Response: The project is a partnership between the applicant and the City of Milwaukie, and the development strategy has been coordinated closely with the City's development team assigned to the project. The proposed uses are consistent with the goals and policies of the Comprehensive Plan as well as the Housing and Residential Land Needs Assessment. Specific Comprehensive Plan goals are listed and described individually in Section 19.905.A.6 Conditional Use Approval Criteria. This criterion is met.

K. The request is consistent with applicable plans and programs of the Division of State Lands;

Response: The proposed project is not inconsistent with any known plans or programs of the Department of State Lands (DSL). The project does not propose removal-fill activities below the ordinary high water line (OHW) or within waters of the State, and no permits from DSL or the US Army Corps. Of Engineers (USACE) are required. This criterion is met.

L. A vegetation buffer plan meeting the conditions of Subsections 19.401.8.A through C.

Response: The buffer plan is addressed in 19.401.8 below.

19.401.8 Vegetation Buffer Requirements

A. A buffer strip of native vegetation shall be identified along the river, which shall include the land area between the river and a location 25 ft upland from the ordinary high water line. This area shall be preserved, enhanced, or reestablished, except for development otherwise allowed in this title, and subject to the requirements of Subsection 19.401.8.B below.

Response: The site is not immediately adjacent to the river and therefore a buffer along the river itself cannot be provided. However, the site is adjacent to a WQR area, Kellogg Creek, which has associated vegetated corridors between 50 and 100 feet in width from the ordinary high water line, depending on the adjacent slopes. As described in response to MMC 19.402, impacts to the WQR area (vegetated corridors) are proposed to facilitate the development. These permanent impacts will be mitigated off-site within Dogwood Park and the Adams Street right-of-way adjacent to Kellogg Creek. This criterion is met.

B. Prior to development (e.g., removal of substantial amounts of vegetation or alteration of natural site characteristics) within the buffer, a vegetation buffer plan for the buffer area shall be submitted for review and approval. The plan shall address the following areas and is subject to the following requirements:

1. RIVERBANK STABILIZATION. The plan shall identify areas of riverbank erosion and provide for stabilization. Bioengineering methods for erosion control shall be used when possible. When other forms of bank stabilization are used, pocket plantings or other means shall be used to provide vegetative cover.

Response: The site is not immediately adjacent to the river and therefore riverbank stabilization cannot be provided. However, the site is adjacent to a WQR area, Kellogg Creek, which has associated vegetated corridors between 50 and 100 feet in width from the ordinary high water line, depending on the adjacent slopes. As described in response to MMC 19.402, impacts to the WQR area (vegetated corridors) are proposed to facilitate the development. These permanent impacts will be mitigated off-site within Dogwood Park and the Adams Street right-of-way adjacent to Kellogg Creek.

Stabilization efforts will be utilized to recreate a stable bank for Kellogg Creek, including gabion walls. Plantings will be included on the gabion walls to provide vegetative cover. This criterion is met.

2. SCENIC VIEW PROTECTION (SCREENING). The plan shall identify the impact of the removal or disturbance of vegetation on scenic views from the river, public parks, public trails, and designed public overlooks.

Response: The site is not immediately adjacent to the river and therefore the project will not be disturbing scenic views from the river from any public parks, trails or purpose-built public overlooks. The project is adjacent to Kellogg Creek, and improvements to Dogwood Park are proposed that will enhance the public access and views to this natural area. Mitigation plantings adjacent to the park will increase the natural feel through the use of native plants and removal of invasive, non-native and noxious vegetation. This criterion is met.

3. RETAIN EXISTING NATIVE VEGETATION AND LARGE TREES. The plan shall provide for the retention of existing large trees and existing native vegetation, including small trees, ground covers, and shrubs, within the vegetation buffer area. Removal of native vegetation and large trees is allowed pursuant to the following standards:

a. Large trees that are diseased, dead, or in danger of falling down may be removed if there is a clear public safety hazard or potential for property damage.

b. Grading or tree removal is allowed in conjunction with establishing a permitted use. Only the area necessary to accommodate the permitted use shall be altered.

c. Tree and vegetation removal may be allowed to create 1 view window from the primary residential structure to the river when suitable views cannot be achieved through pruning or other methods. The width of a view window may not exceed 100 ft or 50% of lineal waterfront footage, whichever is lesser. The applicant must clearly demonstrate the need for removal of trees and vegetation for this purpose.

Response: The site is not immediately adjacent to the river and therefore the removal of existing native vegetation and trees with the river's vegetation buffer area is not proposed. However, the project is adjacent to Kellogg Creek, a WQR area, which includes adjacent vegetated corridors as previously described. As identified in response to MMC 19.402 in this narrative, permanent impacts are proposed to this WQR area. As shown on the existing conditions plan, sheet 46 of the plan set, various trees are proposed for removal within the vegetated corridor. Impacts to the vegetated corridors that are resulting from the proposed development, a mixed-use residential and commercial building that is a permitted use in the DMU zone, will be mitigated adjacent to Dogwood Park and the Adams Street right-of-way, which include native plantings consistent with the Milwaukie Native Plant List. Prior to plantings, invasive, non-native and noxious vegetation will be removed within the mitigation area. Proposed plantings are identified on sheets 12 and 13 of the plan set. These criteria are met.

4. RESTORE NATIVE VEGETATION. The plan shall provide for restoring lands within the buffer area which have been cleared of vegetation during construction with native vegetation.

Response: For all of the mitigation areas, native plants are being used per the City of Milwaukie's standards. In other areas, a combination of native, indigenous, and drought-tolerant plants is being utilized. This criterion is met.

5. ENHANCE VEGETATION BUFFER AREA. The plan may provide for enhancing lands within the buffer area. Regular pruning and maintenance of native vegetation shall be allowed. Vegetation that is not native, except large trees, may be removed. New plant materials in the buffer strip shall be native vegetation.

Response: The site is not immediately adjacent to the river and therefore the removal of existing native vegetation and trees with the river's vegetation buffer area is not proposed. However, the project is adjacent to Kellogg Creek, a WQR area, which includes adjacent vegetated corridors as previously described. As identified in response to MMC 19.402 in this narrative, permanent impacts are proposed to this WQR area. As shown on the existing conditions plan, sheet 46 of the plan set, various trees are proposed for removal within the vegetated corridor. Impacts to the vegetated corridors that are resulting from the proposed development, a mixed-use residential and commercial building that is a permitted use in the DMU zone, will be mitigated adjacent to Dogwood Park and the Adams Street right-of-way, which include native plantings consistent with the Milwaukie Native Plant List. Prior to plantings, invasive, non-native and noxious vegetation will be removed within the mitigation area. Proposed plantings are identified on sheets 12 and 13 of the plan set. This criterion is met.

C. The vegetation buffer requirements shall not preclude ordinary pruning and maintenance of vegetation in the buffer strip.

19.402 NATURAL RESOURCES NR

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: The Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped Water Quality Resource (WQR) and Habitat Conservation Areas (HCA) associated with Kellogg Creek, a primary protected water feature, per the City's NR Administrative Map. As a result, these sites contain an associated vegetated corridor that varies between 50 and 100 feet—depending on adjacent slopes—along the WQR (Kellogg Creek). Therefore, the provisions of this section are applicable.

The applicant's environmental consultant, Pacific Habitat Services (PHS), has prepared a Natural Resources Review (PHS report), which further demonstrates the project's compliance with applicable criteria of this section, including the general discretionary review criteria.

B. For properties that do not contain, but are within 100 ft of, a WQR and/or HCA, as shown on the NR Administrative Map, and where an activity not listed as exempt in Subsection 19.402.4.A will disturb more than 150 sq ft, a construction management plan is required in accordance with Subsection 19.402.9 (see also Table 19.402.3).

Response: The Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped WQR and HCA areas. As the proposed development results in approximately 2,311 square feet of permanent HCA impacts and approximately 279 square feet of temporary HCA impacts, as well as approximately 16,904 square feet of permanent vegetated corridor (WQR) impacts and approximately 10,405 square feet of temporary WQR impacts, as identified on Figure 5 of the PHS report, a construction management plan is required per MMC 19.402.3.G, and is included as sheet 49 of the plan set.

C. The NR Administrative Map, which shows WQRs and HCAs, is adopted by reference. The NR Administrative Map shall be used to determine the applicability of Section 19.402 and shall be administered in accordance with Subsection 19.402.15.

Response: As previously identified, the Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped WQR and HCA areas. Therefore, the provisions of this section are applicable.

D. Designated natural resources are shown on the NR Administrative Map as follows:

1. Water quality resources (WQRs) include protected water features and their associated vegetated corridors, as specified in Table 19.402.15. The vegetated corridor is a buffer around each protected water feature, established to prevent damage to the water feature. The width of the vegetated corridor varies depending on the type of protected water feature, upstream drainage area served, and slope adjacent to the protected water feature. The NR Administrative Map is a general indicator of the location of vegetated corridors; the specific location of vegetated corridors shall be determined in the field in accordance with Table 19.402.15.

2. Habitat conservation areas (HCAs) include significant Goal 5 wetlands, riparian areas, and fish and wildlife habitat. HCAs are designated based on a combination of inventory of vegetative cover and analysis of habitat value and urban development value. HCA locations on the NR Administrative Map are assumed to be correct unless demonstrated otherwise; verifications and corrections shall be processed in accordance with the procedures established in Subsection 19.402.15.

Response: As previously identified, the Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped WQR and HCA areas. The PHS report includes the City mapping showing HCA, vegetated corridor, and wetlands within the sites (See Figure 3). The HCA areas have been field verified by PHS in accordance with MMC Table 19.402.15 and are shown to exist within the sites. The field verified HCA line is shown on Figure 8 within the PHS report. Therefore, the provisions of this section are applicable.

E. To determine whether a proposed activity on a given property will trigger any requirements of Section 19.402, the City shall use the latest available aerial photographs; a copy of the applicable section of the NR Administrative Map; and, in the case of WQRs, the parameters established in Table 19.402.15. If a property owner or applicant believes that the NR Administrative Map is inaccurate, they may propose corrections according to the standards established in Subsection 19.402.15.

Response: As previously identified, the Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped WQR and HCA areas. The HCA areas have been field verified by PHS and are shown to exist within the sites. Therefore, the provisions of this section are applicable.

F. In the context of designated natural resources, "disturbance" is a condition or result of an act that "disturbs" as defined in Section 19.201. Disturbance can be either temporary or permanent as noted below.

1. Temporary disturbances are those that occur during an allowed or approved development or activity but will not persist beyond completion of the project. Temporary disturbances include, but are not limited to, accessways for construction equipment; material staging and stockpile areas; and excavation areas for building foundations, utilities, stormwater facilities, etc.

2. Permanent disturbances are those that remain in place after an allowed or approved development or activity is completed. Permanent disturbances include, but are not limited to, buildings, driveways, walkways, and other permanent structures.

Response: The proposed development results in approximately 2,311 square feet of permanent HCA impacts and approximately 279 square feet of temporary HCA impacts, as well as approximately 16,904 square feet of permanent WQR impacts and approximately 10,405 square feet of temporary WQR impacts. These permanent and temporary impacts are necessary to facilitate the construction of the proposed mixed-use development on the Coho Point site and improvements to the City's Dogwood Park.

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: As identified on Figure 5 of the PHS report, approximately 2,311 square feet of permanent HCA impacts and approximately 279 square feet of temporary HCA impacts, as well as approximately 16,904 square feet of permanent WQR impacts and approximately 10,405 square feet of temporary WQR impacts result from the project. Therefore, a construction management plan is required, and is included in the plan set as sheet 49. As identified in response to MMC 19.402.9, the construction management plan provides all required information.

H. Proposed activities that are listed as exempt or occur more than 100 ft from a WQR or HCA, as shown on the NR Administrative Map or determined in accordance with Table 19.402.15, do not require review under the provisions of Section 19.402.

Response: The applicant is proposing a mixed-use residential and commercial building within the Coho Point site, as well as improvements to Dogwood Park and the Adams Street right-of-way, which all

contain WQR and HCA areas. The proposed activities are not exempt per MMC 19.402.4. and require review under the provisions of this section.

I. Those portions of streams, creeks, and other protected water features that appear on the NR Administrative Map but are enclosed in pipes, culverts, or similar structures are not subject to the provisions of Section 19.402, except where a proposed activity will expose or directly disturb the protected water feature, such as with excavation. For WQRs, the underground portion of the protected water feature is not considered a protected water feature for purposes of determining the WQR location as outlined in MMC Table 19.402.15. For HCAs, the boundary verification options provided in MMC 19.402.15 may be used as necessary to determine whether the aboveground characteristics of the underground portion of the protected water feature affects the representation of HCA on the NR Administrative Map.

Response: As previously identified, the Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped WQR and HCA areas. The PHS report includes the City mapping showing HCA, vegetated corridor, and wetlands within the sites (See Figure 3). The HCA areas have been field verified by PHS in accordance with MMC Table 19.402.15 and are shown to exist within the sites per Figure 8 of the PHS report. Therefore, the provisions of this section are applicable.

J. The requirements of Section 19.402 apply, as shown in Table 19.402.3, both to properties that include a WQR and/or HCA, and to properties that do not include a WQR or HCA but where an activity is proposed within 100 ft of a WQR or HCA.

Response: As previously identified, the Coho Point site, Adams Street right-of-way, and Dogwood Park site contain City mapped WQR and HCA areas. A copy of City mapping showing HCA, vegetated corridor, and wetlands within the sites is included with the PHS report as Figure 3. The HCA areas have been field verified by PHS in accordance with MMC Table 19.402.15 and are shown to exist within the sites per Figure 8 of the PHS report. Therefore, the provisions of this section are applicable.

K. Activities that are not exempt per Subsection 19.402.4, or prohibited per Subsection 19.402.5, are subject to the Type I, II, or III review process as outlined in Table 19.402.3.K.

Response: The applicant is proposing a mixed-use residential and commercial building within the Coho Point site, as well as improvements to Dogwood Park and the Adams Street right-of-way, which contain WQR and HCA areas. The proposed activities are not exempt per MMC 19.402.4. and require review under the provisions of this section. As identified in response to MMC 19.402.8.A, a Type III review is required.

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.

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 applicant is proposing a mixed-use residential and commercial building within the Coho Point site, as well as improvements to Dogwood Park and the Adams Street right-of-way, which contain WQR and HCA areas. As identified in response to MMC 19.402.3.K, the activities proposed are not exempt from review under this section. This project is also subject to a Type III downtown design review. Therefore, the project is subject to a Type III review under the provisions of this section.

B. The activities listed below shall be subject to the review criteria for partitions and subdivisions provided in Subsections 19.402.13.H and I, respectively:

1. The partitioning of land containing a WQR or HCA that cannot meet the standards provided in Subsection 19.402.13.G.

2. The subdividing of land containing a WQR or HCA.

Response: A partition or subdivision is not proposed. Therefore, the review criteria contained in MMC 19.402.13.H and I are not applicable.

19.402.9 Construction Management Plans

A. Construction management plans are not subject to Type I review per Section 19.1004 but shall be reviewed in similar fashion to an erosion control permit (MMC Chapter 16.28).

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 and the location of excavation 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 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: As the proposed development includes approximately 2,311 square feet of permanent HCA impacts and approximately 279 square feet of temporary HCA impacts, as well as approximately 16,904 square feet of permanent WQR impacts and approximately 10,405 square feet of temporary WQR impacts, a construction management plan is required, and is included as sheet 49 of the plan set. As shown, the construction management plan shows all details identified above, including excavation areas, construction access and egress for equipment, staging and stockpile areas, erosion and sediment control measures, and city-mapped and field verified HCA lines.

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: Apart from WQR and HCA areas that are temporarily and permanently impacted as a result of the proposed development, all other WQR and HCA areas will be demarcated during construction to avoid disturbance and further permanent impacts. A construction management plan is included with this submittal as sheet 49 of the plan set and identifies specified erosion and sediment control measures, including protection for all inlets, sediment fences, sediment curtains, and biobags. Construction staging and stockpile areas are shown on the construction management plan and will be clearly marked on-site.

2. Trees in WQRs or HCAs shall not be used as anchors for stabilizing construction equipment.

Response: Trees and other vegetation within the WQR and HCA areas will not be used as anchors for stabilizing construction equipment.

3. Native soils disturbed during development shall be conserved on the property.

Response: All native soils disturbed during development will be conserved on the property as required.

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: A construction management plan is included with this submittal as sheet 49 of the plan set and identifies specified erosion and sediment control measures, including protection for all inlets, sediment fences, sediment curtains, and biobags. These measures have been

implemented in compliance with City's Public Works Standards as required. Erosion and sediment control measures are also shown on the grading plan, sheet 48 of the plan set.

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: A construction management plan is included with this submittal as sheet 49 of the plan set and identifies specified erosion and sediment control measures, including protection for all inlets, sediment fences, sediment curtains, and biobags. These measures have been implemented in compliance with City's Public Works Standards as required. Erosion and sediment control measures are also shown on the grading plan, sheet 48 of the plan set. All prescribed measures will be followed during site work to prevent further impacts to WQR areas adjacent to the development.

6. Stormwater flows that result from proposed development within and to natural drainage courses shall not exceed predevelopment flows.

Response: A stormwater drainage report is included with this submittal. As identified in Table 2-1 of the report, the total impervious area on-site is decreasing. Therefore, on-site stormwater flows post-development will be less than pre-development conditions. Stormwater runoff from the hardscape and plaza areas around the building will be managed through permeable pavers. Stormwater runoff from the building's roof will be treated in planter facilities located on the second-floor terrace, which will discharge to the storm pipe in SE Main Street, which flows to an outfall into Kellogg Creek and eventually to the Willamette River.

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: Apart from WQR and HCA areas that are temporarily and permanently impacted as a result of the proposed development, all other WQR and HCA areas will be demarcated during construction to avoid disturbance and further permanent impacts. These areas will remain undisturbed for the duration of on-site construction activities.

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: Apart from WQR and HCA areas that are temporarily and permanently impacted as a result of the proposed development, all other WQR and HCA areas will be demarcated during construction to avoid disturbance and further permanent impacts. A construction management plan is included with this submittal as sheet 49 of the plan set and identifies specified erosion and sediment control measures, including protection for all inlets, sediment fences, sediment curtains, and biobags. Construction staging and stockpile areas are shown on the construction management plan and will be clearly marked on-site.

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: Proposed lighting elements have been placed to avoid shining directly into any WQR and HCA areas adjacent to the site. Proposed lighting elements are shielded and aimed down when possible, to avoid excess light impacts to adjacent natural areas. An exterior lighting plan is included as sheet 25 of the plan set.

10. All work on the property shall conform to a construction management plan prepared according to Subsection 19.402.9.

Response: A construction management plan is included with this submittal as sheet 49 of the plan set and identifies specified erosion and sediment control measures, including protection for all inlets, sediment fences, sediment curtains, and biobags. This construction management plan has been prepared in accordance with MMC 19.402.9 as previously identified in this narrative. Prescribed erosion and sediment control measures have been implemented in compliance with City's Public Works Standards.

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 19.402.11.D.2 for HCAs, as applicable.

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.

Response: The proposed development will result in temporary and permanent impacts to WQR and HCA areas. Impacts are to be mitigated in accordance with MMC 19.402.11.C and MMC 19.402.D.2. Additional details on proposed mitigation are identified in the PHS report, and Figure 9 and Figure 9A within the report.

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 appropriately suited for the specific conditions of the planting site; e.g., shade, soil type, moisture, topography, etc.

Response: Proposed mitigation plantings will consist of species identified in the Milwaukie Native Plant List. Plantings have been selected based on the native soils and the hydrology of the site, their natural occurrence in the area, wildlife habitat enhancement value and local availability. Additional details on the proposed plantings are identified in the PHS report. Species specified are identified on Figure 9A of the report. A planting plan is also included as sheets 12 and 13 of the plan set.

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.

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.

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: Species of proposed mitigation plantings are identified on Figure 9A of the PHS report and meet the requirements size, spacing, and diversity identified above. Planting plans are also included as sheets 12 and 13 of the plan set.

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.

b. Off-Site Mitigation

(1) For disturbances allowed within WQRs, off-site mitigation shall not be used to meet the mitigation requirements of Section 19.402.

(2) For disturbances allowed within HCAs, off-site mitigation vegetation may be planted within an area contiguous to the subject-property HCA, provided there is documentation that the applicant possesses legal authority to conduct and maintain the mitigation, such as having a sufficient ownership interest in the mitigation site. If the off-site mitigation is not within an HCA, the applicant shall document that the mitigation site will be protected after the monitoring period expires, such as through the use of a restrictive covenant.

Response: All mitigation plantings for WQR and HCA impacts are proposed off-site within the Dogwood Park site and Adams Street right-of-way immediately adjacent to the Coho Point development site. As off-site mitigation for WQR impacts is not allowed, the applicant is requesting a variance to allow off-site mitigation for these impacts. Applicable approval criteria for the variance request per MMC 19.911 are addressed in this narrative.

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: Invasive, nonnative, or noxious vegetation will be removed from the mitigation area prior to planting.

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 identified in the PHS report, following proposed mitigation plantings, all remaining bare or open soil areas will be planted or seeded with a native grass seed mixture or other ground cover species during the following planting season. Ground cover species utilized will be species identified as native on the Milwaukie Native Plant List.

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.

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: To meet the minimum of 80% tree and shrub survival for proposed mitigation plantings on the second anniversary of the date that mitigation planting is completed, the applicant will follow the required and recommended practices identified above. Additional details on proposed mitigation maintenance are included in the PHS report

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: As identified in the PHS report, an annual site monitoring visit will be conducted. Following this site visit, a report will be submitted to the City for two years following planting. Plants will be replaced as necessary to ensure the minimum 80% survival rate. Additional maintenance measures per MMC 19.402.11.B.9.b will be utilized as required.

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: Proposed lighting elements have been placed to avoid shining directly into any WQR and HCA areas adjacent to the site. Proposed lighting elements are shielded and aimed down when possible, to avoid excess light impacts to adjacent natural areas. An exterior lighting plan is included as sheet 25 of the plan set.

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.

Response: Mitigation for proposed WQR area impacts is proposed per the requirements identified above and identified in MMC Table 19.402.11.C. Responses demonstrating that the proposed mitigation will comply with MMC 19.402.11.B are included with this narrative and in the PHS report. As previously identified, mitigation for WQR impacts is proposed off-site within the Dogwood Park site and Adams Street right-of-way, which requires a variance. Applicable approval criteria for the variance request per MMC 19.911 are included in this narrative. Additional details on proposed mitigation plantings are included in the PHS report, including species of plants and their reason for inclusion in the proposed mitigation area based on specific site criteria. A planting plan is also included as sheets 12 and 13 of the plan set.

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. The evaluation and analysis shall include the following: [...]

Response: The criteria of this section are addressed in detail within the PHS report and demonstrate the project's compliance with this section as well as the functions and values that contribute to water quality and wildlife habitat per MMC 19.402.1.C.2. As discussed in the PHS report, the applicant considered alternative site plans utilizing different a building layout that would not result in impacts to HCA or WQR areas. As shown on Figure 6 of the PHS report, the construction of a building outside HCA and WQR areas would result in a building that is 21% smaller and does not meet the goals of the DMU zone, which encourages denser developments that are built to the property line, which wouldn't be possible within the Coho Point site without impacting HCA and WQR areas adjacent to Kellogg Creek. Please see the PHS report for further details and findings of compliance with the criteria of this section.

B. Approval Criteria

1. Unless specified elsewhere in Section 19.402, applications subject to the discretionary review process shall demonstrate how the proposed activity complies with the following criteria: [...]

Response: The approval criteria of this section are addressed in detail within the PHS report and demonstrate the project's compliance with each applicable approval criterion. Please see the PHS report for findings of compliance.

19.402.14 Adjustments and Variances

B. Variances

1. Requests to vary any standards beyond the adjustments allowed in Subsections 19.402.14.A or B shall be subject to the review process and approval criteria for variances established in Section 19.911.

Response: The applicant is requesting a variance to MMC 19.402.11.B.6.b, which prohibits off-site mitigation for disturbances within WQRs. Applicable criteria contained in MMC 19.911 are addressed in this narrative.

SUPPLEMENTARY DEVELOPMENT STANDARDS

19.508 DOWNTOWN SITE AND BUILDING STANDARDS

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: The project does not meet every standard in 19.508 and therefore a Type III Downtown Design Review process is required. See responses to the individual standards below.

19.508.3 Review Process. Design standards for development in downtown Milwaukie are applied through downtown design review as established in Section 19.907. Projects subject to downtown design review are described in the applicability language in Subsection 19.907.2.

C. Type III. This provides for a discretionary Type III review process through which the Design and Landmarks Committee and Planning Commission determine substantial consistency with the Milwaukie Downtown Design Guidelines document. The discretionary process uses design guidelines that are more discretionary in nature and are intended to provide the applicant with more design flexibility.

Response: The project seeks a discretionary Type III Design Review process for the standards in 19.508 that are not being met.

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

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

2. Nonresidential and Mixed-Use Buildings. The following standards apply only to nonresidential and mixed-use buildings.

a. Vertical Building Façade. Nonresidential and mixed-use buildings 2 stories and above shall provide a defined base, middle, and top.

(1) Base. The base extends from the sidewalk to the bottom of the second story or the belt course/string course that separates the ground floor from the middle of the building. The building base shall be defined by providing all of these elements:

(a) The street-facing ground floor shall be divided into distinct architectural bays that are no more than 30 ft on center. For the purpose of this standard, an architectural

bay is defined as the zone between the outside edges of an engaged column, pilaster, post, or vertical wall area.

(b) The building base shall be constructed of brick, stone, or concrete to create a "heavier" visual appearance.

(c) Weather protection that complies with the standards of Subsection 19.508.4.C.

(d) Windows that comply with the standards of Subsection 19.508.4.E.

Response:
(a). The ground story residential portion of the Washington Street façade is not articulated with 30' bays. The ground story along SE McLoughlin and the residential portion of the Adams Street façade include bay spacing wider than 30'. This criterion is not met.

(b). The ground story residential portions of the Washington Street and Adams Street facades and all of the McLoughlin Street façade are clad in wood. This criterion is not met.

(c). The weather protection provided on the Washington Street façade is less than 50% of the elevation. This criterion is not met.

(d). The percentages of glazed areas at the ground story on Main, Washington and Adams Streets are slightly under the requirements. This criterion is not met.

The building design does incorporate a visual base meeting the purpose of this standard however, the base does not provide all of the prescriptive elements of 19.508.4.A.2a(1) (a)-(d). Please see the general response to Section A below.

(2) Middle. The middle of a building extends from the top of the building base to the ceiling of the highest building story. The middle is distinguished from the top and base of the building by use of building elements. The middle of the building shall be defined by providing all of the following elements:

(a) Windows that comply with the standards of Subsection 19.508.4.E.

(b) One of the following elements:
(i) A change in exterior cladding and detailing and material color between the ground floor and upper floors. Differences in color must be clearly visible.
(ii) Street-facing balconies or decks at least 2 ft deep and 4 ft wide for at least 25% of the length of the building.

(c) A change in wall plane of not less than 24 in. deep and 24 in. wide. Breaks may include, but are not limited to, an offset, recess, window reveal, pilaster, pediment, coursing, column, marquee, or similar architectural feature.

(d) Provide a step back of at least 6 ft for any street-facing portion of the building above the base maximum height as identified in Figure 19.304-4.

Response:
(a). The upper story glazing meets the requirements of 19.508.4.E. See response in 19.508.4E below.

(b). There is a change of materials at the residential portions of the Washington and Adams Street facades and the McLoughlin Street facades. There is not a change in

materials at the commercial portions of the Washington Street and Adams Street facades nor at the Main Street façade. The length of decks provided at the street facing facades is less than 25% of the length of the building. This criterion is not met.

(c). There is at least (1) wall plane changes on each façade greater than 24" deep. This criterion is met.

(d). The building massing does step back for some portions of the building however, the step backs do not meet the prescriptive requirements. This criterion is not met.

The building design does incorporate a visual middle however, the middle does not provide all of the prescriptive elements of 19.508.4.A.2a(2) (a)-(d). Please see the general response to Section A below.

(3) Top. The top of the building extends from the ceiling of the uppermost floor to the highest vertical point on the roof of the building, and it is the roof form/element at the uppermost portion of the façade that visually terminates the façade. The top of the building shall provide roofs that comply with the standards of Subsection 19.508.4.F.

Response: The building design does incorporate a visual termination of the façade at the roof levels however, the design does not comply with all of the roof standards of 19.508.4.F. This criterion is not met. Please see the general response to Section A below.

b. Horizontal Building Façade

(1) Horizontal datum lines—such as belt lines, cornices, or upper-floor windows—shall line up with adjacent façades if applicable.

(2) Significant breaks shall be created along building façades at least every 150 linear ft by either setting the façade back at least 20 ft or breaking the building into separate structures. Breaks shall be at least 15 ft wide and shall be continuous along the full height of the building. The area or areas created by this break shall meet the standards of Subsection 19.304.5.H.

Response: The building design does incorporate horizontal datum lines, however, there are not truly adjacent buildings to match our datum line except for a single building across the Right-of-Way, which does not line up. Additionally, there is not a significant break on the Main Street façade, which is more than 150' long. This criterion is not applicable however, since there is no truly adjacent building to align too. Please see the general response to Section A below.

General Response to 19.504.A: Because of the special nature of the site on the edge between urban and natural areas, not all of the prescriptive requirements of 19.508.4A can be met while also addressing the location's duality. The building design, therefore, must be reviewed comprehensively instead of as a series of itemized parts. The purpose of this section, to provide cohesive and visually interesting facades in downtown, has been met in the site-specific building design. Detailed discussions of the building's façade strategy and design are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines apply:

- *Downtown Design Guideline 1 - Milwaukie Character*
  - *Reinforce Milwaukie's Sense of Place*
  - *Integrate the Environment*
  - *Establish Gateways*
  - *Consider View Opportunities*
  - *Consider Context*
  - *Use Architectural Context Wisely*

- *Downtown Design Guideline 3 – Architecture Guidelines*
  - *Wall Materials.*
  - *Wall Structure*
  - *Silhouette and Roofline*

B. Corners

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

2. Nonresidential or Mixed-Use Buildings. 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):

a. The primary entry to the building located within 5 ft of the corner.
b. 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.
c. The corner of the building cut at a 45° angle or a similar dimension "rounded" corner.
d. A combination of special paving materials; street furnishings; and, where appropriate, plantings, in addition to the front door.

Response:
The Intersection of Main Street and Washington Street - creates a strong corner with the overall building design to establish the significance of this urban corner. A retail entrance is located near the corner, however, the existing grade along SE Washington does not allow for an accessible entrance immediately on the building corner. The entrance is therefore shifted to the south. The corner features generous glazing and a sweeping canopy to establish a focal point and provide visual interest from the sidewalk; the corner marks the start of the building's commercial frontage along SE Main Street. While not providing a building cut for added visibility, the storefront provides a clear line of sight from the adjacent street. As mentioned, natural grade does not allow the corner retail entrance to occur within 5 ft of the corner as prescribed; to create a compliant and functional entrance to this unit, the entry is shifted south from the corner to provide an accessible entry that is compatible with the adjacent site condition. To address the corner, a stormwater planter is proposed to soften the edge condition and create an inviting pedestrian experience.

The intersection of Main Street and the Adams Street ROW - is treated differently as it occurs at the transition from a dense downtown urban condition to the natural areas of Kellogg Creek and Dogwood Park. The future restaurant space is located at this corner in response to early feedback from the City. The restaurant entry is set back to provide a prominent covered area for restaurant customers and allow for a view from Main Street to Kellogg Creek and the new pedestrian path. A combination of special paving and street furnishings are presented in the corner to enhance the connection to Dogwood Park, the adjacent pedestrian access way, and the farmers market. The special paving creates an axis with the neighboring property that pulls the pedestrian through the site and allows free and safe access onto the landscaped public walkway that connects SE Main Street and SE McLoughlin Boulevard. The special paving and walkway access strengthens the pedestrian experience at this corner and provides a unifying feature between the building and neighboring sites. The cut at the building corner, while not meeting the letter of the code, acts in a similar fashion as a rounded corner, and provides a visual connection and direct access from SE Main Street to the adjacent park and public walkway.

The intersection of Washington Street and McLoughlin blvd - is part of the residential portion of the building and therefore has different architectural language from the commercial corners. This corner is also influenced by the large right-of-way curve and the significant slope along Washington. The corner is angled to follow the curve of the right-of-way and allows for greater

visibility between the adjoining streets. An entry is located at this corner to provide access to a shared bike storage as well as the shared parking garage. The entry is offset from the corner to accommodate the steep grade along SE Washington Street and provide barrier free access to the interior of the building. Large sections of planted walls soften the otherwise utilitarian garage access. The living walls are a prominent and lush building element that both buffer the adjacent building program and enhance the surrounding urban environment.

This criterion is not met. The purpose of this section, to create a strong architectural statement at street corners and establish visual landmarks and enhance visual variety, has been met by alternative design means. Detailed discussions of the building's design strategy are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines are relevant to this standard:

- *Downtown Design Guideline 2 – Pedestrian Emphasis*
  - *Integrate Barrier Free Design*
- *Downtown Design Guideline 3 – Architecture Guidelines*
  - *Corner Doors*

C. Weather Protection

1. Purpose. Create an all-season pedestrian environment.

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.

(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.

(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.

(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.

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:
a(1). All ground floor building entries are protected by canopies and are recessed at least 3' behind the front building façade. This criterion is met.

a(2). Permanent canopies and recesses are provided along 50% of the Main Street façade. Less than 50% of the commercial portion of the Washington Street façade includes canopies. This criterion is not met.

a(3). Weather protection extends a minimum of 4' over the pedestrian area and a maximum of 4' over the public ROW. This criterion is met.

a(4). The residential portions of the ground story façade are not included in the calculations since the residential entry is covered.

b. The canopies will be designed to meet all applicable building codes and will be reviewed with the building permit application. The canopies will be able to accommodate future blade signage without encroaching the required vertical clearance. This criterion is met.

The building design incorporates weather protection coverage to provide an all-season pedestrian environment, however, not all of the standards are met. Because the parking garage door reduces the available façade area for canopies, the canopy coverage on Washington Street is not 50%. The purpose of this standard, to create an all-season pedestrian environment, has been met by including weather protection at every location available. Detailed discussions of the building's weather protection design strategy are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines are relevant to this standard:

- *Downtown Design Guideline 2 – Pedestrian Emphasis*
  - *Reinforce and Enhance the Pedestrian System*
  - *Define the Pedestrian Environment*
  - *Protect the Pedestrian from the Elements*
  - *Create Successful Outdoor Spaces*

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 Milwaukie and the surrounding built and natural environment.

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:
a. Primary materials make up 73% of the Main Street façade. Primary materials make up 64% of the Washington Street façade. Primary materials make up 66% of the Adams Street façade. Primary materials make up 12% of the McLoughlin Street facades. This criterion is not met. Please see the general response to Section D below.

b. Secondary materials make up 23% of the Main Street façade, 32% of the Washington Street façade and 32% of the Adams Street façade. Secondary materials make up 88% of the McLoughlin Street facades. This criterion is not met. Please see the general response to Section D below.

c. Accent materials include metal PTHP screens, ornamental metal screens over the ground story storefront and the projecting cornice. Accent materials make up 4% of the Main Street façade, 4% of the Washington Street façade, 7% of the Adams Street façade and 1% of the McLoughlin Street facade. This criterion is met.

d. No prohibited materials are proposed. This criterion is met.

General Response to Section 19.504.D: The building includes primary (brick and wood siding) and secondary (finished metal panels) materials that are compatible with downtown Milwaukie

and the adjacent natural resources. However, due to the overall approach to distributing the materials along varying façade conditions, the prescriptive percentages are not met. The overall building design must be reviewed comprehensively. The purpose of this section, to encourage the construction of attractive buildings with materials that evoke a sense of permanence and are compatible with downtown Milwaukie and the surrounding built and natural environment, has been met in the site-specific building design. Detailed discussions of the building's material strategy are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines apply:

- *Downtown Design Guideline 1 - Milwaukie Character*
  - *Reinforce Milwaukie's Sense of Place*
  - *Integrate the Environment*
  - *Consider Context*
  - *Promote Architectural Compatibility*
  - *Use Architectural Context Wisely*
- *Downtown Design Guideline 3 – Architecture Guidelines*
  - *Wall Materials.*
  - *Wall Structure*

E. Windows and Doors

1. 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.

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: Glazing makes up 43% of the ground story wall area at Main Street. This criterion is not met. The ground story design provides visual interest, daylighting of interior space and multiple points of visual connection between interior and exterior space. Due to the proportions of the storefront bays in relation to the overall building proportions, the prescriptive percentage is not met. Please see the general response to Section E below.

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.
b. Along McLoughlin Blvd the required coverage is 30%.

Response: Glazing makes up 37% of the ground story wall area along Washington Street and 37% of the ground story wall area at Adams Street. Glazing makes up 39% of the ground story wall area at McLoughlin Street. This criterion is not met. Due to the proportions of the storefront bays in relation to the overall building proportions, the prescriptive percentage is not met. Additionally, these facades contain residential units, which require some solid wall area for furnishings and other practical needs. Please see the general response to Section E below.

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 Main Street and Washington Street façades each include 31% glazing. The Adams Street façade includes 30% glazing. The McLoughlin Street façade includes 31% glazing. No sloped roofs or dormer windows are proposed. 100% of upper floor windows are vertically oriented. These criteria are met.

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.

b. All buildings with nonresidential ground-floor windows must 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.

d. The bottom edge of windows along pedestrian ways shall be constructed no more than 30 in above the abutting walkway surface.

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.

f. Signs are limited to a maximum coverage of 20% of the required window area.

Response:
a. The windows within the brick clad walls are set back 4". The windows in the metal panel walls are not set back. This criterion is not met. The design goal is for the metal panel walls to be very simple in appearance in order to visually recede and allow for the brick facades to be more hierarchically prominent. The plane of the windows will be very close to the plane of the metal panel cladding. Please see the general response to Section E below.

b. The ground story commercial windows will be aluminum framed storefront with glazing to meet the minimum VT of 0.6. This criterion is met.

c. Doors and primary entrances are located on the street facing facades. Future business entrances will be unlocked when the building is open. The residential entrance, which serves all residential units, will be locked. This criterion is met.

d. The bottom edge of the commercial storefront abutting the public ways is less than 30" above the abutting sidewalk surfaces. This criterion is met.

e. Ground story commercial storefront will not have more than 50% coverage of the window area. This criterion is met.

f. No signs within the window area are proposed. This criterion is met.

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: No prohibited window elements are proposed. This criterion is met.

General Response to 19.504.E. Because of the special nature of the site on the edge between urban and natural areas, and the mixed use nature of the building, not all of the prescriptive requirements of 19.508.4E are met. The building design, therefore, must be reviewed comprehensively instead of as a series of itemized parts. The purpose of this section, 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, has been met in the site-specific building design. Detailed discussions of the building's design strategy are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines apply:

- *Downtown Design Guideline 1 – Milwaukie Character*
  - *Promote Architectural Compatibility*
  - *Use Architectural Context Wisely*
- *Downtown Design Guideline 2 – Pedestrian Emphasis*
  - *Provide Places for Stopping and Viewing*
  - *Create Successful Outdoor Spaces*
- *Downtown Design Guideline 3 – Architecture Guidelines*
  - *Windows*
  - *Building Security*

F. Roofs and Rooftop Equipment

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

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.

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.

c. All hip or gabled roofs exposed to view from adjacent public or private streets and properties shall have a minimum 4/12 pitch.

d. Sloped roofs shall have eaves, exclusive of rain gutters, that project from the building wall at least 12 in.

e. When an addition to an existing structure, or a new structure, is proposed in an existing development, the roof forms for the new structure(s) shall have similar slope and be constructed of the same materials as the existing roofing.

Response:
a. The building steps in height and has multiple roof levels. All roof forms are flat. The roofs have either a parapet or a projecting cornice. This criterion is met.

b. Some of the parapets are 12" high while others are only 6". The cornices project 3'-6". This criterion is not met. Please see the general response to Section F below.

c. No hip or gabled roofs are proposed. This criterion does not apply.

d. No sloped roofs are proposed. This criterion does not apply.

e. This building is not existing. This criterion does not apply.

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.

   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:
   a. The building includes solar panels at the roof. The panels are not screened. This criterion is met.

   b. The elevator penthouse extends 10' above the roof. This is more than 16' above the height limit. This criterion is not met. A Type III variance for additional building height is requested at the end of this document.

   c. All mechanical equipment is set back more than 10' away from the roof edges. The equipment is not screened with prescriptive materials because it is surrounded by solar panels, which will serve as the screens. This criterion is not met. Please see the general response to Section F below.

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: The building design includes a trellis over one of the roof decks. The trellis is 10' high. This criterion is met.

General Response to 19.504.F. Because of the special nature of the site on the edge between urban and natural areas, the building massing steps down toward the adjacent natural resources. This creates a complex roofline that includes parapets and cornices. Some of the parapets are set at 6" above the roof to maintain the horizontal datum line of the adjacent window sills, which does not meet the prescriptive requirement for parapets. Additionally, the building a significant number of solar panels. Because the solar panels effectively screen the mechanical equipment, no additional equipment screening has been provided. The purpose of this section, to create a

visually interesting condition at the top of the building that enhances the quality and character of the building, has been met in the site-specific building design. Detailed discussions of the building's massing and roofline strategy are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines apply:

- *Downtown Design Guideline 3 – Architectural Guidelines*
  - *Silhouette and Roofline*
  - *Rooftops*

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.

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.

(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.

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.

(2) The private open space provided shall be 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.

(4) Balconies may project up to a maximum of 4 ft into the 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:
50 SF outdoor space x 195 units = 9,750 SF total required outdoor space
9,750 x .50 (open space credit) = 4,875 SF required outdoor space
Private outdoor space provided = 3,832 SF
Including: 1st, 2nd, 5th & 6th story Unit Patios/terraces
Common outdoor space provided = 4,832 SF
Including: 5th story Amenity Rooms & Landscaped roof terrace
Total outdoor space provided = 8,664 SF
This criterion is met.

19.605 VEHICLE PARKING QUANTITY REQUIREMENTS

19.605.1 MINIMUM AND MAXIMUM REQUIREMENTS.

1 space per dwelling unit.	1 x 195 units = 195 spaces
2 spaces per 1,000 SF retail floor area	3,900 / 2 = 8 spaces
4 spaces per 1,000 SF restaurant floor area	3,100 / 4 = 12 spaces

Total required spaces	***215***

Response: 81 spaces have been provided with the following ratios.

.48 space per dwelling unit.	*.48 x 195 units = 94 spaces*
2 spaces per 1,000 SF retail floor area	*3,900 / 2 = 8 spaces*
4 spaces per 1,000 SF restaurant floor area	*3,100 / 4 = 12 spaces*
Total spaces before By-Right reductions	***114***
By-Right reduction: proximity to MAX	*114 x .25 = 29*
By-Right reduction: additional bike parking	*6 per 1 add'l bike space*
	39 additional spaces / 6 = 6
Total By-Right reductions	*<35>*
	112– 35 = 79
Total spaces after By-Right reductions	***81***

A Modification of the required residential parking ratio has been requested at the end of this narrative.

19.605.3.B EXEMPTIONS AND BY-RIGHT REDUCTIONS TO QUANTITY REQUIREMENTS. Allows a 25% reduction in required parking spaces in the DMU zone when the site is within 1,000 feet walking distance from a light rail stop. Allows an additional reduction of 1 parking space per 6 additional secured bike spaces.

Response: The site is located 800' walking-distance from the MAX Orange-line stop and is eligible for the 25% by-right reduction. The project includes 36 additional secured bike parking spaces over the required minimum and is eligible for a by-right deduction of one parking space per 6 additional bike spaces. See the tables above for calculations based on a modification of the required residential parking ratio. See the Modification Request at the end of this narrative for the proposed residential parking ratio. The proposed ratio results in 114 required spaces. The combined by-right deductions reduce this requirement to 79 spaces. 81 spaces are provided.

19.606 PARKING AREA DESIGN REQUIREMENTS

19.606.1 PARKING SPACE AND AISLE DIMENSIONS. Requires parking spaces and abutting drives to meet the dimensions shown in Table 19.606.1. 90-degree stalls are required to be 9'-0" wide x 18'-0" deep, minimum. Two-way aisles serving 90-degree stalls must be 22' wide, minimum.

Response: The parking garage includes 81 90-degree surface parking stalls.

41 of the surface parking stalls are 9'-0" wide x 18'-0" deep and meet the requirements of Table 19.606.1

Reduced width for the remaining 40 stalls is requested as part of this application. 34 of the stalls will be slightly narrower than required, at 8'-9" wide x 18'-0" deep. The six remaining stalls will be considered "compact" at 8'-6" wide x 18'-0" deep.

This proposal is based on dimensions the City of Portland minimum width requirement for standard 90-degree stalls, which is 8'-6" wide. In this proposal, only three stalls are reduced to the City of Portland standard width. The 34 8'-9" stalls still exceed COP standards. Please note the proposed narrower stalls in this application are 18'-0" deep, which meets the depth requirements of Table 19.606.1. Additionally, all drive aisles are 24' wide or wider, which exceeds the requirements of Table 19.606.1.

For additional reference, the City of Seattle only requires 8'-6" wide stalls for "large" vehicles. Standard stall widths are smaller for "medium" and "small" vehicles. Please see City of Portland and City of Seattle parking stall standards, which are included as a separate Exhibit.

Since the project includes fewer total spaces than required, permitting a portion of the spaces to be compact allows for more total spaces. This helps to mitigate the impact of the reduced number of total spaces provided. The requested width is based on parameters set in other jurisdictions and is a reasonable means to gain more total parking stalls.

19.606.3 ADDITIONAL DESIGN STANDARDS. Requires parking areas to meet the requirements of the following:
A. Paving and Striping
B. Wheel Stops
C. Site Access and Drive Aisles
D. Pedestrian Access and Circulation
E. Internal Circulation

Response: Paving, striping and wheel stops are provided throughout the garage and comply. 24' wide drive aisles are provided and comply. Pedestrian access is provided from a dedicated entrance and elevator on SE Washington St. as well as the primary shared tenant circulation system. Internal circulation is provided within the garage. This criterion is met.

19.609 BICYCLE PARKING

19.602.2A QUANTITY OF SPACES. Requires 1 space per unit for multi-family development and 10% of the minimum required vehicle parking for other uses.

1 space per dwelling unit.	1 x 195 units = 195 spaces
.10 x 8 for retail	1 space
.10 x 12 for restaurant	2 spaces
Total required spaces	***198***

Response: 237 spaces are provided. This criterion is met.

19.602.2B COVERED OR ENCLOSED BICYCLE PARKING. Requires that 50% of required bicycle spaces be covered and/or enclosed in a secure room.

Response: 90% of the required bicycle parking is covered and enclosed in secure rooms. This criterion is met.

19.606.3 SPACE STANDARDS AND RACKS. Requires bike spaces to be 2' x 6' minimum with a 5' access aisle behind the spaces. 7' of overhead clearance is required. Racks must be securely anchored and allow the frame and one wheel to be locked.

Response: All bike spaces will be wall-mounted racks. The racks will be securely anchored to the walls. All racks will be of a design that allows the frame and one wheel to be locked.

The bike spaces are proposed as 1'-6" wide x 4'-2" deep with an 8" vertical stagger from one rack to the next. Reduced depth of bike spaces is requested as part of this application.

The project provides more bike spaces than the minimum requirement. The proposed spacing allows for more bike parking than the minimum requirement, which is beneficial to occupants and

visitors to the building. The proposed spacing is common in similar buildings within the City of Portland and the metro area, and bicycle users are accustomed to this type of bike parking.

Because the racks are wall-mounted, they do not take up as much length as a floor-mounted rack and the 6'-0" length is therefore not needed. The vertical stagger allows for the narrower spacing by minimizing handlebar conflicts. The City of Portland allows for wall-mounted rack spacing to be 1'-6" wide (with an 8" vertical stagger) x 3'-4" deep. The proposed spaces have more depth than what the City of Portland allows.

19.606.4 LOCATION. Requires bicycle parking facilities to be within 50' of the main entrance, closer to the entrance than the nearest non-ADA vehicle parking stall, provide direct access to a public right-of-way, be dispersed for multiple entrances, be in a location that is visible to building occupants or from the main parking lot, not impede pedestrians in the public right-of-way and be separated from vehicle parking areas by physical barriers.

Response: Due to the size and mixed-use nature of the building, the bicycle parking facilities are dispersed throughout the building. 60% are located in the parking garage and ground story with (3) being in the public ROW and have easy access to the building entrances and elevators, as well as direct access to the public ROW. The remaining 40% are located on residential floors for proximity to individual apartment units. These spaces have easy access to the building elevators.

19.611 PARKING STRUCTURES

19.611.2B COMPLIANCE WITH OTHER SECTIONS OF 19.600.
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.

Response: Please see request to reduce the width of a small portion of the parking stalls in Section 19.606.1 above.

19.611.3 STANDARDS AND DESIGN CRITERIA. Requires structured parking to meet the requirements of the following:
A. 75% of the length of any street-facing façade shall provide ground-story windows or wall openings.
B. The structure shall be visually compatible with related structures.
C. Required setbacks shall be landscaped per 1906.2.D.3
D. Safe pedestrian connections between the parking structure and the public right-of-way and principal building.
E. The structure shall provide adequate lighting.

Response: The parking structure is part of the overall building. Due to the significant grade change across the site, some of parking portion of the building is below grade.

The east (SE Main) and south façades do not have above grade parking walls
The north (SE Washington) façade has 91' lineal feet of above grade parking wall and 100% of the length includes openings.
The west (SE McLoughlin) façade has 79 lineal feet of above grade parking wall and 100% of this length includes openings.
The southwest (SE McLoughlin) façade has 144 lineal feet of above grade parking wall and 100% of this length includes openings.

The portion of the parking structure that is visible to view is visually compatible with the rest of the building. The building setbacks are landscaped. There are safe pedestrian connections between

the building, including the parking portion, and the right-of-way. The parking garage lighting will meet the requirements of 19.606.3F. Since the lighting is interior to the building, no light trespass will occur.

These criteria are met.

LAND USE APPLICATIONS

19.905 CONDITIONAL USES

19.905.4 Conditional Use Approval Criteria

A. Establishment of a new conditional use, or major modification of an existing conditional use, shall be approved if the following criteria are met:

1. The characteristics of the lot are suitable for the proposed use considering size, shape, location, topography, existing improvements, and natural features.

Response: The characteristics of the lot are suitable for the proposed uses in the Willamette Greenway, as supported by the DMU zoning designation of the entire site, including the portion that is in the Greenway. The size and shape of the site area allow for the proposed uses to function appropriately. The location of the site is extremely favorable for the proposed uses due to its proximity to public transportation, bicycle paths and the downtown district. The proposed uses will greatly improve the site from its current condition. Additionally, the project will provide significant public benefit by providing floodplain mitigation and landscaping improvements on the adjacent Adams St. ROW, the Kellogg Creek natural resource and Dogwood Park, while also providing a new, important pedestrian connection from SE Main to the river. Provisions for a future public bike path have also been included in the design. This criterion is met.

2. The operating and physical characteristics of the proposed use will be reasonably compatible with, and have minimal impact on, nearby uses.

Response: The proposed uses (multi-family residential, retail, restaurant) are the same as the nearby uses and therefore the operating and physical characteristics of the proposed use will have minimal impacts. This criterion is met.

3. All identified impacts will be mitigated to the extent practicable.

Response: The impacts that have been identified (building height, parking quantity and site access) have been mitigated to the extent practicable. See requested variances and modifications below for detailed descriptions.

4. The proposed use will not have unmitigated nuisance impacts, such as from noise, odor, and/or vibrations, greater than usually generated by uses allowed outright at the proposed location.

Response: The proposed uses are allowed outright at the site by the Zoning Code. No nuisances greater than usually generated for these allowed uses are proposed. Any potential nuisance impacts will comply with all applicable codes. This criterion is met.

5. The proposed use will comply with all applicable development standards and requirements of the base zone, any overlay zones or special areas, and the standards in Section 19.905.

Response: The proposed uses comply with the development requirements of all applicable zoning, overlay and special area standards, with the exception of the variances and modifications requested below. Please see detailed descriptions below.

6. The proposed use is consistent with applicable Comprehensive Plan policies related to the proposed use.

Response: The project is a partnership between the applicant and the City of Milwaukie, and the development strategy has been coordinated closely with the City's development team assigned to the project. The proposed uses are consistent with the goals and policies of the Comprehensive Plan as well as the Housing and Residential Land Needs Assessment. Specific Comprehensive Plan goals are summarized below. Please refer to the remainder of the application for detailed descriptions of the proposed development.

2.2.4. Incentivize development sites to include spaces conducive to public events, community gathering and the provision of public art (adjacency to Farmer's Market and tabletop).

3.2 Water Quality and Resources: Enhance the quality of Milwaukie's water resources and ensure they have adequate flows and quantity to support their long-term health (multiple sub-goals addressed by the floodplain mitigation and vegetation).

3.3 Flora and Fauna Habitat: Protect and Conserve aquatic, aerial, arboreal and terrestrial wildlife and habitat (multiple sub-goals addressed by the floodplain mitigation and vegetation.)

3.5.2 Incorporate sustainable and low-impact building and site planning technologies, habitat-friendly development strategies and green infrastructure into city codes and standards (LEED certification, on-site stormwater treatment, native plant selections, solar array).

4.4 Natural Resource Protection: Protect and conserve the natural resources within the Willamette River Greenway while recognizing recreation needs (multiple sub-goals addressed by the floodplain mitigation and vegetation).

6.1.5 Create a more energy efficient land use pattern that is not limited to infill and cluster development, neighborhood hubs and increased density (infill and increased density on underutilized site).

6.1.6 Encourage the creation of compact, walkable neighborhoods and neighborhood hubs throughout the city that provide a mix of uses and help reduce transportation emissions and energy usage (increases residential use downtown, proximity to a variety of uses and transportation options).

7.3 Sustainability: Promote environmentally and socially sustainable practices associated with housing development and construction (multiple sub-goals addressed by green building measures, proximity to a variety of other uses and transportation options).

7.4 Livability: Enhance the ability of Milwaukie's neighborhoods to meet community members' economic, social and cultural needs and promote their contributions to health, well-being and universal access and design (multiple sub-goals addressed by increased residential density in downtown, proximity to public amenities and gathering areas, proximity to a variety of uses and transportation options).

8.1.1 Downtown Milwaukie Policies (multiple policies addressed by increased residential density, safety, proximity to natural resources, pedestrian-friendly design and materials, proximity to a variety of uses and transportation options).

8.2 Livability: Enhance livability by establishing urban design concepts and standards that help improve the form and function of the built environment (multiple sub-goals addressed by pedestrian-friendly and accessible design and materials, new inclusive pedestrian path, safety, small storefront retail spaces, pedestrian space landscaping).

9.3.2 Ensure that bicycle trails, sidewalks and walking trails provide convenient access for pedestrians and bicyclists to natural areas, parks and recreation opportunities (new pedestrian path from Main Street connecting Dogwood Park to Willamette River).

10.4.1 Preserve and restore natural functioning and historic floodplains and healthy uplands to better manage floor events, provide and enhance wildlife habitat, improve water quality, ensure late season water availability and increase climate change resiliency (extensive floodplain mitigation).

10.4.3 To the extent possible, stormwater should be managed with green infrastructures such as green roofs, water quality swales, rain gardens and the intentional placement of appropriate trees (on-site green roofs and stormwater planters).

11.1.10 Make downtown Milwaukie a regional destination with uses and amenities that capitalize on its proximity to the Willamette waterfront and multimodal transportation options (increases residential density in downtown, adds commercial space and increases trips).

12.6.2 To use land more efficiently, encourage infill on underutilized parcels and encourage intensification of redevelopment of land and buildings in the downtown mixed use districts and areas designated for commercial, industrial or employment use (development of underutilized site, increased density in mixed-use zone).

7. Adequate public transportation facilities and public utilities will be available to serve the proposed use prior to occupancy pursuant to Chapter 19.700.

Response: The site is 800' from the MAX Orange Line station, as well as falling within walking distance of a Trimet bus transfer area. Public utilities are adequate to serve the proposed uses. This criterion is met.

19.907 DOWNTOWN DESIGN REVIEW

MILWAUKIE DOWNTOWN DESIGN GUIDELINES

1. Milwaukie Character

These guidelines address Milwaukie's unique "sense of place," its special quality and personality. People's image of Milwaukie is that of an All- American riverfront town which is hospitable and family oriented. The guidelines address what gives Milwaukie this feeling, this "character" as a unique collection of spaces and buildings, not simply a group of individual projects that could be anywhere. The Milwaukie Character Guidelines consist of the following sections:

- Reinforce Milwaukie's Sense of Place: Strengthen the qualities and characteristics that make Milwaukie a unique place.

Response: The Willamette River and Kellogg Creek are defining features of downtown Milwaukie. The project site sits on the bank of Kellogg Creek and enjoys proximity to the Willamette River. This location serves as a gateway to downtown from McLoughlin Street to the west and the less dense neighborhoods to the south.

The building design responds directly to its immediate surroundings. The footprint and massing are site specific. The tallest portion of the building is located at the corner of Main Street and Washington Street and extends south along the Main Street Frontage. The taller height provides a strong corner at this important intersection and creates an urban edge that responds to the gateway nature of the location. The building's height and massing step down on the Kellogg Creek and Willamette River sides to soften the edges adjacent to these natural resources. The southwest corner is a diagonal wall defined by Kellogg Creek and the associated wetland area and marks the shortest part of the building. The massing strategy allows the building to visually recede where it abuts the natural areas instead of overwhelming them. It also provides view opportunities from residential units and the amenity roof decks.

The materials on the street-facing facades are primarily brick with glazed aluminum storefront at the ground story that tie into the material palette of the existing historic downtown buildings and the retail nature of the district. The north and south facades transition from brick to metal and wood cladding as the building approaches Kellogg Creek. The southwest façade is completely clad with metal and wood cladding. The change in material palette softens the portions of the building that are adjacent to natural resources, helping the building to be quieter on these sides instead of imposing itself visually onto the natural areas. Planted screens are provided on the river-facing sides of the building to further soften the appearance.

Because of the special nature of the site on the edge between urban and natural areas, not all of the prescriptive requirements of 19.508 can be met while also addressing the location's duality. The proposed design meets the intention of this guideline by embracing the aspects of the site that make it unique and specific to downtown Milwaukie. This building could not occur in any other location.

- Integrate the Environment: Building design should build upon environmental assets.

Response: The building design takes its cue from its immediate environmental surroundings. The footprint and massing are site specific and respond to adjacent environmental features. The footprint of the building is derived directly from the path of Kellogg Creek as it crosses the site. The building's height and massing step down on the Kellogg Creek and Willamette River sides to soften the edges adjacent to these natural resources. The southwest corner marks the shortest part of the building. The massing strategy allows the building to visually recede where it abuts the natural areas instead of overwhelming them. Extensive public site improvements on the adjacent sites include floodplain mitigation and a new public pedestrian path along new gabion walls. Provisions for a future public bike path are also included in the site design.

The master plan for Dogwood Park is integrated into the project by maintaining the park's large open grass area and providing an opportunity for overlooking Kellogg Creek and the Willamette River beyond. Native plants and trees create a newly restored bank that will attract birds and wildlife and provide an opportunity for environmental education.

- Consider View Opportunities: Building design should maximize views of natural features or public spaces.

Response: The building design incorporates opportunities for views of the Willamette River, Kellogg Creek and Dogwood Park. height steps down on the Kellogg Creek and Willamette River sides to allow for views from multiple areas within the building's interior. Two occupied roof decks are also provided at the 5th story. These are located on the southwest angled wing of the building to maximize views of the natural resources.

A new public pedestrian path along Kellogg Creek will provide views of Kellogg Creek, Dogwood Park and the Willamette River. Outdoor seating for the future restaurant space has been located on the southeast corner of the building to provide views for the dining public and foster interest in the adjacent natural areas.

Additionally, balconies are provided on the north and east sides of the building to provide views of the surrounding downtown blocks.

- Consider Context: A building should strengthen and enhance the characteristics of its setting, or at least maintain unifying features.

  Response: The building design responds directly to its immediate context. The footprint and massing are site specific. The north and east facades are taller to provide a strong corner and create an urban edge that reflects the gateway nature of the location. The building's height and massing step down on the Kellogg Creek and Willamette River sides to soften the edges adjacent to these natural resources and allow for views. The southwest corner is a diagonal wall defined by Kellogg Creek and the associated wetland area.

  The materials on the street-facing facades are primarily brick with glazed aluminum storefront at the ground story that tie into the material palette of the existing historic downtown buildings and the retail nature of the district. The north and south facades transition from brick to metal and wood cladding as the building approaches Kellogg Creek. The southwest façade is completely clad with metal and wood cladding. The change in material palette softens the portions of the building that are adjacent to natural resources, helping the building to be quieter on these sides instead of imposing itself visually onto the natural areas.

- Promote Architectural Compatibility: Buildings should be "good neighbors." They should be compatible with surrounding buildings by avoiding disruptive excesses. New buildings should not attempt to be the center of attention.

  Response: The building's mixed-use nature is compatible with district's identity as a historic small-town downtown and an emerging contemporary urban center. The high floor-to-floor height at the ground story and generous glazed storefront promote pedestrian activity and interest, and retail entrances along Main Street foster commercial activity. The street-facing facades are clad primarily in brick to tie into the material palette of the existing downtown buildings. The ample ground story storefront and canopies respond to the commercial retail nature of the downtown location.

  The material palette includes a modest number of materials to avoid flashiness. Demarcations of the tripartite aspects of the building design are subtle and include strong datum lines, minor wall plane and material transitions. Fussy and disruptive architectural features have been avoided.

- Use Architectural Contrast Wisely: Contrast is essential to creating an interesting urban environment. Used wisely, contrast can provide focus and drama, announce a socially significant use, help define an area and clarify how the downtown is organized.

  Response: The building incorporates architectural contrast in two ways: height/mass and materials. These contrasts reflect the contrasting character of each side of the building site.

  The north and east facades are six stories tall to create a strong corner and an urban edge on the downtown side, and to respond to the gateway location. In contrast, the south, west and southwest facades step down on the Kellogg Creek and Willamette River sides. Additionally, the ground story wall plane on the west and southwest facades is broken into angled sections that further erode and soften the edges adjacent to the natural resources.

  The north and east facades are clad primarily in brick with aluminum storefront at the ground story.

The brick and storefront tie into the material palette of the existing downtown buildings for a sense of permanence and to foster an active pedestrian and commercial environment. The north and south facades transition from brick to metal and wood cladding as the building approaches Kellogg Creek.

The southwest façade is completely clad with metal and wood cladding. The change in material palette softens the portions of the building that are adjacent to natural resources, helping the building to be quieter on these sides instead of imposing itself visually onto the natural areas.

These architectural contrasts not only address the contrasting aspects of the building site, but also provide visual interest and diversity when the building is viewed from its different sides.

2. Pedestrian Emphasis

In Downtown Milwaukie, the pedestrian is the priority. These guidelines address the ways in which buildings and spaces may be designed to create a convenient, comfortable, human-scaled environment that people will want to be in.

The Pedestrian Emphasis Guidelines include the following:

- Reinforce and Enhance the Pedestrian System: Barriers to pedestrian movement and visual and other nuisances should be avoided or eliminated so that the pedestrian is the priority in all development projects.

  Response: All retail and restaurant entrances, as well as the residential lobby entrance, are located on Main Street. This orientation promotes and enhances pedestrian traffic along Main Street. Generous glazed storefront is included on both facades to provide visual interest from the sidewalk. Canopies are located over each storefront bay to protect pedestrians from weather and minimize glare on the glazing. The parking garage entrance is located on Washington Street to minimize disruption to pedestrian activity and avoids interference with the Farmer's Market activities. A public pedestrian path will be created on the south side of the building to provide an important connection from Main Street to McLoughlin and the river.

- Define the Pedestrian Environment: Provide human scale to the pedestrian environment, with variety and visual richness that enhance the public realm.

  Response: The high floor-to-floor height at the ground story distinguishes the pedestrian level from the rest of the building. Ample storefront provides visual interest from the sidewalk. Storefront bays include bulkheads below the glazing and decorative metal screens at the tops of the bays to bring the scale down within each bay. Canopies are provided over each storefront bay to offer protection from the elements as well as to provide visual demarcation of the pedestrian level. Additionally, planted screens are provided as the building steps down on the Kellogg Creek and Willamette River sides, to screen the parking garage from the sidewalk and create a colorful and enlivened transition from the urban pedestrian area to the adjacent natural resources.

- Protect the Pedestrian from the Elements: Protect pedestrians from wind, sun and rain.

  Response: The building entrances are set back from the edge of the building to provide cover at the doors. Canopies are also provided over all the entrances and each fixed storefront bay to provide additional protection along the sidewalk.

- Provide Places for Stopping and Viewing: Provide safe, comfortable places where people can stop to sit and rest, meet and visit with each other and otherwise enjoy the downtown surroundings.
-

  Response: The high floor-to-floor height at the ground story and generous glazed storefront promote window shopping and provide visual interest at the sidewalk level. The restaurant's outdoor seating area creates opportunities for outdoor dining with views of the surrounding natural environment. Planted screens are provided as the building steps down towards Kellogg Creek and the river, to screen the parking garage from the sidewalk and create a colorful and interesting transition from the

urban pedestrian area to the adjacent natural resources.

- Create Successful Outdoor Spaces: Spaces should be designed for a variety of activities during all hours and seasons.

  Response: The outdoor restaurant seating is adjacent to the public sidewalk and looks over Kellogg Creek. The location provides an inviting and attractive place to dine outdoors and supports activity at the nearby Farmer's Market. The seating area connects to new public pedestrian path along the Kellogg Creek side and fosters interest in the adjacent natural areas. Planted screens soften the edges of the building as it steps down toward the on the Kellogg Creek and Willamette River sides and provide visual interest to passers-by. Two occupied rooftop decks are located strategically to maximize views of the creek and the river. One deck is covered to encourage use throughout the year, and the other is uncovered for a different type of outdoor experience.

- Integrate Barrier-Free Design: Accommodate handicap access in a manner that is integral to the building and public right-of-way and not designed merely to meet minimum building code standards.

  Response: All the building pedestrian entrances except for the shared parking garage entrance are located along SE Main Street, where more favorable grading conditions exist. The corner retail entrance has been shifted away from the intersection, where there are grading challenges, in order to provide an accessible and more comfortable entry. All of the building entrances will meet ADA and other accessibility requirements. Elevators and an internal accessible route to all areas of the building will be provided. Accessible toilet rooms to serve the commercial spaces will also be provided. Accessible parking stalls and paths will be included in the parking garage. All residential units will meet ADA and Fair Housing requirements and all shared residential service areas and amenities will be accessible. The new public pedestrian path linking Main Street to McLoughlin is designed to be inclusive and accessible for all users.

3. Architecture Guidelines

The Architecture Guidelines promote quality development while reinforcing the individuality and spirit of Milwaukie. The guidelines promote architectural types indigenous to Milwaukie and/or the Northwest. Buildings in Milwaukie should seem to be "at home" there, reflecting its character and heritage, suiting its climate, landscape and downtown street grid.

Within each downtown planning area, building proposals must consider and respond to selected requirements from the following architectural criteria:

- Corner Doors: Locate entry doors on corners of commercial and retail buildings wherever possible.

  Response: The entrance to the retail space at the intersection of Main and Washington is set back somewhat from the corner of the building. The existing grade along SE Washington does not allow for an accessible entrance at the building corner, therefore the entrance is shifted to the south to provide a more comfortable entry for all users. Wide glazed storefront bays are provided on either side of the corner instead, which create a strong visual statement. A canopy extending over each storefront bay and wrapping the corner is provided. Since an accessible entrance at the corner is not technically feasible, the intention of the criterion is met with the expansive glazing and corner canopy.

  A future restaurant space is located at the corner at Main Street and the Adams Street ROW, based on early feedback from the City. This building corner is treated differently than the Washington Street corner since it occurs at the transition from the denser built downtown blocks to the natural areas of Kellogg Creek and Dogwood Park. The restaurant entry occurs in this corner, although it is set back from the primary building faces. This deeper recess provides a covered area for restaurant customers as well as views through the corner from Main Street to Kellogg Creek and vice versa. The recess also creates a visual flow between the sidewalk, the new public path, the restaurant outdoor seating area and the farmer's market.

  The intersection of Washington Street and McLoughlin is part of the residential portion of the building and this guideline does not technically apply. However, since the corner is at a significant

intersection, additional information is provided here for reference. Since this corner is within the residential portion of the building, it has different architectural language than the two commercial corners and is not intended to resemble them or compete with their primary nature. This corner is also influenced by the large right-of-way curve and the significant slope along Washington Street. The building is angled at this corner instead of square, to respond to the shape of the large curve and also to provide a visual "sweep" from northbound McLoughlin to Washington Street.

- Wall Materials: Use materials that create a sense of permanence.

  Response: Wall materials have been employed to respond to the building's unique location at the intersection of the urban downtown district and Kellogg Creek and Dogwood park to the south. The wall materials have been strategically located to respond to each façade's surroundings, as well as to provide hierarchy among the different facades.

  At the Main Street and Washington Street sides, brick and ground story glazed storefront are used to create a strong corner and reflect permanence. Additionally, the brick cladding ties into the existing downtown building palette and reflects the commercial nature of the district. Vertical and horizontal brick reveals are included to break down the wall planes and create shadow lines. Decorative metal screens are included above the ground story canopies to bring additional scale to each storefront bay. A cornice is provided at the upper level roof lines to emphasize the primary nature of the brick walls and mark the transition to the secondary metal clad walls above.

  High-quality metal cladding is utilized at the upper level walls and the facades that do not face the streets, distinguishing these walls from the primary street-facing walls. This material selection also allows for the non-street facing walls to visually recede and not overwhelm the adjacent natural resources.

  Wood cladding is employed at recessed alcoves and along the recessed base level of the non-street-facing facades. This creates visual depth at the street level and provides a softer edge on the walls immediately adjacent to the natural areas.

  The exterior wall materials and their strategic locations create a sense of permanence, respond to the existing downtown material palette while also responding to the unique and diverse site frontages.

- Wall Structure: Use scale-defining devices to break up the longitudinal dimensions of buildings, creating a comfortable sense of enclosure by establishing an uninterrupted street edge.

  Response: The building employs a tripartite system. The material palette includes a modest number of materials to avoid flashiness. Demarcations of the tripartite aspects of the building design are subtle and include strong datum lines, minor wall plane transitions and material transitions.

  The ground story is taller than the upper stories to visually set it apart from the rest of the building. At the street-facing facades, the base is differentiated from the middle portion of the building by a strong horizontal datum line created by the storefront bays and canopies. The height of these bays is maintained even as the grade changes along the commercial section of the SE Washington façade. Decorative metal screens are provided above the canopies to visually terminate the base level.

  There is discernable building middle that extends several stories on the primary street-facing facades. A cornice at the top of the walls distinguishes the middle from the top. Above the cornice line, the wall materials change to metal panels, to break down the visual mass of the building and further define the wall hierarchy.

  At the non-street facing facades, the base is differentiated by the use of wood cladding. The base level wood clad walls are set back from the wall plane above, and the walls are angled on the west, southwest and portions of the south side. This treatment creates less imposing and softer edges adjacent to the natural resources.

The middle and top portions of the non-street facing walls are clad in metal panel to visually tie into the upper level street-facing walls. The building height steps along the non-street facing walls. The design of these facades is less concerned with maintaining a strong tripartite hierarchy and instead focuses more on responding to the adjacent natural areas.

The combination of material transitions, wall plane changes, datum lines and general approach to building massing allow the building to create a strong edge while also breaking up the longitudinal dimensions of the walls.

- Retail Windows. Use windows that create an open and inviting atmosphere.

  Response: At the ground story, each bay of commercial space will be glazed with aluminum storefront. The expansive glazing will allow views into and from the commercial spaces for visual interest and promotion of pedestrian activity. The openness of the ground story will invite pedestrians into the commercial spaces and also provide eyes on the street for safety.

  The storefront will have solid panels at the base. The color will dark, not clear anodized aluminum. The residential lobby storefront will be high-quality wood cladding and will sit on top of a concrete base.

- Silhouette and Roofline. Create interest and detail in silhouette and roofline.

  Response: The roofline along Main Street varies along the length of the facade to break up the overall mass and provide visual interest. The roofline along Washington Street steps down with the building to respond to the adjacent natural resources and significant grade change. Cornices at the primary roof line are provided on street-facing facades.

  The overall building massing approach and strategic roofline strategy create an interesting and straightforward silhouette. The roofline design articulates and reinforces the hierarchy of the building's parts.

- Rooftops. Integrate rooftop elements into building design.

  Response: Two occupied rooftop decks are located strategically to maximize views of Kellogg Creek and the Willamette River. One deck is covered to encourage use throughout the year, and the other is uncovered for a different type of outdoor experience. Additional non-occupied green roof areas are included to reduce rooftop heat and to provide a better visual experience from nearby buildings. Mechanical units are setback from building edges and will not be visible from the sidewalk. Solar arrays are also included at the roof level and will not be visible.

  The roof plan and components are an integral part of the overall building design.

- Green Architecture. New construction or building renovation should include sustainable materials and design.

  Response: The project anticipates receiving LEED Silver certification. A solar array will be installed on the roof. Stormwater from the hardscape and plaza areas around the building will be managed through permeable pavers and pervious concrete. Storm water from the roof area will be treated in a planter facility located on the second-floor terrace.

  There are also a number of green building measures being utilized in the landscape areas. For all of the mitigation areas, native plants are being used per the City of Milwaukie's standards. In other areas, a combination of native, indigenous, and drought-tolerant plants is being utilized. In addition, a smart irrigation controller will be specified that will monitor the rainfall to avoid irrigation when it is not

necessary. The major public pedestrian path that connects Main Street to McLoughlin Boulevard will be a steel grate surface that will allow water to filter into the native grade.

Additionally, the project scope includes extensive floodplain mitigation, which is, by its nature, sustainable design.

- Building Security. Buildings and site planning should consider and employ techniques that create a safe environment.

  Response: The active, mixed-use nature of the building will generate activity during the day and at night, with "eyes on the street" throughout. The retail spaces will have continued visitors during the day and the restaurant hours can extend into the evening. Residents will come and go at all hours.

  Residential units overlook the new pedestrian path, which will provide a safety factor for the new public amenity. Lighting has been included along the path.

  The development of a new building at this scale will create a level of activity that is much greater than the current activity level. Overall, this will provide significantly more security for the district.

TYPE III VARIANCES REQUESTED

1. Variance to MMC 19.402.11.B.6.b

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.

Response: The applicant is requesting a variance to MMC 19.402.11.B.6.b, which prohibits off-site mitigation for disturbances within WQRs. As identified in response to MMC 19.911.2.B, this is not a prohibited variance.

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 applicant is requesting a variance to MMC 19.402.11.B.6.b, which prohibits off-site mitigation for disturbances and permanent impacts within WQR areas. As identified in response to the applicable criteria of MMC 19.402, the applicant's proposed multi-use development will result in approximately 16,904 square feet of permanent and 10,405 square feet of temporary vegetated corridor impacts adjacent to an WQR (Kellogg Creek). The applicant is proposing mitigation to these WQR impacts on a site immediately adjacent to the Coho Point site, Dogwood Park and Adams Street right-of-way. This applicant's variance request is not for any of the purposes identified above. Additionally, MMC19.402.11.B.6.b does not contain the word 'prohibited'. Therefore, this variance request is allowed, and the standards of this section are applicable.

C. Exceptions. 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: MMC 19.402.11.B.6.b does not allow off-site mitigation for WQR impacts by right, and does not include provisions for exceptions, adjustments or modifications. Therefore, a variance is required to allow for off-site WQR impacts.

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: The applicant's variance request will allow for off-site mitigation to WQR impacts. As previously identified in response to MMC 19.402, the applicant is proposing permanent impacts to HCA and WQR areas to allow for the development of a mixed-use development. As the applicant's development requires a Type III Natural Resources review per MMC 19.402.8, this variance is also subject to the Type III process.

A second variance, to allow for an increase in the allowed buildable height of the proposed multi-use building, is also requested. The applicant's requested height variance is subject to approval criteria identified in MMC 19.911.6. Responses demonstrating the project's compliance with those criteria are included in this narrative.

A third variance, to allow a reduction in the minimum percentage of first floor zero setback is also requested. The requested variance is subject to approval criteria in 19.911.4. Responses demonstrating the project's compliance with those criteria are included in this narrative.

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.

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.

Response: As previously identified, the applicant's variance request to allow off-site mitigation to permanent WQR impacts is subject to the Type III process. Therefore, these standards are not applicable.

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: The applicant's variance request will allow for off-site mitigation to WQR impacts. As previously identified in response to applicable standards of MMC 19.402, the applicant is proposing temporary and permanent impacts to HCA and WQR areas to allow for the development of a mixed-use development that is constructed to the property line and maximizes use of the site. As the applicant's development requires a Type III Natural Resources review per MMC 19.402.8, this variance is also subject to the Type III process. This request is not to a numerical standard, or to a standard of MMC 19.505, 19.901, or to fence height standards. Therefore, this variance is subject to the Type III process.

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.

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.

Response: The applicant is requesting a Type III variance to allow for off-site mitigation to WQR impacts. As previously identified in response to MMC 19.402, the applicant is proposing temporary and permanent impacts to HCA and WQR areas to allow for the development of a mixed-use building on the subject property which will provide 84 studio apartments, 56 one-bedroom apartments, 187 two-bedroom apartments, and seven (7) three-bedroom apartments that will range in size from 570 to 1,150 square-feet. The ground story of the building will include commercial retail spaces facing Main Street, and a corner restaurant oriented toward Dogwood Park and Kellogg Creek with outdoor seating.

The site is currently partially vacant and located in Downtown Milwaukie, adjacent to SE McLoughlin Boulevard (Hwy 99E) to the west, Kellogg Creek and Dogwood Park to the south, SE Main Street to the east, and SE Washington Street to the north. The site is located entirely within Milwaukie's Downtown Mixed Use (DMU) zone, which promotes mixed-use development, densities higher than other City zones, and development that extends to the right-of-way frontage and property line. The DMU zone includes many incentives for higher density and unique development, including height bonuses, flexible ground-floor space, and 0-foot minimum setbacks. As stated in MMC 19.304, minimal buildable land remains in Downtown, and the City encourages unique mixed-use and residential projects that maximize density and complete site utilization.

Off-site mitigation will allow for maximum utilization of the Coho Point site for the mixed-use development, maximizing the number of residential units and leasable commercial space, allowing the building to be constructed as close to the property line as possible consistent with other recent developments within the DMU zone in downtown Milwaukie. The off-site mitigation will provide native tree and shrub plantings compliant with the Milwaukie Native Plan List. Mitigation plantings will occur in the mitigation areas as identified in Figure 9 of the PHS report, located within the Adams Street right-of-way and Dogwood Park.

Alternatives to the mixed-use development's design were contemplated within the PHS report, including a design that reduced the development's footprint to the limit of the HCA and WQR areas. As identified in Figure 6 of the PHS report, building within the HCA and vegetated corridor adjacent to the WQR (Kellogg Creek) allows for a building that is approximately 204,253 square-feet; a building that is built to the HCA line, and does not impact the WQR vegetated corridors, results in a building that is approximately 165,310 square-feet, or a reduction of approximately 21% of the preferred alternative's building size. In this alternative, HCA and WQR impacts would not occur, and mitigation would not be necessary. This alternative would provide a project that is not financially feasible due to the reduce number of residential units, however. The applicant's proposed development has been designed to maximize the use of the site consistent with other recent developments in the DMU zone and Downtown Milwaukie, including the Axeltree Apartments located at SE 21st Avenue and SE Washington Street.

Alternatives that reduce the development's footprint but still result in WQR and HCA impacts that require mitigation would ultimately require this to be done off-site due to the site's constrains previously identified, which includes public right-of-way on north, east, and west sides, and Kellogg Creek and a public park to the south. Alternatives to off-site mitigation do not exist in these scenarios; mitigation would still be required off-site, whether mitigation occurs within in Adams Street right-of-way and Dogwood Park, or elsewhere. While off-site mitigation is not allowed for WQR impacts per MMC 19.401.11.B.6.b, the proposed off-site mitigation meets all other baseline code requirements for mitigation to WQR impacts, including:

- *Areas of temporary impacts will be restored and permanent impacts to WQR and HCA impacts will be mitigated (MMC 19.401.11.B.1);*
- *Proposed mitigation plantings consisting of native species consistent with MMC 19.401.11.B.2 will be provided;*
- *Proposed plantings will meet the plant size, spacing, and diversity requirements as identified on sheets 12 and 13 of the plan set and Figure 9A of the PHS report (MMC 19.401.11.B.3-5);*
- *Invasive non-native and noxious vegetation, and nuisance plants will be removed from the mitigation area prior to planting (MMC 19.401.11.B.7);*
- *Following the installation of mitigation plantings, remaining bare/open soil areas will be planted or seeded to 100% coverage with a native grass seed mix or other ground cover species (MMC 19.401.11.B.8);*

- *Required and recommended practices identified in MMC 19.0401.11.B.9 will be utilized by the applicant on the second anniversary of mitigation plantings being installed to meet the minimum of 80% tree and shrub survival as required (MMC 19.401.11.B.9);*

- *An annual monitoring site visit will be conducted, and a report prepared and submitted to the City for two years following plantings (MMC 19.401.11.B.10); and*

- *Proposed mitigation plantings have been selected based on the existing conditions of the WQR areas being impacted and the conclusion that the area could be enhanced through vegetation enhancement and mitigation, as identified in the PHS report. (MMC 19.401.11.C.1)*

While the Adams Street right-of-way and Dogwood Park are not considered part of the Coho Point development site per the City's definition of "site", these areas are immediately adjacent to the Coho Point site development area and include improvements that will be constructed in conjunction with the applicant's proposed mixed-use development. As identified in detail within the PHS report, the proposed mitigation will improve the overall quality of wildlife habitat within the mitigation areas and will also improve the functional value of Kellogg Creek, which is the resource (WQR) being impacted by the applicant's proposed mixed-use development.
As identified above, the proposed mitigation will meet all other baseline requirements per MMC 19.401.11.B.1-10, as well as specific mitigation requirements for WQR impacts per MMC 19.401.11.C.1. As identified in response to MMC 19.911.4.B.1.b-c below, the proposed variance for off-site mitigation avoids impacts to surrounding properties, results in desirable public benefits, responds to the natural and built environment in a creative and sensitive manner, and will not result in impacts that need to be mitigated. Therefore, the applicant's proposal to allow for off-site mitigation for permanent disturbances to WQR areas will meet the baseline code requirements for required WQR impact mitigation and does not result in any adverse impacts.

b. The proposed variance is determined by the Planning Commission to be both reasonable and appropriate, and it meets one or more of the following criteria:

(1) The proposed variance avoids or minimizes impacts to surrounding properties.

Response: The requested variance is to allow for off-site mitigation for disturbances and permanent impacts within WQR areas adjacent to Kellogg Creek as a result of the proposed mixed-use development. As identified in Figure 9 of the PHS report, the off-site mitigation is proposed within the Adams Street right-of-way and Dogwood Park and is not anticipated to impact surrounding properties due to the nature of the request. The proposed mitigation plantings will include native trees and shrubs that are compliant with the Milwaukie Native Plant List, which will further enhance Dogwood Park's natural character, and will soften the transition from the public park space toward Kellogg Creek.

As a part of the mitigation, man-made debris and non-native and noxious vegetation will be removed within the planting area prior to the installation of mitigation plantings. The removal of non-native and noxious plantings will provide an improved environment for the proposed and existing native plantings that could otherwise be harmed by the presence of non-native and noxious plants and man-made debris. The proposed off-site mitigation will not diminish the natural character of the areas adjacent to and within Dogwood Park and will provide additional public benefits by enhancing these natural areas. As described in the PHS report, the mitigation plantings will complement the existing diverse plant community within the WQR and provide other benefits such as bank stabilization and sediment pollution control, while adequately mitigating impacts caused by the proposed mixed-use development.

Therefore, the proposed variance for off-site mitigation plantings for WQR impacts will avoid impacts to surrounding properties, including the City's Dogwood Park.

(2) The proposed variance has desirable public benefits.

Response: The requested variance for off-site mitigation will provide native tree and shrub plantings compliant with the Milwaukie Native Plant List adjacent to and within Dogwood Park as identified on Figure 9 of the PHS report. These plantings will further enhance Dogwood Park's natural feel and will act to soften the transition from Dogwood Park and the existing built areas adjacent to Main Street toward Kellogg Creek.

These mitigation plantings will benefit the existing diverse plant community within the WQR areas and provide water filtration, infiltration, and natural purification functions for Kellogg Creek, as well as bank stabilization and sediment pollution control. As further identified in the PHS report, the proposed tree plantings will also better provide microclimate regulation and shade for Kellogg Creek as compared to the existing plant community. These trees will complement the existing trees that will remain within the vegetated corridor and provide the potential for large wood recruitment and retention functions. Additionally, non-native and noxious plantings will be removed within the planting area prior to installation of mitigation plantings, increasing the overall health of the area adjacent to Kellogg Creek and Dogwood Park as compared to current conditions.

Therefore, the proposed variance for off-site mitigation plantings for WQR impacts will result in a desirable public benefit as natural areas adjacent to Kellogg Creek will be enhanced with native plantings that will only contribute to the health of Kellogg Creek and existing native vegetation within the mitigation area, which will enhance the public's use of these areas for passive and active recreational purposes.

(3) The proposed variance responds to the existing built or natural environment in a creative and sensitive manner.

Response: The requested variance is for off-site mitigation for disturbances to WQR areas adjacent to Kellogg Creek resulting from the applicant's proposed mixed-use development within the Coho Point site. Off-site mitigation will allow for maximum utilization of the Coho Point site for the mixed-use development, maximizing the number of residential units and leasable commercial space, allowing the building to be constructed as close to the property line as possible consistent with other recent developments within the DMU zone in downtown Milwaukie. The off-site mitigation will provide native and tree shrub plantings compliant with the Milwaukie Native Plan List. Mitigation plantings will occur in the mitigation areas as identified in Figure 9 of the PHS report, located within the Adams Street right-of-way and Dogwood Park.

As the variance is for required mitigation due to the project's impacts to WQR areas, the plantings are inherently needed as a response to the project's permanent impacts on the natural environment adjacent to Kellogg Creek. These mitigation plantings will benefit the existing diverse plant community within the undisturbed WQR areas and provide water filtration, infiltration, and natural purification functions for Kellogg Creek, as well as bank stabilization and sediment pollution control. As further identified in the PHS report, the proposed tree plantings will also better provide microclimate regulation and shade for Kellogg Creek as compared to the existing plant community. Proposed tree plantings will complement the existing trees that will remain within the vegetated corridor and provide the potential for large wood recruitment and retention functions. Additionally, non-native, and noxious plantings will be removed within the mitigation planting area prior to installation of mitigation plantings, increasing the overall health of the area adjacent to Kellogg Creek and Dogwood Park as compared to current conditions.

Therefore, the proposed variance for off-site mitigation responds to the existing natural environment in a creative and sensitive manner by providing mitigation plantings that adequately mitigate impacts from the applicant's proposed mixed-use development within the Coho Point site, while also benefiting the overall health and functional value of Kellogg Creek and the adjacent undisturbed WQR areas. Additionally, proposed mitigation plantings will complement the built environment within Dogwood Park and the Adams Street right-of-way by providing native plantings

that will supplement the park's more natural areas and provide a more natural transition from these areas to Kellogg Creek.

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

Response: The proposed off-site mitigation includes plantings of native trees and shrubs that are compliant with the Milwaukie Native Plant List as identified in Figure 9 of the PHS report. Invasive and non-native or noxious vegetation will be removed within the mitigation planting areas prior to planting; additional species listed as nuisance plants by the City will also be removed, as well as man-made debris. As identified on Figure 9 of the PHS report, the mitigation area will occur adjacent to and within the City's Dogwood Park. The proposed mitigation plantings will not result in impacts that require mitigation in their own right. Conversely, these plantings will further enhance Dogwood Park's natural feel, and will eliminate non-native and invasive species that could otherwise harm existing natural resource areas adjacent to Kellogg Creek.

Therefore, the applicant's variance request to allow for off-site mitigation required for WQR impacts within the Coho Point site does not result in additional impacts that would require mitigation.

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: The applicant is electing to meet the discretionary relief criteria. Therefore, the economic hardship criteria are not applicable.

2. Variance to MMC 19.304.5.B.3

19.911.6 Building Height Variance in the Downtown Mixed Use Zone

A. Intent. To provide a discretionary option for variances to maximum building heights in the Downtown Mixed Use Zone to reward buildings of truly exceptional design that respond to the specific context of their location and provide desired public benefits and/or amenities.

B. Applicability. The Type III building height variance is an option for proposed buildings that exceed the maximum heights or stories allowed through the bonuses specified in Figure 19.304-4, Subsection 19.304.5.B.3, and Section 19.510.

Response: The applicant is requesting a variance to MMC 19.304.5B, which allows 5 stories and 69' maximum height with the bonuses specified in Figure 19.304-4, Subsection 19.304.5.B.3 and Section 19.510. The proposed building is 6 stories and 78' from the zoning base point. Therefore, this variance request is allowed, and the standards of this section are applicable.

C. Review Process. The building height variance shall be subject to Type III review and approval by the Design and Landmarks Committee and the Planning Commission, in accordance with Chapter 19.907 and Section 19.1011. The building height variance shall be consolidated with downtown design review.

1. Because the building height variance provides substantial flexibility and discretion, additional time will be required for public input and technical evaluation of the proposal. To use this option, the applicant shall sign a waiver of the 120-day decision requirement.

Response: The signed waiver is included in this response.

2. The applicant may request design advice from the Design and Landmarks Committee prior to submitting an application. Design advice requests provide the opportunity to assess approval potential prior to committing excessive time or money to detailed design plans.

Response: The City of Milwaukie is a partner in this project and has been involved in the design discussions since the beginning of the project. An informal pre-application conference was attended in addition to the formal pre-application conference. A formal presentation will be made to the DLC.

3. Design advice requests may not be made for a specific project or site with an active land use review application.

Response: No design advice request is being made.

4. A special application fee may be required to use this Type III option to allow the City to contract with a registered architect to assist in the review of the height variance application.

Response: The fees associated with this application have been identified by City staff.

D. Approval Criteria. The approval authority may approve, approve with conditions, or deny the building height variance based on the following approval criteria:

1. Substantial consistency with the Downtown Design Guidelines.

Response: The proposed building is substantially consistent with the Downtown Design Guidelines. A Type III Downtown Design Review is included in this application. Applicable guidelines are addressed in 19.907 above.

2. The proposed height variance will result in a project that is exceptional in the quality of detailing, appearance and materials or creates a positive unique relationship to other nearby structures, views or open space.

Response: The building is designed for the prominent gateway location it occupies. The downtown district façade requirements identified in the Downtown Design Guidelines are addressed, including a tripartite design, durable, high-quality materials, and ample façade openness. Downtown pedestrian standards are also met with weather protection, ground story glazing, places for stopping and viewing, among others.

The additional story requested in this variance occurs along the SE Main and SE Washington facades. The building form and massing respond directly to the site conditions. The overall building massing approach pushes the taller portion of the building to the downtown facing sides to create an urban edge. The massing erodes on the south, west and southwest facades in response to adjacent natural resources. This site specific approach can be described diagrammatically as taking a 5-story building, removing one story from a portion of the building and adding it to another portion of the building. In other words, the overall mass of the proposed building is the same as it would be if the entire building utilized the 5 stories that are allowed outright. The proposal is to simply shift the mass around to create the urban edge on the downtown sides and a softer edge on the more sensitive natural resource sides. See Drawing sheet 8 for diagrams that illustrate this approach.

There are several building design considerations that factor into the additional height requested. The Milwaukie Downtown Design Guidelines require a tall ground story height. In addition, the steps in the massing and the inclusion of occupied roof decks require deeper structural members in some portions of the building. In order to provide these positive design features, the building height must be raised to allow for a livable floor-to-floor height on the upper floors and an appropriate ceiling height in the 5th story amenity space.

There will be inherent impacts by building any new building, particularly a multi-family housing structure

that brings more people to the neighborhood. It is important to understand that these impacts are positive, not negative. The impacts include increased pedestrian activity, increased security from residential activity and more eyes on the street, and general economic improvements from more people residing in the district. The project addresses needs identified in the Housing and Residential Land Assessment. The project provides 195 units of housing with a variety of housing types. The development of this needed housing mitigates the impact of the requested additional height.

Additionally, the project scope includes extensive floodplain mitigation, development of a significant pedestrian connection from SE Main St to SE McLoughlin and the river and provisions for a future public bike path. These are not directly related to the height of the building but reinforce the partnership with the City of Milwaukie and the good faith intention for the project to have a strong positive impact on the surrounding area.

3. The proposed height variance preserves important views to the Willamette River, limits shadows on public open spaces and ensures step downs and transitions to neighborhoods at the edge of the Downtown Mixed Use Zone.

Response: The project does not block the defined view corridor along Washington Street. The project creates new views from and along the Adams Street ROW by developing a new public path connecting Main Street to McLoughlin. From this path, views of Kellogg Creek, Dogwood Park, and the Willamette River will be provided.

The overall building massing approach pushes the taller portion of the building to the downtown facing sides to create an urban edge. The massing erodes on the south, west and southwest facades in response to adjacent natural resources. This approach minimizes shadowing from the taller portion of the building on the adjacent natural areas and the farmer's market to the south.

4. The proposed height variance will result in a project that provides public benefits and/or amenities beyond those required by the base zone standards and that will increase downtown vibrancy and/or help meet sustainability goals.

Response: The project provides 195 units of needed housing with a variety of unit types, as identified in the Housing and Residential Land Assessment. In addition, the increased activity from residential dwellers and active retail spaces promotes economic development and provide increased security for the neighborhood. The increased height allows for building amenities that will make the housing units attractive and provide desired views while also meeting the need for a taller, active ground story.

Additionally, the project scope includes extensive floodplain mitigation, development of a significant pedestrian connection from SE Main St to SE McLoughlin and the river and provisions for a future public bike path. These are not directly related to the height of the building but reinforce the partnership with the City of Milwaukie and the good faith intention for the project to have a strong positive impact on the surrounding area.

The impacts to the adjacent natural areas have been reduced by the massing approach described above. Pushing the mass toward the urban edge conforms to the Downtown Design Guidelines while at the same time respects and defers to the adjacent natural areas along the remaining facades. The inclusion of roof decks and the resulting views will help attract the residents that the City wishes to draw into the downtown district. The numerous benefits of having increased activity and dwelling downtown mitigate the additional height.

3. Variance to MMC 19.304.5.D.2.b(1)

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.

Response: The applicant is requesting a variance to MMC 19.304.5D.2.b(1), which requires 75% of the first floor to be built to the front lot line. As identified in 19.911.2B, this is not an ineligible variance.

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 applicant is requesting a variance to MMC 19.304.5D.2.b(1), which requires 75% of the first floor to be built to the front lot line. This applicant's variance request is not for any of the purposes identified above, therefore this is not an ineligible variance.

C. Exceptions. 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: MMC 19.304.5D.2.b(1) does not allow for a reduction in the minimum percentage of first floor zero setback by right, and does not include provisions for exceptions, adjustments or modifications. Therefore, a variance is required to allow for a reduction in the percentage of first floor zero setbacks.

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: The applicant's variance request will allow for a reduction in the percentage of zero setbacks along Main and Washington Streets and the Adams Street right-of-way. This is the third variance request included in this application

A variance to MMC 19.402.11.B.6.b, which prohibits off-site mitigation for disturbances and permanent impacts within WQR areas, is also requested. The variance is subject to approval criteria identified in MMC 19.911.4. Responses demonstrating the project's compliance with those criteria are included in this narrative.

A variance to allow for an increase in the allowed buildable height of the proposed multi-use building is also requested. The applicant's requested height variance is subject to approval criteria identified in MMC 19.911.6. Responses demonstrating the project's compliance with those criteria are included in this narrative.

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.

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.

Response: This request is not to a numerical standard, or to a standard of MMC 19.505, 19.901, or to fence height standards. Therefore, this variance is subject to the Type III process.

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: This request is not to a numerical standard, or to a standard of MMC 19.505, 19.901, or to fence height standards. Therefore, this variance is subject to the Type III process.

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.

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.

Response: MMC 19.304.5.D.2.b(1) and Figure 19.304-5 require that buildings along Main and Washington Streets and the Adams Street right-of-way have zero setbacks for 75% or more of the frontages. This section does not include provisions for shallow recesses incorporated for façade articulation, similar to 19.304.5E.2.d.

Façade articulation is required by 19.508.4 Building Design Standards and the Milwaukie Downtown Design Guidelines. The proposed design achieves the required façade articulation in part by providing slight recesses at the storefront bays, wall material changes and where the building transitions from commercial uses to residential use. These recesses are generally less than 2' deep, with a few specific exceptions. All of the recesses occur beneath the datum line set by the canopies, and the remaining ground story wall areas above are at the lot lines.

Recesses less than 2' deep are not experienced as interruptions in the continuous urban enclosure and instead provide visual interest and help to engage passers-by. The proposed building is large, with over 200' of frontage on Main Street and 150'-6" of frontage on Washington Street (as measured per Figure 19.304-5). Without façade articulation, these long frontages would be monolithic and imposing and would not support the standards in 19.508.4 and the Milwaukie Downtown Design Guidelines.

Each of the frontages responds to unique considerations that factor into the proposed facade articulation strategy. Specific percentages of recessed areas for each frontage are described in the response to 19.304.5D.2.b.

The Washington Street frontage contains both commercial and residential uses. There is also a significant grade change, and the ground story is above the sidewalk level for part of the frontage. At the commercial portion of the Washington Street frontage, the brick wall is set at the property line the full height of the building. The storefront bays are recessed 1'-0" to provide façade articulation and allow for sound construction detailing of wall material transitions. The pedestrian access door is recessed more than 2' to protect the entry from the elements and to allow the door to open without swinging over the right of way.

The ground story residential portion of this frontage is recessed less than 2' from the lot line. This recess occurs at a change in wall materials and visually differentiates the residential portion of the building from the commercial portion. Additionally, planted metal screen walls are provided in front of the open garage below. These walls are recessed approximately 1'-4" from the lot line. Because the plants require a minimum of 12" of growing space, the screen walls must be set back from the property line to allow room for the plants and for the planted screen concept to be viable.

At the Adams Street right of way, the brick walls is not set exactly to the lot line. This is due to the brick coursing. The brick coursing starts at the zero lot line of the Washington/Main Street corner and progresses south. The Adams/Main Street corner is 2-1/2" off the lot line in order for the wall to terminate at a brick module in lieu of cutting small slivers of bricks, which is not practical or attractive.

The brick wall at the Adams Street frontage is located 2-1/2" from the lot line for the entire height. Practically and visually, the wall is at the lot line.

Similar to Washington Street, the storefront bays are set back from the face of the brick wall less than 1' to provide façade articulation. The restaurant entrance bay is set back 20'. This provides covered circulation space for restaurant customers and also allows a view through the corner from Main Street to Kellogg Creek and the new public path, and vice versa.

There is approximately 35' of residential frontage at Adams Street (as measured per Figure 19.304-5). The residential portion is set back to distinguish it from the commercial part of the building, and to mark the change in wall materials. This set back is approximately 6' from the property line to allow for an outdoor deck. Due to the path of the Kellogg Creek bank, which crosses the property line and travels northwest, the building wall also angles to the northwest. This geometry results in a section of wall that is between 2' and 20', and a very small section that is more than 20' from the lot line.

The Main Street frontage has several subtle variations in recess depths. This is the longest wall of the building and is anticipated to have the most pedestrian activity. The residential entrance is located on this frontage, alongside the commercial entrances. Façade articulation on this frontage is particularly important.

The brick wall is located at the lot line for its full height. All but one of the commercial storefront bays are recessed less than 2' for façade articulation and to create a rhythm of bays along the sidewalk. The commercial retail entrance doors are recessed approximately 3' to provide additional protection from the elements and to allow the doors to open without swinging over the right of way. The restaurant entrance is set back 19'-0". This provides covered outdoor circulation space for restaurant customers and also allows a view through the corner from Main Street to Kellogg Creek and the new public path, and vice versa.

The middle portion of the Main Street frontage contains the residential entry and lobby. The wood clad wall at the residential entry and lobby is set back less than 2' from the lot line to differentiate it from the commercial portion of the frontage. The residential entrance doors are recessed another 5'. This provides more maneuvering room for residents who may be carrying bags, managing bikes, etc.

Adjacent to the residential entry and lobby is a service area, which includes doors to the trash room and electrical room. The wood clad wall at the service area is additionally recessed to provide a buffer between the service doors and the right-of-way. The commercial storefront bay adjacent to the north aligns with this wood clad wall, to achieve balance on the elevation. This is the sole commercial storefront bay that is recessed more than 2'.

The intent statemen of 19.304.5D.2.b reads: Buildings are allowed and encouraged to build up to the street right-of-way in the DMU Zone. Required build-to lines are used in combination with the frontage occupancy requirements of Subsection 19.304.5.E and are established in specific areas of the downtown to ensure that the ground floors of buildings engage the street right-of-way (see Figure 19.304-5). The build-to line ensures compatibility and harmony between buildings, enabling a series of different buildings to maintain or establish a continuous vertical street wall.

At all three facades, the majority of the walls are at or less than 2' off the lot line. 19.304.5E.d Frontage Occupancy allows for recesses incorporated to comply with façade articulation requirements to be considered to be occupying the site frontage if the recesses do not exceed 2'. A similar argument can be made for Build-To line requirements. Slight recesses that are used to provide scale and variety to long walls do not reduce the urban enclosure effect. The recesses support the goals of Milwaukie Downtown Design Guidelines, including:

Define the pedestrian environment: Provide human scale to the pedestrian environment, with variety and visual richness that enhance the public realm

Wall Structure: Use scale-defining devices to break up the longitudinal dimensions of buildings, creating a comfortable sense of enclosure by establishing an uninterrupted street edge

b. The proposed variance is determined by the Planning Commission to be both reasonable and appropriate, and it meets one or more of the following criteria:

(1) The proposed variance avoids or minimizes impacts to surrounding properties.

(2) The proposed variance has desirable public benefits.

(3) The proposed variance responds to the existing built or natural environment in a creative and sensitive manner.

Response: The proposed variance has minimal negative impact to surrounding properties. The slight recesses along the sidewalk level wall planes do not create voids in the urban edge or otherwise reduce the sense of urban enclosure.

The proposed variance has desirable public benefits, including façade articulation that provides human scale and visual interest at the sidewalk level, and differentiates between commercial and residential uses.

The proposed variance responds to the existing built environment by utilizing a traditional storefront bay language and scale-defining façade articulation techniques. The proposed articulation helps the long ground story walls to engage the right-of-way.

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

Response: There are few negative impacts from the proposed variance. At Washington Street, the plants growing on the screens will occupy the space between the lot line and the building walls, which will create another edge of sorts. At the Adams Street right-of-way, the avoidance of awkward small slivers of brick at the corner mitigates the 2-1/2" setback from the lot line.

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: The applicant is electing to meet the discretionary relief criteria. Therefore, the economic hardship criteria are not applicable.

MODIFICATION REQUESTED

Modification to MMC 19.605.1

MMC 19.605.1 requires a ratio of one parking space per residential dwelling unit in the DMU zone, for a total of 195 residential parking spaces. .48 spaces per residential unit are proposed, for a total of 94 residential spaces (before by-right deductions). The proposed total number of spaces for the project, after by-right deductions, are as follows:

.48 space per dwelling unit.	*.48 x 195 units = 94 spaces*
2 spaces per 1,000 SF retail floor area	*3,900 / 2 = 8 spaces*
4 spaces per 1,000 SF restaurant floor area	*3,100 / 4 = 12 spaces*
Total spaces before By-Right reductions	***114***

By-Right reduction: proximity to MAX	*114 x .25 = 29*
By-Right reduction: additional bike parking	*6 per 1 add'l bike space* *36 additional spaces / 6 = 6*
Total By-Right reductions	*<35>*
	114– 35 = 79
Total spaces after By-Right reductions	***81***

B. Application

Determination of parking ratios in situations listed above shall be reviewed as a Type II land use decision, per Section 19.1005 Type II Review. The application for a determination must include the following:

1. Describe the proposed uses of the site, including information about the size and types of the uses on site, and information about site users (employees, customers, etc.).

Response: The building is mixed-use with retail, restaurant and multi-family residential uses. The restaurant and retail spaces will be completed as shell spaces to be leased and built-out separately with future tenant improvement permits. Information about future employees and customers is not known at this time. The modification to the required parking ratios only applies to the residential uses. The required restaurant and retail use parking ratios will be met.

2. Identify factors specific to the proposed use and/or site, such as the proximity of transit, parking demand management programs, availability of shared parking, and/or special characteristics of the customer, client, employee or resident population that affect parking demand.

Response: The site is located within 800' of the MAX Orange line station. A Tri-Met bus transfer area is also nearby, as well as a public bike path that connects to the Springwater Corridor Trail for access to Portland and other destinations.

Historically, dense urban areas and city centers have relied more on mass transit and pedestrian/bicycle transit than individually-owned cars. Downtown Milwaukie is transforming from a small city downtown to a modern and forward-thinking urban center and the current development projects must serve to foster this growth and encourage a diversity of residents and visitors. Higher density residential projects such as the proposed tend to appeal to smaller and, often, younger households. As regional costs of living continue to increase, many people no longer wish to pay for ongoing vehicle costs. Many people also do not want to contribute to climate change and environmental degradation and prefer to use alternative means of transportation. The proximity to mass transit and established bicycle paths provides and encourages alternative means of transportation. As more services and amenities develop in the downtown area, residents will be able to walk to nearby amenities and will not need to rely so much on driving to services located in other parts of the city. The rise of the gig economy provides popular ride services such as Lyft and Uber. Additionally, the nature of workplaces is rapidly changing, and the need for as many people to commute to work daily is diminishing. All of these factors reduce the current and future demand for parking.

3. Provide data and analysis specified in Subsection 19.605.2.B.3 to support the determination request. The Planning Director may waive requirements of Subsection 19.605.2.B.3 if the information is not readily available or relevant, so long as sufficient documentation is provided to support the determination request.

a. Analyze parking demand information from professional literature that is pertinent to the proposed development. Such information may include data or literature from the Institute of Transportation Engineers, American Planning Association, Urban Land Institute, or other similar organizations.

b. Review parking standards for the proposed use or similar uses found in parking regulations from other jurisdictions.

c. Present parking quantity and parking use data from existing developments that are similar to the proposed development. The information about the existing development and its parking demand shall include enough detail to evaluate similarities and differences between the existing development and the proposed development.

Response: The City of Portland requires a minimum of .33 spaces per unit for residential projects with more than 51 units within mixed-use commercial zones and high-density residential zones. The proposed ratio is .48 spaces per unit. This exceeds Portland's minimum requirement for mixed-use and high-density residential zones.

Given the project's proximity to the MAX Orange Line station, Trimet bus transfer area and the district's goals for development and growth, the proposed ratio is a reasonable middle ground between current code requirements and the nearby, denser districts of Portland.

4. Propose a minimum and maximum parking ratio. For phased projects, and for projects where the tenant mix is unknown or subject to change, the applicant may propose a range (low and high number of parking spaces) for each development phase and both a minimum and maximum number of parking spaces to be provided at buildout of the project.

Response: The minimum ratio proposed for the multi-family portion of the project is .48 spaces per unit. The ratios for the retail and restaurant portions of the project will meet the standards of 19.605.1

5. Address the approval criteria in Subsection 19.605.2.C.

Response: See responses below.

C. Approval Criteria

The Planning Director shall consider the following criteria in deciding whether to approve the determination or modification. The Planning Director, based on the applicant's materials and other data the Planning Director deems relevant, shall set the minimum parking requirement and maximum parking allowed. Conditions of approval may be placed on the decision to ensure compliance with the parking determination.

1. All modifications and determinations must demonstrate that the proposed parking quantities are reasonable based on existing parking demand for similar use in other locations; parking quantity requirements for the use in other jurisdictions; and professional literature about the parking demands of the proposed use.

Response: The City of Portland requires a minimum of .33 spaces per unit for residential projects with more than 51 unit within mixed-use commercial zones and high-density residential zones. The proposed ratio is .48 spaces per unit. This exceeds Portland's minimum requirement for mixed-use and high-density residential zones.

Given the project's proximity to the MAX Orange Line station, Trimet bus transfer area and the district's goals for development and growth, the proposed ratio is a reasonable middle ground between current code requirements and the nearby, denser districts of Portland.

2. In addition to the criteria in Subsection 19.605.2.C.1, requests for modifications to decrease the amount of minimum required parking shall meet the following criteria:

a. The use of transit, parking demand management programs, and/or special characteristics of the site users will reduce expected vehicle use and parking space demand for the proposed use or development, as compared with the standards in Table 19.605.1.

b. The reduction of off-street parking will not adversely affect available on-street parking.

c. The requested reduction is the smallest reduction needed based on the specific circumstances of the use and/or site.

Response: The site is located within 800' of the MAX Orange line station. A Tri-Met bus transfer area is also nearby, as well as a public bike path that connects to the Springwater Corridor Trail for access to Portland and other destinations.

Higher density residential projects such as the proposed tend to appeal to smaller and, often, younger households. As regional costs of living continue to increase, many people no longer wish to pay for ongoing vehicle costs. Many people also do not want to contribute to climate change and environmental degradation and prefer to use alternative means of transportation. The proximity to mass transit and established bicycle paths provides and encourage alternative means of transportation. As more services and amenities develop in the downtown area, residents will be able to walk to nearby amenities and will not need to rely so much on driving to services located in other parts of the city. The rise of the gig economy provides popular ride services such as Lyft and Uber. Additionally, the nature of workplaces is rapidly changing, and the need for as many people to commute to work daily is diminishing. All of these factors reduce the current and future demand for parking.

The requested reduction only applies to the multi-family residential portion of the project. These users will not be able to park long-term on the street because the on-street parking has time limitations. The retail and restaurant portions of the project, which will draw short term parkers, will have the required number of parking spaces, therefore, the request will not adversely affect available on-street parking.

The proposed reduction is the smallest needed based on the specific circumstances of the project. Mitigation measures have been taken in order to maximize the number of spaces, which includes a percentage of narrower, "compact" stalls. The proposed ratio is a reasonable alternative to these more extreme measures.

3. In addition to the criteria in Subsection 19.605.2.C.1, requests for modifications to increase the amount of maximum allowed parking shall meet the following criteria:

a. The proposed development has unique or unusual characteristics that create a higher-than-typical parking demand.

b. The parking demand cannot be accommodated by shared or joint parking arrangements or by increasing the supply of spaces that are exempt from the maximum amount of parking allowed under Subsection 19.605.3.A.

c. The requested increase is the smallest increase needed based on the specific circumstances of the use and/or site.

Response: An increase in the amount of maximum allowed parking is not requested. This does not apply.

MEMORANDUM

PROJECT 17-021 COHO POINT

SUBJECT COMPLETENESS 3.1 LETTER RESPONSE

DATE AUGUST 25, 2021

RECIPIENTS Brett Kelver, City of Milwaukie

The list below summarizes the response to the items noted in the Completeness Letter dated July 22, 2021. Please see the individual revised application components for detailed responses.

1. MMC Section 19.304 Downtown Zones (beginning on page 55 of narrative)

MMC Subsection 19.304.5.D establishes requirements for street setbacks and build-to lines, with reference to block faces identified on MMC Figure 19.304-5, including the Washington Street, Main Street, and Adams Street frontages of the subject property. The requirement is that at least 75% of the first floor along each block face must be built to the lot line, with a 0-ft setback. Based on the information provided as part of the revised submittal, it appears that none of the three block faces of the proposed building meet this standard. Each of the first-floor façades appears to be generally within 1-3 ft of the lot line, but each appears to be well under the 75% standard of an actual 0-ft setback.

3. Variance to MMC 19.304.5.D.2.b(1)

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.

Response: The applicant is requesting a variance to MMC 19.304.5D.2.b(1), which requires 75% of the first floor to be built to the front lot line. As identified in 19.911.2B, this is not an ineligible variance.

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 applicant is requesting a variance to MMC 19.304.5D.2.b(1), which requires 75% of the first floor to be built to the front lot line. This applicant's variance request is not for any of the purposes identified above, therefore this is not an ineligible variance.

C. Exceptions. 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: MMC 19.304.5D.2.b(1) does not allow for a reduction in the minimum percentage of first floor zero setback by right, and does not include provisions for exceptions, adjustments or modifications. Therefore, a variance is required to allow for a reduction in the percentage of first floor zero setbacks.

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: The applicant's variance request will allow for a reduction in the percentage of zero setbacks along Main and Washington Streets and the Adams Street right-of-way. This is the third variance request included in this application

A variance to MMC 19.402.11.B.6.b, which prohibits off-site mitigation for disturbances and permanent impacts within WQR areas, is also requested. The variance is subject to approval criteria identified in MMC 19.911.4. Responses demonstrating the project's compliance with those criteria are included in this narrative.

A variance to allow for an increase in the allowed buildable height of the proposed multi-use building is also requested. The applicant's requested height variance is subject to approval criteria identified in MMC 19.911.6. Responses demonstrating the project's compliance with those criteria are included in this narrative.

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.

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.

Response: This request is not to a numerical standard, or to a standard of MMC 19.505, 19.901, or to fence height standards. Therefore, this variance is subject to the Type III process.

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: This request is not to a numerical standard, or to a standard of MMC 19.505, 19.901, or to fence height standards. Therefore, this variance is subject to the Type III process.

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.

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.

Response: MMC 19.304.5.D.2.b(1) and Figure 19.304-5 require that buildings along Main and Washington Streets and the Adams Street right-of-way have zero setbacks for 75% or more of the frontages. This section does not include provisions for shallow recesses incorporated for façade articulation, similar to 19.304.5E.2.d.

Façade articulation is required by 19.508.4 Building Design Standards and the Milwaukie Downtown Design Guidelines. The proposed design achieves the required façade articulation in part by providing slight recesses at the storefront bays, wall material changes and where the building transitions from commercial uses to residential use. These recesses are generally less than 2' deep, with a few specific exceptions. All of the recesses occur beneath

the datum line set by the canopies, and the remaining ground story wall areas above are at the lot lines.

Recesses less than 2' deep are not experienced as interruptions in the continuous urban enclosure and instead provide visual interest and help to engage passers-by. The proposed building is large, with over 200' of frontage on Main Street and 150'-6" of frontage on Washington Street (as measured per Figure 19.304-5). Without façade articulation, these long frontages would be monolithic and imposing and would not support the standards in 19.508.4 and the Milwaukie Downtown Design Guidelines.

Each of the frontages responds to unique considerations that factor into the proposed facade articulation strategy. Specific percentages of recessed areas for each frontage are described in the response to 19.304.5D.2.b.

The Washington Street frontage contains both commercial and residential uses. There is also a significant grade change, and the ground story is above the sidewalk level for part of the frontage. At the commercial portion of the Washington Street frontage, the brick wall is set at the property line the full height of the building. The storefront bays are recessed 1'-0" to provide façade articulation and allow for sound construction detailing of wall material transitions. The pedestrian access door is recessed more than 2' to protect the entry from the elements and to allow the door to open without swinging over the right of way.

The ground story residential portion of this frontage is recessed less than 2' from the lot line. This recess occurs at a change in wall materials and visually differentiates the residential portion of the building from the commercial portion. Additionally, planted metal screen walls are provided in front of the open garage below. These walls are recessed approximately 1'-4" from the lot line. Because the plants require a minimum of 12" of growing space, the screen walls must be set back from the property line to allow room for the plants and for the planted screen concept to be viable.

At the Adams Street right of way, the brick walls is not set exactly to the lot line. This is due to the brick coursing. The brick coursing starts at the zero lot line of the Washington/Main Street corner and progresses south. The Adams/Main Street corner is 2-1/2" off the lot line in order for the wall to terminate at a brick module in lieu of cutting small slivers of bricks, which is not practical or attractive. The brick wall at the Adams Street frontage is located 2-1/2" from the lot line for the entire height. Practically and visually, the wall is at the lot line.

Similar to Washington Street, the storefront bays are set back from the face of the brick wall less than 1' to provide façade articulation. The restaurant entrance bay is set back 20'. This provides covered circulation space for restaurant customers and also allows a view through the corner from Main Street to Kellogg Creek and the new public path, and vice versa.

There is approximately 35' of residential frontage at Adams Street (as measured per Figure 19.304-5). The residential portion is set back to distinguish it from the commercial part of the building, and to mark the change in wall materials. This set back is approximately 6' from the property line to allow for an outdoor deck. Due to the path of the Kellogg Creek bank, which crosses the property line and travels northwest, the building wall also angles to the northwest. This geometry results in a section of wall that is between 2' and 20', and a very small section that is more than 20' from the lot line.

The Main Street frontage has several subtle variations in recess depths. This is the longest wall of the building and is anticipated to have the most pedestrian activity. The residential entrance is located on this frontage, alongside the commercial entrances. Façade articulation on this frontage is particularly important.

The brick wall is located at the lot line for its full height. All but one of the commercial storefront bays are recessed less than 2' for façade articulation and to create a rhythm of bays along the sidewalk. The commercial retail entrance doors are recessed approximately 3' to provide additional protection from the elements and to allow the doors to open without swinging over the right of way. The restaurant entrance is set back 19'-0". This provides covered outdoor circulation space for restaurant customers and also allows a view through the corner from Main Street to Kellogg Creek and the new public path, and vice versa.

The middle portion of the Main Street frontage contains the residential entry and lobby. The wood clad wall at the residential entry and lobby is set back less than 2' from the lot line to differentiate it from the commercial portion of the frontage. The residential entrance doors are recessed another 5'. This provides more maneuvering room for residents who may be carrying bags, managing bikes, etc.

Adjacent to the residential entry and lobby is a service area, which includes doors to the trash room and electrical room. The wood clad wall at the service area is additionally recessed to provide a buffer between the service doors and the right-of-way. The commercial storefront bay adjacent to the north aligns with this wood clad wall, to achieve balance on the elevation. This is the sole commercial storefront bay that is recessed more than 2'.

The intent statemen of 19.304.5D.2.b reads: Buildings are allowed and encouraged to build up to the street right-of-way in the DMU Zone. Required build-to lines are used in combination with the frontage occupancy requirements of Subsection 19.304.5.E and are established in specific areas of the downtown to ensure that the ground floors of buildings engage the street right-of-way (see Figure 19.304-5). The build-to line ensures compatibility and harmony between buildings, enabling a series of different buildings to maintain or establish a continuous vertical street wall.

At all three facades, the majority of the walls are at or less than 2' off the lot line. 19.304.5E.d Frontage Occupancy allows for recesses incorporated to comply with façade articulation requirements to be considered to be occupying the site frontage if the recesses do not exceed 2'. A similar argument can be made for Build-To line requirements. Slight recesses that are used to provide scale and variety to long walls do not reduce the urban enclosure effect. The recesses support the goals of Milwaukie Downtown Design Guidelines, including:

Define the pedestrian environment: Provide human scale to the pedestrian environment, with variety and visual richness that enhance the public realm

Wall Structure: Use scale-defining devices to break up the longitudinal dimensions of buildings, creating a comfortable sense of enclosure by establishing an uninterrupted street edge

b. The proposed variance is determined by the Planning Commission to be both reasonable and appropriate, and it meets one or more of the following criteria:

(1) The proposed variance avoids or minimizes impacts to surrounding properties.

(2) The proposed variance has desirable public benefits.

(3) The proposed variance responds to the existing built or natural environment in a creative and sensitive manner.

Response: The proposed variance has minimal negative impact to surrounding properties. The slight recesses along the sidewalk level wall planes do not create voids in the urban edge or otherwise reduce the sense of urban enclosure.

The proposed variance has desirable public benefits, including façade articulation that provides human scale and visual interest at the sidewalk level, and differentiates between commercial and residential uses.

The proposed variance responds to the existing built environment by utilizing a traditional storefront bay language and scale-defining façade articulation techniques. The proposed articulation helps the long ground story walls to engage the right-of-way.

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

Response: There are few negative impacts from the proposed variance. At Washington Street, the plants growing on the screens will occupy the space between the lot line and the building walls, which will create another edge of sorts. At the Adams Street right-of-way, the avoidance of awkward small slivers of brick at the corner mitigates the 2-1/2" setback from the lot line.

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: The applicant is electing to meet the discretionary relief criteria. Therefore, the economic hardship criteria are not applicable.

2. MMC Section 19.508 Downtown Site and Building Design Standards (beginning on page 26)

i. Incompleteness item Response sent to the city on August 05, 2021, no changes have been made to the response for the 3.1 Narrative Submission

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

Response:
<u>The Intersection of Main Street and Washington Street</u> - creates a strong corner with the overall building design to establish the significance of this urban corner. A retail entrance is located near the corner, however, the existing grade along SE Washington does not allow for an accessible entrance immediately on the building corner. The entrance is therefore shifted to the south. The corner features generous glazing and a sweeping canopy to establish a focal point and provide visual interest from the sidewalk; the corner marks the start of the building's commercial frontage along SE Main Street. While not providing a building cut for added visibility, the storefront provides a clear line of sight from the adjacent street. As mentioned, natural grade does not allow the corner retail entrance to occur within 5 ft of the corner as prescribed; to create a compliant and functional entrance to this unit, the entry is shifted south from the corner to provide an accessible entry that is compatible with the adjacent site condition. To address the corner, a stormwater planter is proposed to soften the edge condition and create an inviting pedestrian experience.

<u>The intersection of Main Street and the Adams Street ROW</u> - is treated differently as it occurs at the transition from a dense downtown urban condition to the natural areas of Kellogg Creek and Dogwood Park. The future restaurant space is located at this corner in response to early feedback from the City. The restaurant entry is set back to provide a prominent covered area for restaurant customers and allow for a view from Main Street to Kellogg Creek and the new pedestrian path. A combination of special paving and street furnishings are presented in the corner to enhance the connection to Dogwood Park, the adjacent pedestrian access way, and the

farmers market. The special paving creates an axis with the neighboring property that pulls the pedestrian through the site and allows free and safe access onto the landscaped public walkway that connects SE Main Street and SE McLoughlin Boulevard. The special paving and walkway access strengthens the pedestrian experience at this corner and provides a unifying feature between the building and neighboring sites. The cut at the building corner, while not meeting the letter of the code, acts in a similar fashion as a rounded corner, and provides a visual connection and direct access from SE Main Street to the adjacent park and public walkway.

The intersection of Washington Street and McLoughlin blvd - is part of the residential portion of the building and therefore has different architectural language from the commercial corners. This corner is also influenced by the large right-of-way curve and the significant slope along Washington. The corner is angled to follow the curve of the right-of-way and allows for greater visibility between the adjoining streets. An entry is located at this corner to provide access to a shared bike storage as well as the shared parking garage. The entry is offset from the corner to accommodate the steep grade along SE Washington Street and provide barrier free access to the interior of the building. Large sections of planted walls soften the otherwise utilitarian garage access. The living walls are a prominent and lush building element that both buffer the adjacent building program and enhance the surrounding urban environment.

This criterion is not met. The purpose of this section, to create a strong architectural statement at street corners and establish visual landmarks and enhance visual variety, has been met by alternative design means. Detailed discussions of the building's design strategy are included in Section 19.907 DOWNTOWN DESIGN REVIEW. The following guidelines are relevant to this standard:

- *Downtown Design Guideline 2 – Pedestrian Emphasis*
  - *Integrate Barrier Free Design*
- *Downtown Design Guideline 3 – Architecture Guidelines*
  - *Corner Doors*

3. **MMC Title 18 Flood Hazard Regulations**.

Please see attached response from DOWL.

APPROVABILITY ITEMS

1. **MMC Chapter 19.600 Off-Street Parking**

a) Please see separate Transport Demand Management Program Document.

b) Please see separate Transport Demand Management Program Document.

c) On-site safe and convenient access to changing facilities, including showers and lockers, will be provided to bike commuters located within the fitness facility on the parking level. These facilities are a strong incentive to encourage bicycle use, and will be available for all non resident bike commuters.

d) The Façade of the parking structure that faces Washington st. and McLughlin Blvd. are open air metal planted screens that provide natural light and air into the parking garage. These screens start +/- 6" above grade and remain unblocked by any building structure until its termination at the ground story concrete podium floor. Vegetation will be planted on these screens to soften the building façade and create a more inviting sidewalk interaction with pedestrians, while still providing some visibility into the parking structure. Adequate lighting will also be provided and located on the ceiling of the parking structure to ensure a safe environment for all vehicular and pedestrian traffic.

2. Public Area Requirements (MMC Subsection 19.304.6 and MMC Subsection 19.708.1.C)

a) (3) Public Bike Racks are provided and locations have been provided on the Ground Story Site Plan on page 19 of the Graphic Narrative.

MEMORANDUM

PROJECT 17-021 COHO POINT

SUBJECT Question Responses/Clarifications

DATE AUGUST 25, 2021

RECIPIENTS Brett Kelver, City of Milwaukie

The list below summarizes the response to the items noted in the Completeness Letter dated July 22, 2021. Please see the individual revised application components for detailed responses.

- **Question**: Are there any openings in the concrete foundation that serves as the wall of the parking garage where exposed (on the north, west, and southwest elevations)? The narrative (page 36) indicates that 100% of the exposed façade lengths have openings, but the elevations and renderings do not provide views that would confirm this (we just see the metal screen with plantings).

  Added notes in graphic narrative to call out screen material (Parking Plan page #18)

- **Question**: Page 33 of the narrative provides gross figures of private open space (3,832 sq ft) and common open space (4,832 sq ft), but it would be helpful to get a little more info/detail about the open space, such as a list or breakdown of what constitutes private open space (is it all patios/balconies?) and what constitutes common open space (different rooftop terraces, interior recreation rooms, lobby, etc.?). Our code is a little inconsistent in its language in this section with respect to the common open space, where it mentions "outdoor" space but is really talking overall about any kind of common space, whether inside or outside.

  Added some clarity on what were counting as part of that area in the written narrative

  Response:
  50 SF outdoor space x 195 units = 9,750 SF total required outdoor space
  9,750 x .50 (open space credit) = 4,875 SF required outdoor space
  Private outdoor space provided = 3,832 SF
  Including: 1st, 2nd, 5th & 6th story Unit Patios/terraces
  Common outdoor space provided = 4,832 SF
  Including: 5th story Amenity Rooms & Landscaped roof terrace
  Total outdoor space provided = 8,664 SF
  This criterion is met.

- **Question**: For the exterior building materials (19.508.4.D), where you mention the Adams St and McLoughlin Blvd façades (page 28), can you confirm that you're only considering the Adams St façade to be the short length that directly faces south, and that the McLoughlin façade you're considering to be the southwest and west elevations (like you indicated on the window calculation doc you just sent)? I'm assuming that is how you got such a high percentage of secondary materials on the McLoughlin façade but want to be sure.

  Confirmed, facades that we consider to be on Adams st is directly parallel with the ROW. Mcloughlin street facades starts as soon as the façade rotates away from Adams street.

These are just a couple of notes about places where I came to a different conclusion than the narrative, usually where I thought that a standard was in fact met:

- My rough measure of the façades shows that all four elevations do seem to provide 30-ft architectural bays. Even the garage door opening on Washington Street looks pretty close to a 30-ft width. I'd be curious to hear how you calculated this and concluded differently, to see if I'm missing something.

  Facades on Main st, Adam st and Washington st have bays that range from 23'-35' so its not quite 30' but it is close to it. However, we also have continuous metal screens at the sidewalk level on Washington st & McLoughlin facades that do not differentiate bay lengths, for these (2) reasons we determined that we did not meet the required 30-ft bay requirement.

- Regarding wall planes in the Middle part of the vertical Building Façade Details section (19.508.4.A.2.a(2-c)), the code doesn't specify how many changes in wall plane are required per façade, so it seemed reasonable to me to conclude that all you have to do is provide one per façade. My look at the graphics made it seem like the design provides that, so it looked like the standard is met. Again, it would be helpful to hear how your team thought about this, to understand whether I'm missing something.

  Re-evaluating each façade, with a clearer understanding that we just need (1) plane change per façade we do in fact meet this criteria. The narrative has been updated to reflect this change (page 25)

  (c). There is at least (1) wall plane changes on each façade greater than 24" deep. This criterion is met.

- Similarly, since there are no truly adjacent buildings (only buildings set across the right-of-way on one side or the other, I considered the belt-line standard in 19.508.4.A.2.b(1) to be not applicable. Were you thinking about "adjacent" buildings across the street from the project?

  Yes, we were considering "adjacent" buildings to be across the street from the project, mainly referring to Axletree. The narrative is updated to explain more that the beltline alignments are for across the right-of-way so the section of the code is not applicable (page 25)

  Response: The building design does incorporate horizontal datum lines, however, there are not truly adjacent buildings to match our datum line except for a single building across the Right-of-Way, which does not line up. Additionally, there is not a significant break on the Main Street façade, which is more than 150' long. This criterion is not applicable however, since there is no truly adjacent building to align too. Please see the general response to Section A below.

CITY OF MILWAUKIE

July 22, 2021

Ryan Scanlan
c/o Jones Architecture
120 NW 9th Ave, Suite 210
Portland, OR 97209

Master File: #DR-2021-001

Site: 11103 SE Main St

Dear Ryan:

Please be advised that the above-referenced land use application has been deemed complete as of July 19, 2021, per your direction that the application be deemed complete. This is in accordance with Milwaukie Municipal Code (MMC) Subsection 19.1003.3 and Oregon Revised Statutes 227.178.

The 120-day deadline by which the City would ordinarily be required to take final action is November 16, 2021. However, on April 20, 2021, you provided an extension of the 120-day clock as required by MMC Subsection 19.911.6.C.1 because the requested building height variance requires additional time for public input and technical evaluation of the proposal.

A design review meeting with the Design and Landmarks Committee (DLC) will be scheduled for mid- to late August if possible. A public hearing on your application by the Milwaukie Planning Commission is tentatively scheduled for September 28, 2021. We will contact you with more information and to confirm these dates.

Sign Posting Requirement
Per MMC Subsection 19.1005.3.C, you are responsible for posting notice of the application on the subject property no later than 10 days before the DLC meeting and no later than 14 days before the Planning Commission hearing. **I will prepare a sign for your use, with instructions and an affidavit of posting—these items will be available at the Planning office on Johnson Creek Boulevard.** It is your responsibility to ensure that the signs remain continuously posted until a decision is issued.

Completeness Items

The following items were previously identified as being incomplete or missing in your application and have not yet been resolved:

1. MMC Section 19.304 Downtown Zones

   MMC Subsection 19.304.5.D establishes requirements for street setbacks and build-to lines, with reference to block faces identified on MMC Figure 19.304-5, including the Washington Street, Main Street, and Adams Street frontages of the subject property. The requirement is that at least 75% of the first floor along each block face must be built to the lot line, with a 0-ft setback. Based on the information provided as part of the revised submittal, it appears that none of the three block faces of the proposed building meet this standard. Each of the first-floor façades appears to be generally within 1-3 ft of the lot line, but each appears to be well under the 75% standard of an actual 0-ft setback.

   The most recommendable option (without adjusting the building footprint itself) would be to request a variance from this standard. The current application includes a variance component that allows up to three variance requests before an additional application fee is necessary—to date, only two variances have been requested, so a third variance can be added to the submittal with no additional fee. The narrative would need to be expanded to address the relevant Type III variance approval criteria of MMC Subsection 19.911.4.B (most likely the discretionary relief criteria of 4-B(1)). An argument might be made that the proposed vegetative screens along the Washington Street frontage effectively bring that façade to the property line. Arguments for the Adams Street and Main Street frontages could emphasize other ways that the proposed building setbacks function to engage the street right-of-way.

2. MMC Section 19.508 Downtown Site and Building Design Standards

   MMC 19.508.4.B establishes design standards for building corners, whether at the corners of two public streets or of a public street and a public area, park, or plaza. The current application addresses the corner of Washington Street/Main Street but not the corners of Washington Street/McLoughlin Boulevard or Adams Street/Main Street. Please expand the narrative to include these two other corners in the discussion of how the building is consistent with this design standard and applicable guidelines.

3. MMC Title 18 Flood Hazard Regulations

   City staff have communicated with the applicant's engineering team about the need to augment the hydrologic and hydraulic (H&H) analysis of the floodplain, including some direction and guidance that should help make the H&H analysis complete and sufficient for purposes of land use review.

The City's Engineering staff have confirmed that the Transportation Impact Study (TIS) prepared as part of this application is acceptable for purposes of the land use review. Any remaining transportation issues can be addressed either with conditions of approval or through the development/plan review process farther down the line.

Approvability Items

The following items are approvability items, not completeness items. They are listed here for your information and should be resolved at the beginning of the review process so that staff has sufficient time to analyze your proposal and formulate a recommendation with regard to approvability.

1. MMC Chapter 19.600 Off-Street Parking

    a. The proposed parking arrangement is based on both a by-right reduction (25% for being in the Downtown Mixed Use (DMU) zone, plus up to another 5% for additional bike parking) and a proposed modification of the required parking ratio. The current rationale presented for the parking modification is that the site is downtown and near transit facilities, which is already covered with the by-right reduction. Essentially, the current request is to double the by-right reduction for the DMU zone from 25% to 50%.

    The applicant should offer additional reasons for why the parking ratio should be reduced for this project. A general suggestion is to propose a Transportation Demand Management program featuring actions such as proactively discouraging (or perhaps even disallowing, to some degree) building tenants from keeping personal vehicles, providing transit passes for tenants, educating about and emphasizing alternative travel modes, etc.

    b. Note that MMC Subsection 19.605.1.D provides guidance for rounding in the calculation of required parking. For minimum parking, numbers are rounded down to the nearest whole number (e.g., a calculation of 7.8 spaces would round down to 7). Using this methodology and the numbers provided in the narrative for the minimum number of spaces required by the code (i.e., 195 multifamily units, 3,900 sq ft of retail floor area, and 3,100 sq ft of restaurant floor area), the total would be 195 + 7 + 12 = 214 spaces. The 25% by-right reduction for being in the DMU zone would drop the minimum required number of spaces to 160 (214 x 0.75 = 160.5).

    The total allowed reduction of 30% (25% DMU plus 5% bike parking, in this case) would result in an adjusted minimum of 149 spaces required (214 x 0.7 = 149.8), assuming the applicant could provide 66 additional bike parking spaces beyond what would be required and therefore drop from 160 to 149 required spaces (the formula is one vehicle space reduced per each six excess bike spaces). Since there are approximately 36 extra bike spaces provided, it appears the maximum bike-related reduction would be six vehicle spaces as proposed, which would get the number of required vehicle parking spaces down to 154. Beyond that, the applicant would need to make a case for modifying the number further based on the suggestions noted above in 1-a.

    c. Since the applicant is proposing to use the by-right reduction of five or more vehicle spaces by providing extra bike parking, the code requires on-site changing facilities for bicyclists, including showers and lockers (see MMC Subsection 19.605.3.B.5).

Please provide some description and/or detail of these facilities as they relate to the non-residential aspects of the proposed development.

d. MMC Subsection 19.611.3 establishes design standards for parking structures. Please provide sufficient information to confirm that the parking structure will be adequately lighted to ensure safety. Also, at least 75% of any façade of the parking structure that faces a street must provide ground-floor windows or wall openings. Please provide sufficient information to confirm this standard is met for the Washington Street and McLoughlin Boulevard façades.

2. Public Area Requirements (MMC Subsection 19.304.6 and MMC Subsection 19.708.1.C)

   The memo responding to the list of incompleteness items states that no [public] bike racks will be installed as part of the project (page 2 of 4 in DOWL's portion of the memo). However, the preapplication conference notes did indicate that some public improvements like bike racks would be required. Please explain why the Public Area Requirements would not be applicable to this project.

Informational Item(s)

The following items are informational items, not completeness items. They are meant to help you prepare for review by the review authority, improve your application in ways that are unrelated to completeness and approvability, and anticipate future building permit requirements.

1. MMC Subsection 19.401.8 Vegetation Buffer Requirements (Willamette Greenway)

   The original narrative notes that the site is not immediately adjacent to the river but goes on to address this subsection in the context of Kellogg Creek. Please note that this subsection of the code is not applicable to the project and that the accompanying narrative (beyond stating the lack of applicability) may be removed at the applicant's discretion.

If you decide to withdraw your application before a decision is rendered, please be aware that application fees are nonrefundable. The City may retain some or all of the deposits for technical reviews, such as traffic studies or natural resource studies, based on actual costs incurred by the City.

If you have any questions or concerns, you can call me at 503-786-7657 or email me at kelverb@milwaukieoregon.gov.

Sincerely,

Brett Kelver

Brett Kelver, Associate Planner

Attachments:
None

cc: Angela Creais and Farid Bolouri, property owner team (via email)
Laura Weigel, AICP, Planning Manager (via email)
Kelly Brooks, Interim Community Development Director (via email)
Alison Wicks, Development Project Manager (via email)
Steve Adams, City Engineer (via email)
Engineering Development Review (via email)
File(s): DR-2021-001 (master file)



COHO POINT

11103 SE MAIN ST MILWAUKIE, OR 97222

TYPE III DESIGN REVIEW
LANDUSE SUBMITTAL 3.1 AUGUST 25, 2021
DESIGN DRAWINGS

OVERVIEW	2	Table of Contents
	3	Vicinity Map
	4	Community Connections
	5	Existing Floodplain Diagram
	6	Proposed Floodplain Diagram
	7	Site Mitigation Diagram
	8	Building Diagrams
LANDSCAPE	9	Architectural Context Plan
	10	Landscape Context Plan
	11	Materials and Planting
	12	Enhancement Planting A+B
	13	Enhancement Planting C+D
	14	Enhancement Planting Schedule Charts
	15	Materials Plan
	16	Planting Plan - Courtyard / Rooftop
	17	Dogwood Park Rendering
PLANS	18	Basement Plan
	19	Ground Story Site Plan
	20	Second Story Plan
	21	Third & Fourth Story Plan
	22	Fifth Story Plan
	23	Sixth Story Plan
	24	Roof Plan
	25	Exterior Lighting
SECTIONS	26	Wall Section Key Plan
	27	Building Section - East / West
	28	Building Section - North / South
ELEVATIONS	29	Building Elevation - East
	30	Building Elevation - South
	31	Building Elevation - Southwest
	32	Building Elevation - West
	33	Building Elevation - North
	34	Building Elevation - Courtyard
DESIGN DETAILS	35	Wall Section - Main St Lobby
	36	Wall Section - Adams ST R.O.W
	37	Wall Section - McLoughlin Pedestrian Path
	38	Wall Section - Washington St
RENDERINGS	39	Main/Washington St Perspective
	40	Main St Elevation
	41	Washington St Elevation
	42	Washington/McLoughlin Perspective
	43	Park Perspective
	44	Main St Vignette
	45	Adams St ROW Vignette
CIVIL	46	Existing Conditions
	47	Utility Plan
	48	Grading Plan
	49	Construction Management Plan
APPENDIX	50	Future Bike Path Alignment
	51	Glazed Area Calculations
	52	Glazed Area Calculations



NEIGHBORHOOD FEATURES

1. COHO POINT BUILDING SITE
2. DOGWOOD PARK
3. KELLOGG CREEK
4. MAIN ST MAX STATION
5. POST OFFICE
6. MILWAUKIE FARMERS MARKET
7. WUNDERLAND CINEMA
8. MILWAUKIE BAY PARK
9. MILWAUKIE HIGH SCHOOL
10. ST JOHN THE BAPTIST CHURCH
11. PORTLAND WALDORF SCHOOL
12. WAVERLEY COUNTRY CLUB
13. ISLAND STATION
14. ELK ROCK ISLAND

VICINITY MAP



DRAWING KEY

- New Greenway Connection
- Pedestrian Path
- Bicycle Path
- Bus Stop
- Max Station
- Public Parks







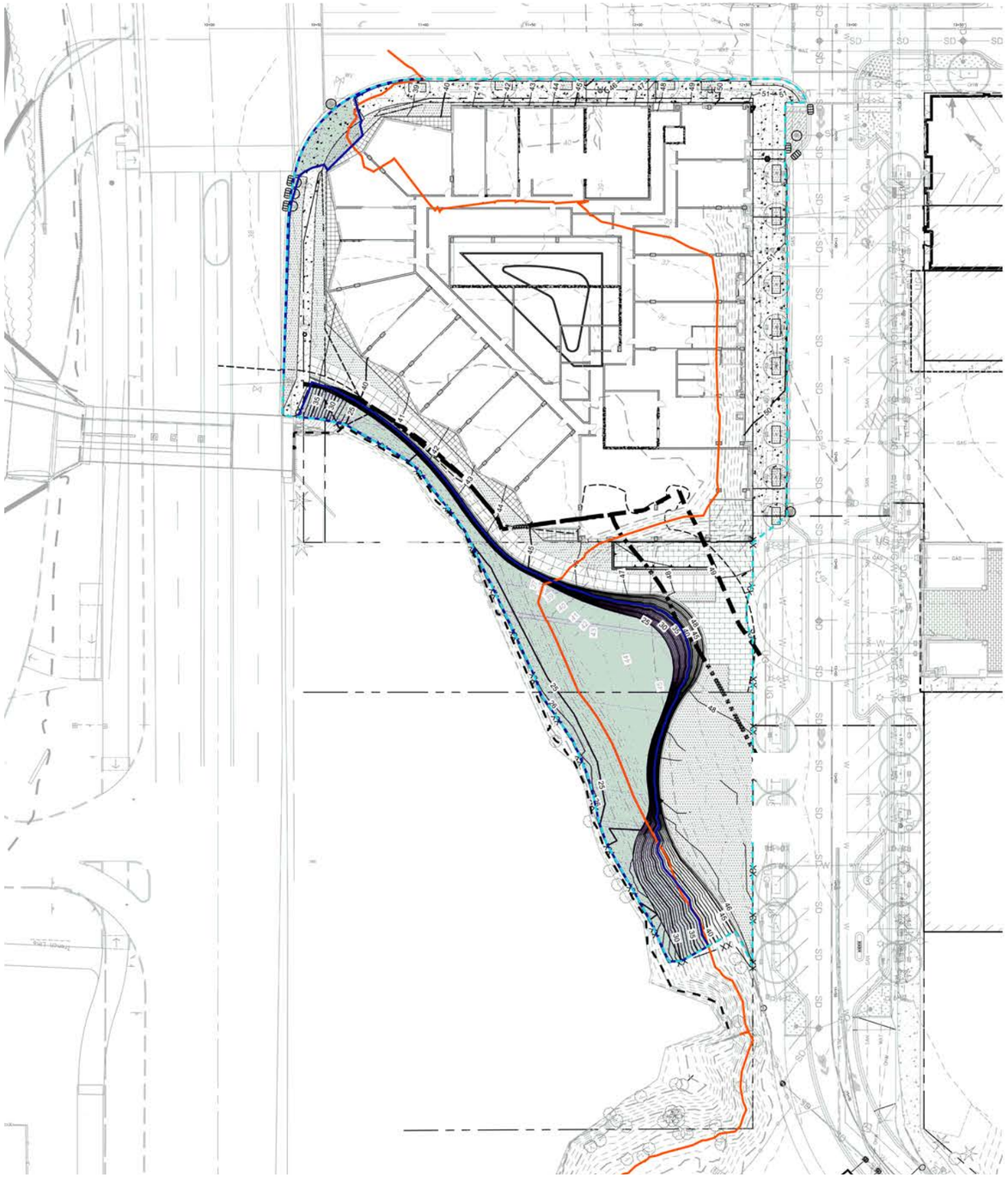


DRAWING KEY

BOUNDARY OF EXISTING FLOODPLAIN (BASED ON 1996 FLOOD)

AREA OF EXISTING FLOODPLAIN

EXISTING FLOODPLAIN SITE DIAGRAM



DRAWING KEY

BOUNDARY OF EXISTING FLOODPLAIN (BASED ON 1996 FLOOD)

PROPOSED BOUNDARY OF FLOODPLAIN

PROPOSED AREA OF FLOODPLAIN

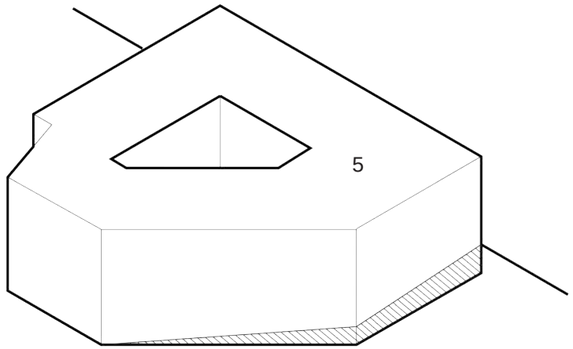
PROPOSED FLOODPLAIN SITE DIAGRAM



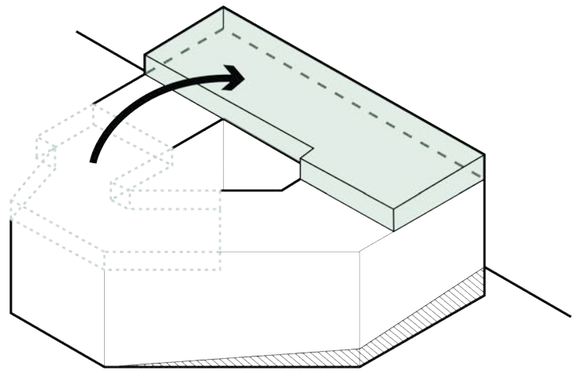
DRAWING KEY

- ORDINARY HIGH WATER
- 100-YEAR FLOODLINE
- CITY-MAPPED HCA LINE
- FIELD-VERIFIED HCA LINE
- VEGETATED CORRIDOR (39,933 SF / .92 AC)
- VEGETATED CORRIDOR IMPACT (9,966 SF / .23 SC)
- HCA IMPACT (2,689 SF / .06 AC)
- MITIGATION AREA (13,179 SF / .30 AC)

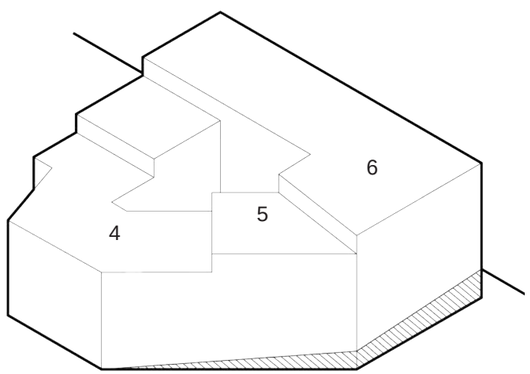
SITE MITIGATION DIAGRAM



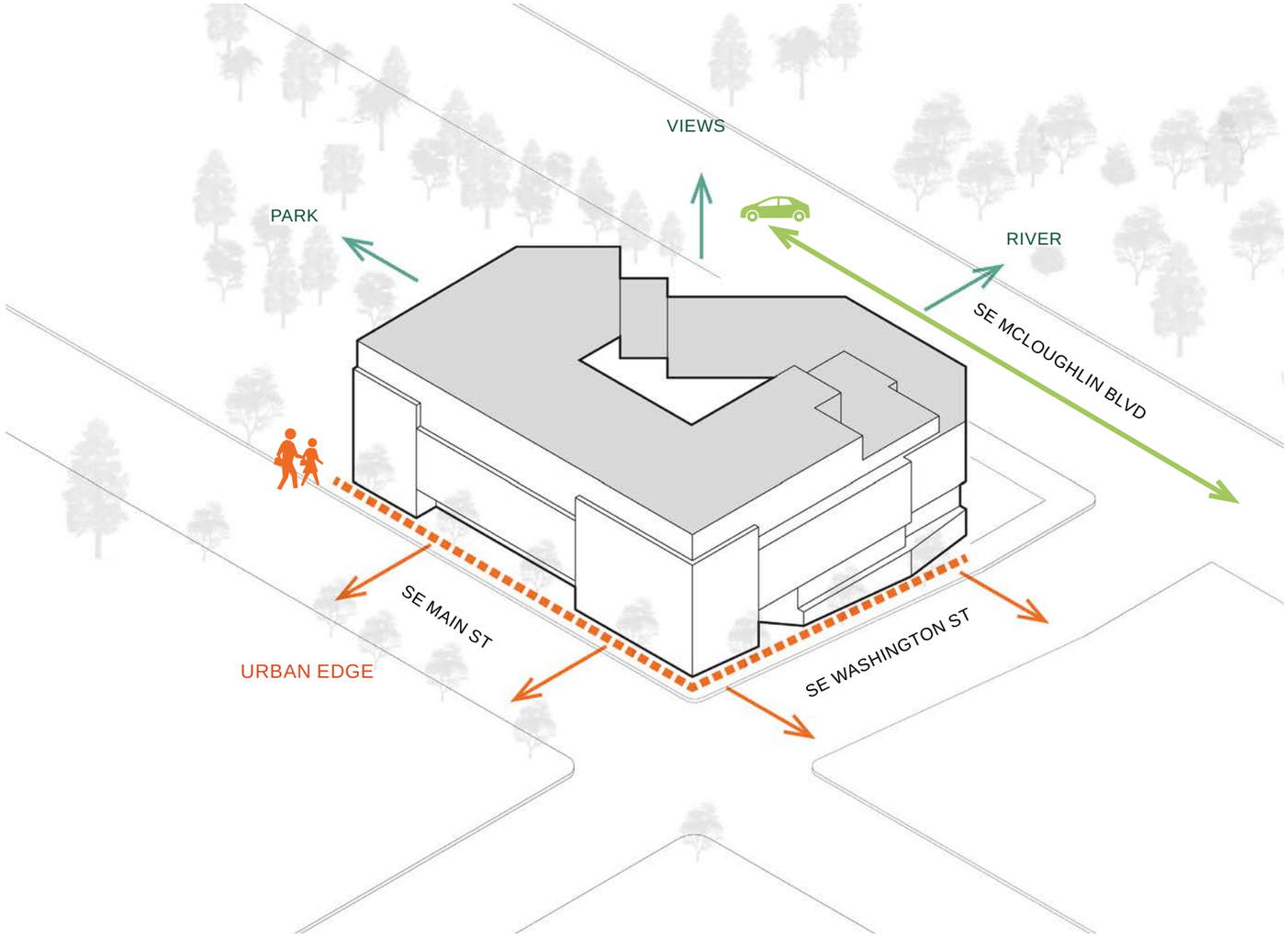
5 STORY BUILD OUT

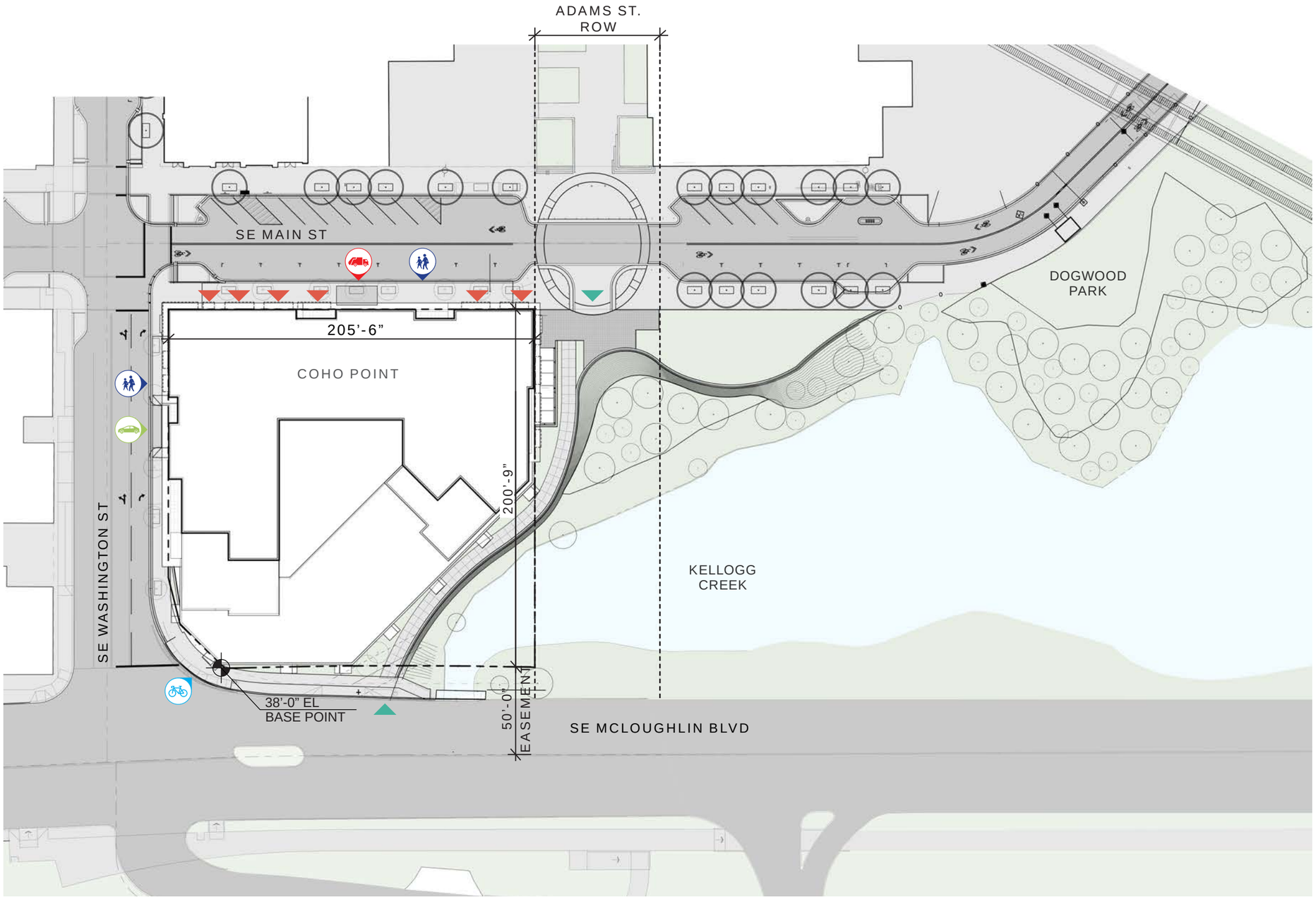


6TH STORY CUT & FILL



FINAL STEPPED SCHEME





DRAWING KEY

- Building Entry
- Garage Access
- Bike Room Access
- Garbage / Recycling
- Retail Entry
- Plaza/Pathway Entry

DEVELOPMENTSUMMARY

SITE AREA	42,541 SF
MAX FAR:	4 TO 1 + BONUS
MAX BUILDING AREA:	185,565 SF
PARKING REQ'D:	1 TO 1 - 30% ~ 136 STALLS
BICYCLE REQ'D:	1 TO 1 + RETAIL ~ 196 STALLS
ACTUAL FAR:	3.71 TO 1
ACTUAL FAR BUILDING AREA:	172,077 SF
% OF SITE BUILT AREA:	35,894 SF ~ 84%
% OF SITE OPEN SPACE:	34,057 SF ~ 80%
PARKING PROVIDED:	81 STALLS
BICYCLE PROVIDED:	237 STALLS

ARCHITECTURAL CONTEXT PLAN



LANDSCAPE CONTEXT PLAN

A STREETSCAPE

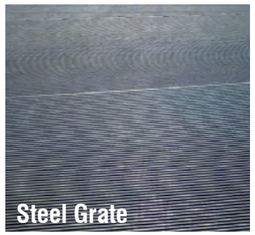








B PATHWAY



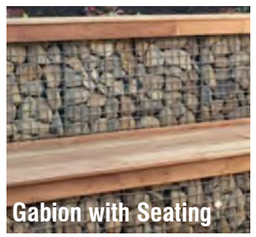






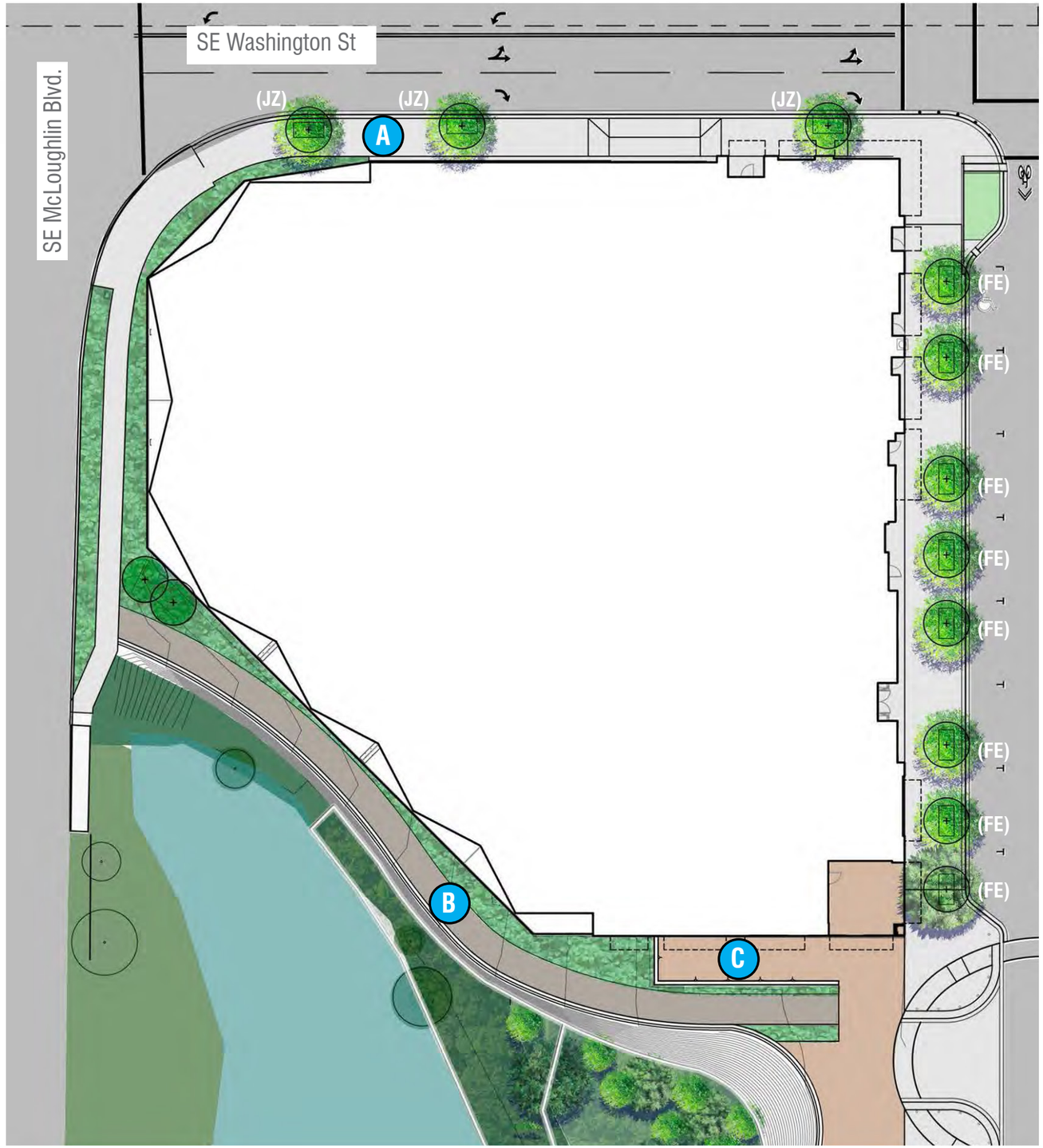
C OUTDOOR DINING

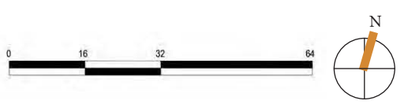












A (3,053 SF)


Oregon Ash


Black Cottonwood


Red-osier Dogwood


Pacific Ninebark


Red Elderberry

B (3,318 SF)


Bigleaf Maple


Oregon Oak


Douglas Fir


Red-osier Dogwood

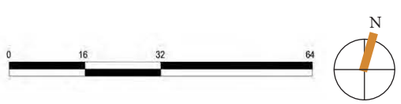

Twinberry Honeysuckle


Pacific Ninebark


Red Elderberry


Snowberry





ENHANCEMENT PLANTING A+B

C (10,065 SF)

















D (6,429 SF)







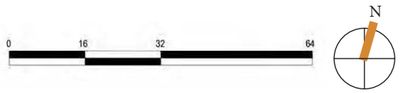














Additional Enhancement Area A (3,053 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Fraxinus latifolia	Oregon ash	20	Container or field grown	½ in caliper
Populus balsamifera	Black cottonwood	20	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	55	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	55	1 gal.	12 in
Sambucus racemosa	Red elderberry	55	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Additional Enhancement Area B (~3,318 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Acer macrophyllum	Bigleaf maple	12	Container or field grown	½ in caliper
Quercus garyana	Oregon Oak	12	Container or field grown	½ in caliper
Pseudotsuga menzieszii	Douglas Fir	12	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	35	1 gal.	12 in
Lonicera involucrata	Twinberry Honeysuckle	35	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	35	1 gal.	12 in
Sambucus racemosa	Red elderberry	35	1 gal.	12 in
Symphoricarpos alba	Snowberry	35	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Additional Enhancement Area C (~10,065 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Alnus rubra	Red alder	35	Container or field grown	½ in caliper
Fraxinus latifolia	Oregon ash	35	Container or field grown	½ in caliper
Populus balsamifera	Black cottonwood	35	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	110	1 gal.	12 in
Lonicera involucrate	Twinberry Honeysuckle	110	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	110	1 gal.	12 in
Sambucus racemosa	Red elderberry	110	1 gal.	12 in
Symphoricarpos alba	Snowberry	110	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Additional Enhancement Area D (~6,429 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Acer macrophyllum	Bigleaf maple	25	Container or field grown	½ in caliper
Quercus garyana	Oregon Oak	25	Container or field grown	½ in caliper
Pseudotsuga menzieszii	Douglas Fir	25	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	65	1 gal.	12 in
Lonicera involucrata	Twinberry Honeysuckle	65	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	65	1 gal.	12 in
Sambucus racemosa	Red elderberry	65	1 gal.	12 in
Symphoricarpos alba	Snowberry	65	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

A INTERIOR COURTYARD









B AMENITY DECK









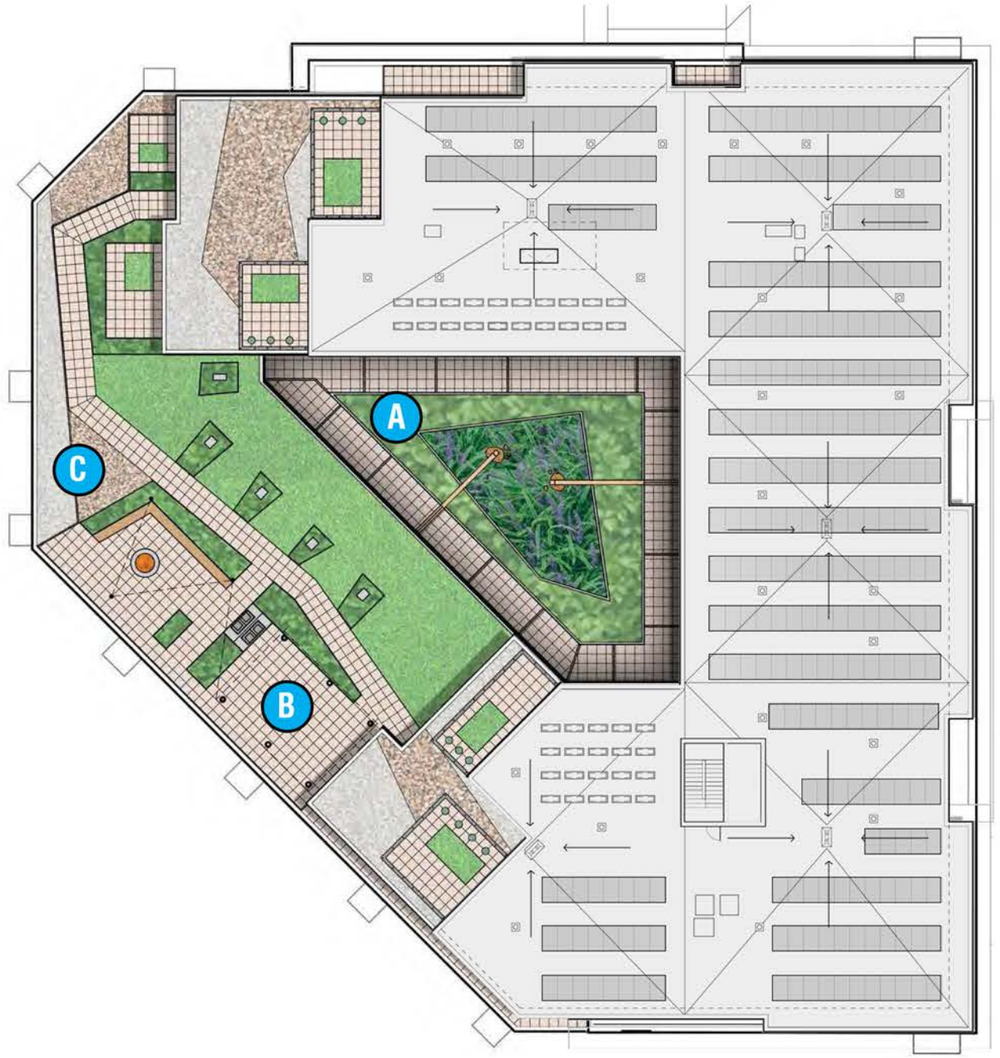




C BALLAST GARDEN







0 16 32 64

N

PLANTING PLAN - COURTYARD / ROOFTOP

A STORMWATER GARDEN


Dense Sedge


California Gray Rush


Red Twig Dogwood

B AMENITY DECK


Gold Brian Escallonia

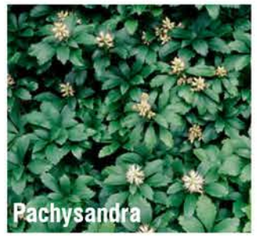

Bluebeard


Lily Turf


Sweetbox

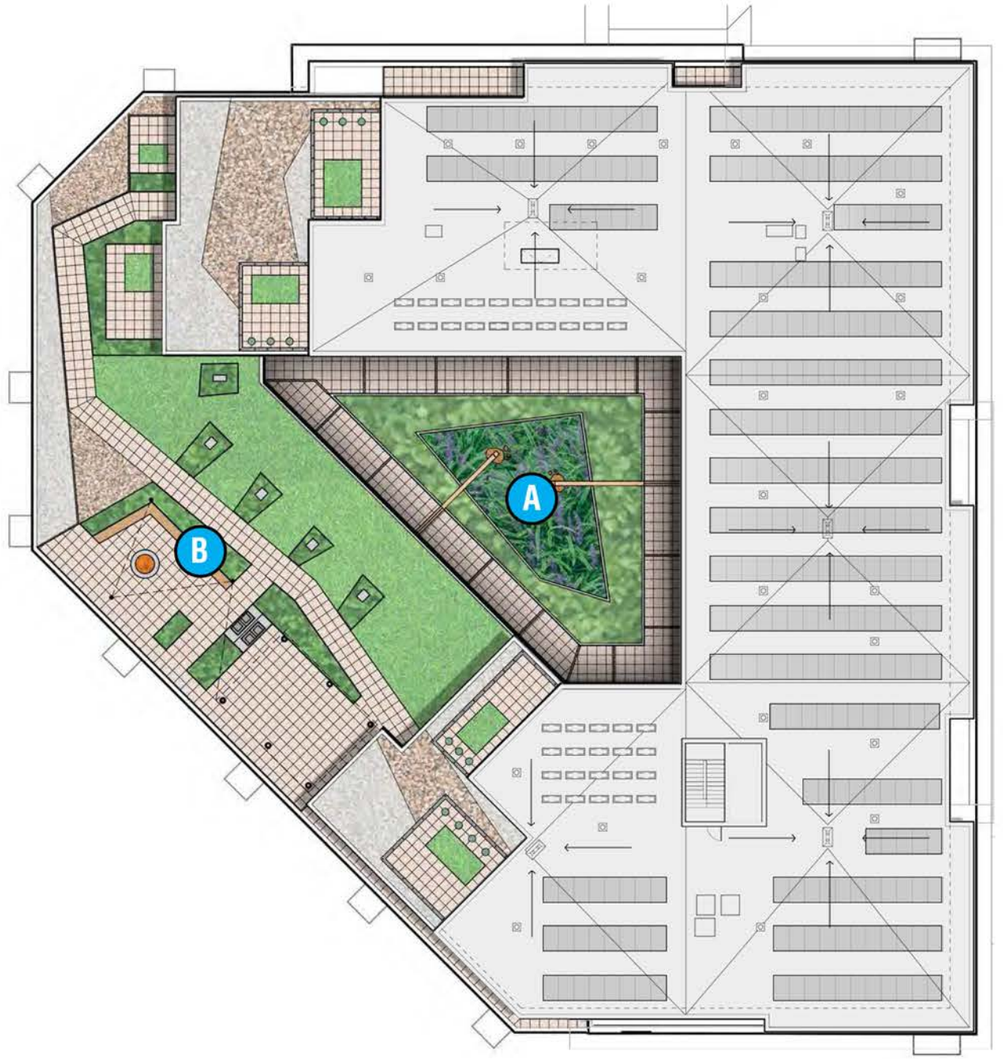

Mexican Orange Blossom


Rockrose


Pachysandra


True Lavender


Synthetic Turf



0 16 32 64

N

PLANTING PLAN - COURTYARD / ROOFTOP



DOGWOOD PARK RENDERING



PLAN AREA LEGEND

COMMON AREAS AND CIRCULATIOI
RESIDENTIAL PROGRAM
UTILITY

AREA SUMMARY

34,703 GSF
- COMMON AREA/CIRC: 915 SF
- RESIDENTIAL PROGRAM: 2,987 SF
- PRIVATE GARAGE: 30,801 SF

PARKING SUMMARY

81 PARKING STALLS

BICYCLE PARKING

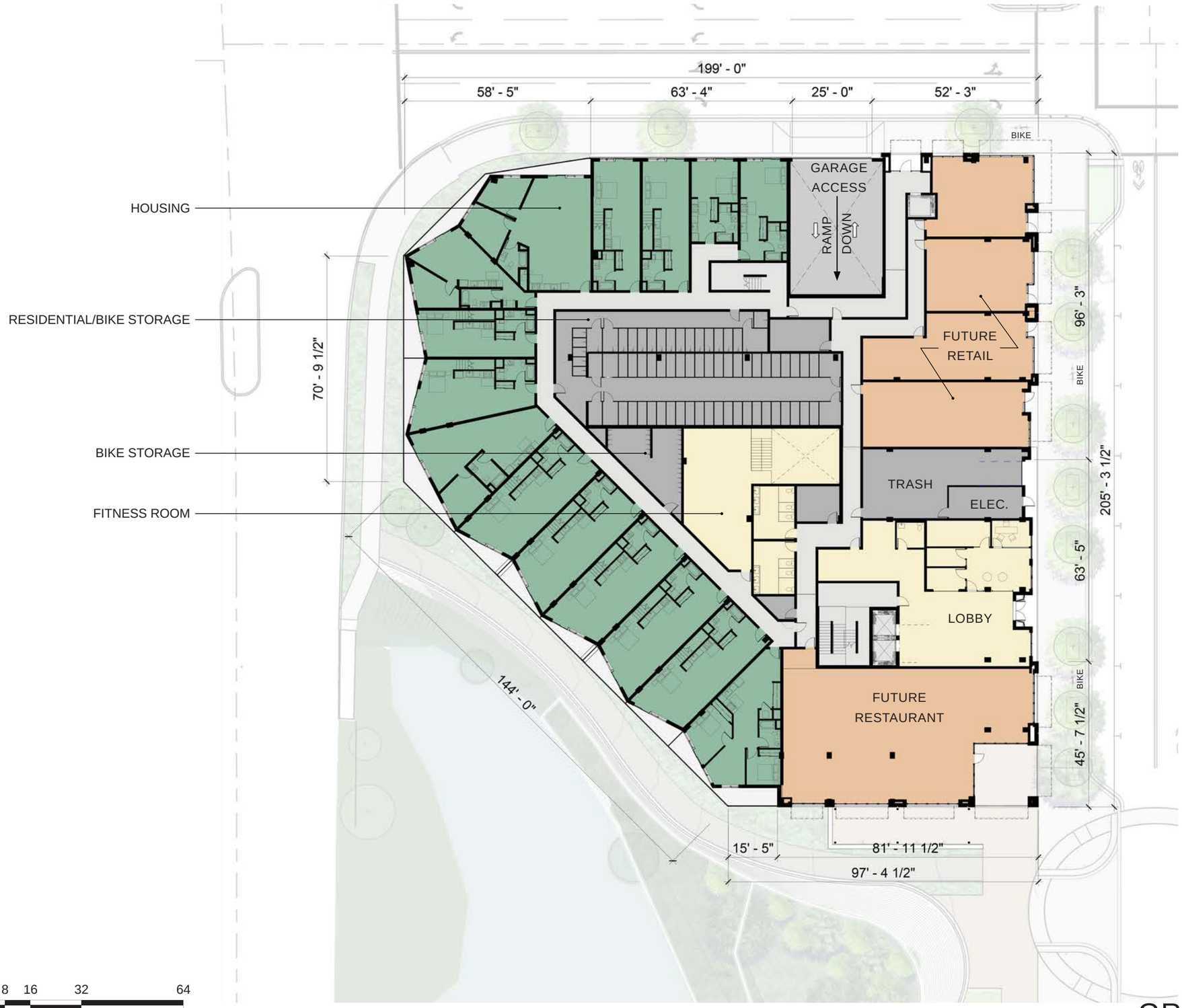
98 SPACES

SHARED PARKING AGREEMENT

PUBLIC USE OF 40 PARKING SPACES FOR WEEKDAY DAYTIME PARKING

N

0 8 16 32 64



PLAN AREA LEGEND

RETAIL
HOUSING
COMMON AREAS AND CIRCULATION
RESIDENTIAL PROGRAM
UTILITY

AREA SUMMARY

GROSS BUILDING AREA: 34,077 SF
- RETAIL: 6,833 SF
- HOUSING: 16,334 SF
- COMMON AREA: 2,235 SF
- RESIDENTIAL PROGRAM: 4,191 SF
- UTILITY: 4,484 SF

BICYCLE PARKING

46 SPACES
3 PUBLIC SPACES

GROUND STORY SITE PLAN



PLAN AREA LEGEND

HOUSING
COMMON AREAS AND CIRCULATION
UTILITY

AREA SUMMARY

GROSS BUILDING AREA: 30,062 SF

- HOUSING: 26,593 SF
- COMMON AREA: 3,071 SF
- UTILITY: 398 SF

BICYCLE PARKING

18 SPACES

N

0 8 16 32 64

SECOND STORY PLAN



PLAN AREA LEGEND

HOUSING
COMMON AREAS AND CIRCULATION
UTILITY

AREA SUMMARY (X2)

GROSS BUILDING AREA: 30,967 SF

- HOUSING: 26,593 SF
- COMMON AREA: 3,976 SF
- UTILITY: 398 SF

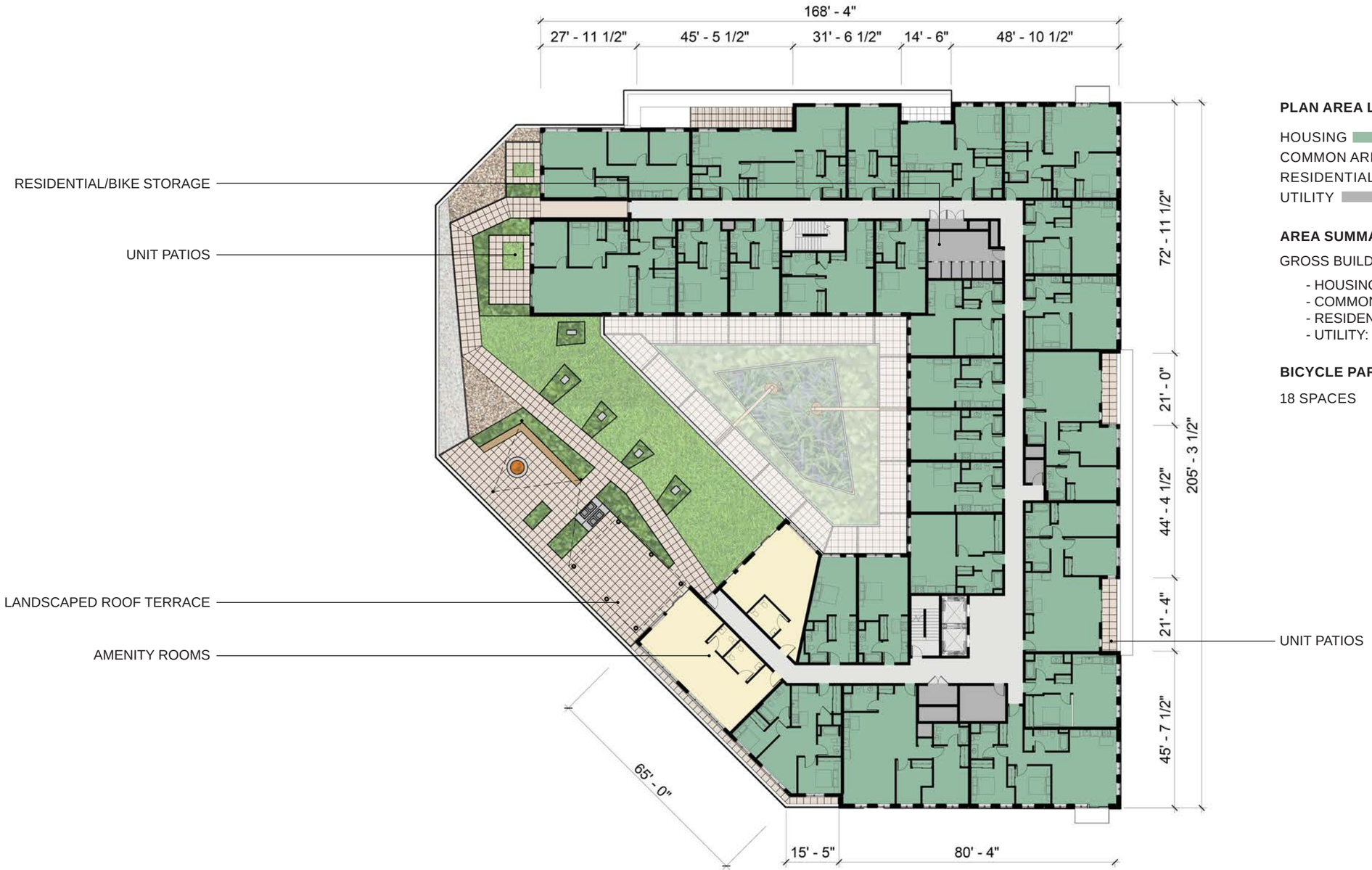
BICYCLE PARKING

18 SPACES

N

0 8 16 32 64

THIRD & FOURTH STORY PLAN



PLAN AREA LEGEND

HOUSING
COMMON AREAS AND CIRCULATION
RESIDENTIAL PROGRAM
UTILITY

AREA SUMMARY

GROSS BUILDING AREA: 22,812 SF

- HOUSING: 17,798 SF
- COMMON AREA: 3,074 SF
- RESIDENTIAL PROGRAM: 1,542 SF
- UTILITY: 398 SF

BICYCLE PARKING

18 SPACES

N

0 8 16 32 64

FIFTH STORY PLAN



PLAN AREA LEGEND

HOUSING
COMMON AREAS AND CIRCULATION
UTILITY

AREA SUMMARY

GROSS BUILDING AREA: 19,290 SF

- HOUSING: 16,334 SF
- COMMON AREA: 2,558 SF
- UTILITY: 398 SF

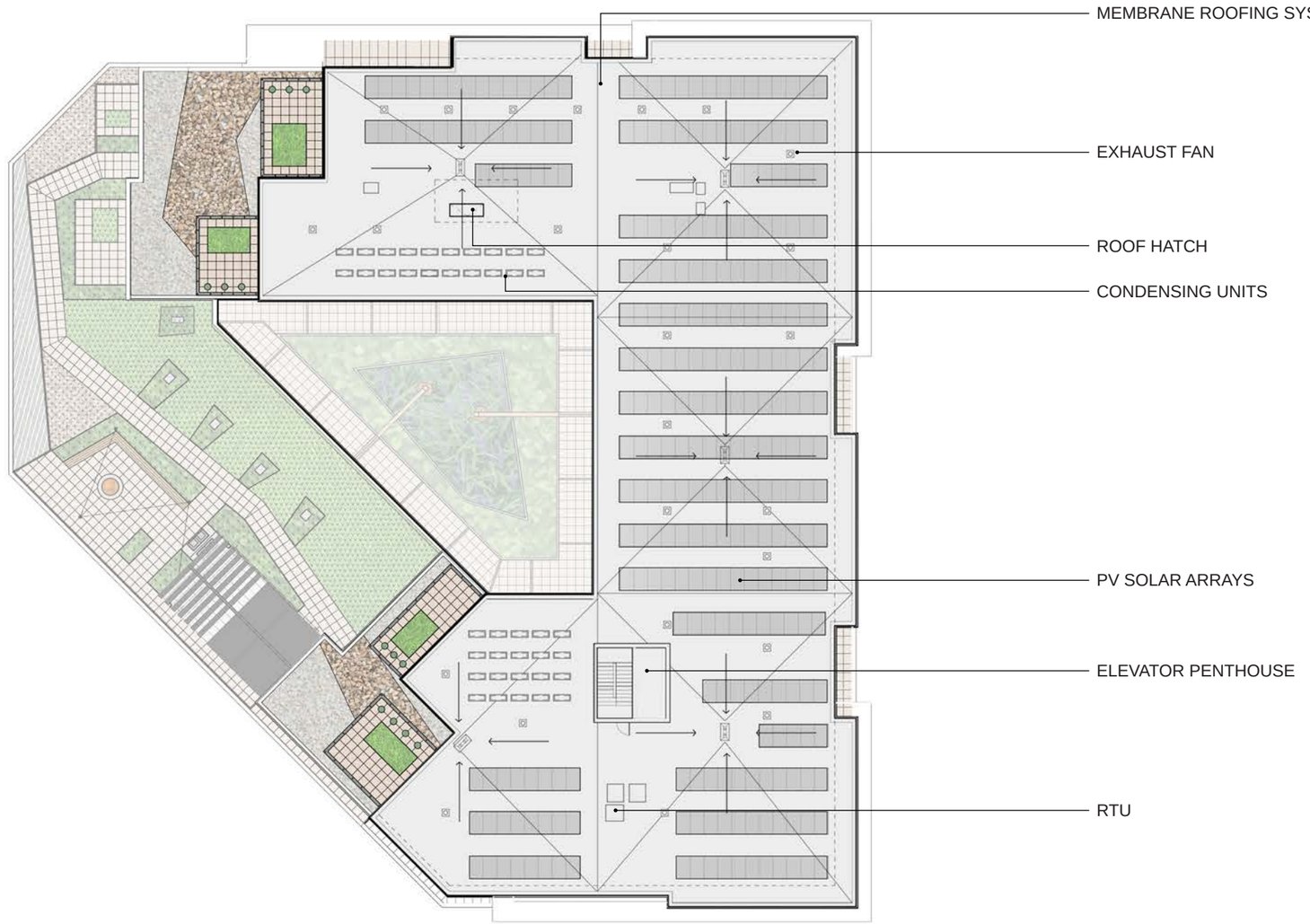
BICYCLE PARKING

18 SPACES

N

0 8 16 32 64

SIXTH STORY PLAN



N

0 8 16 32 64

ROOF PLAN





1 WALL SCONCE

FINISH: BLACK POWDER COAT
TYPE: ASYMMETRIC LED DOWN
MOUNT: WALL SURFACE



2 ENTRY CANOPIES

FINISH: BLACK POWDER COAT
TYPE: LINEAR LED DOWN LIGHT
MOUNT: RECESSED CANOPY



3 GARAGE GENERAL LIGHTING

FINISH: BLACK
TYPE: 18” LED DOWN
MOUNT: FLOOR/CEILING SURFACE



4 RESIDENTIAL LOBBY

FINISH: BLACK POWDER COAT
TYPE: LINEAR LED
MOUNT: WALL SURFACE



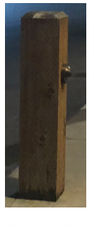
5 RESIDENTIAL PATIO

FINISH: BLACK POWDER COAT
TYPE: ASYMMETRICAL LED DOWN
MOUNT: WALL SURFACE



6 WALL SCONCE

FINISH: BLACK
TYPE: LINEAR LED 120°
MOUNT: WALL

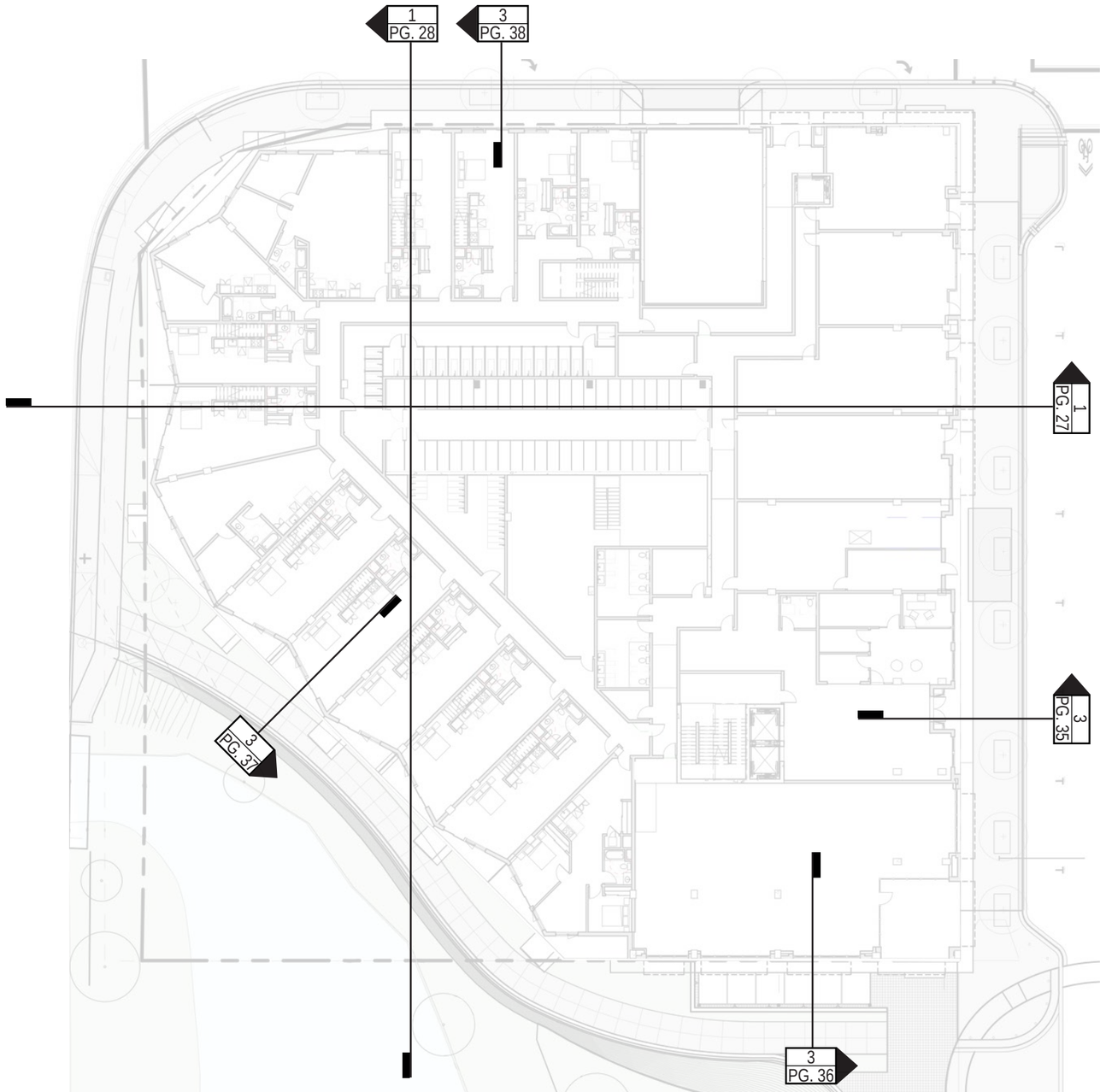




7 OUTDOOR BOLLARD

FINISH: BLACK POWDER COAT
TYPE: DOWN LIGHT
MOUNT: BOLLARD SURFACE

EXTERIOR LIGHTING



WALL SECTION KEY PLAN



1. BUILDING SECTION
SCALE = 3/32"=1'-0"

0 4 8 16 32

BUILDING SECTION - EAST/WEST



1. BUILDING SECTION
SCALE = 3/32”=1’-0”

0 4 8 16 32

BUILDING SECTION - NORTH/SOUTH



0 4 8 16 32

EAST ELEVATION



0 4 8 16 32

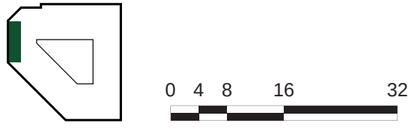
SOUTH ELEVATION



0 4 8 16 32

SOUTHWEST ELEVATION





0 4 8 16 32

WEST ELEVATION



0 4 8 16 32

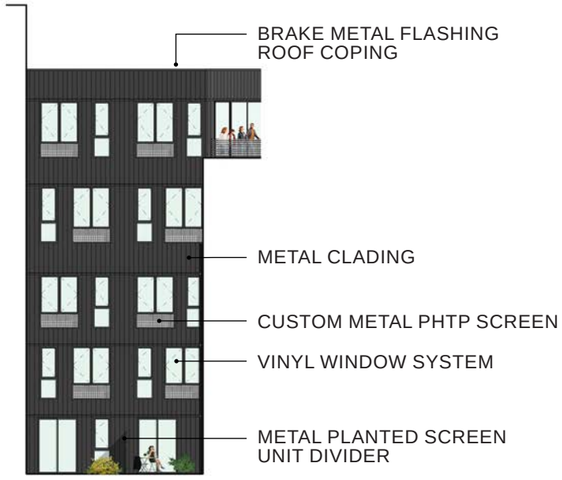
NORTH ELEVATION



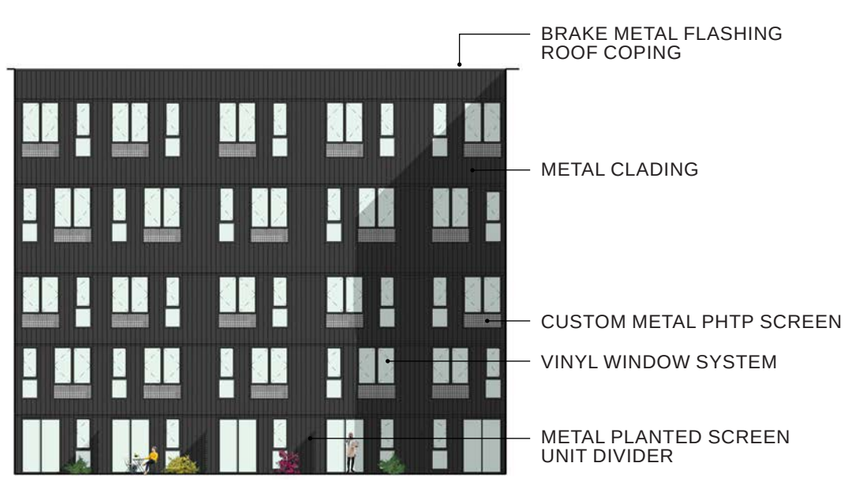
SOUTHWEST



NORTH



SOUTH



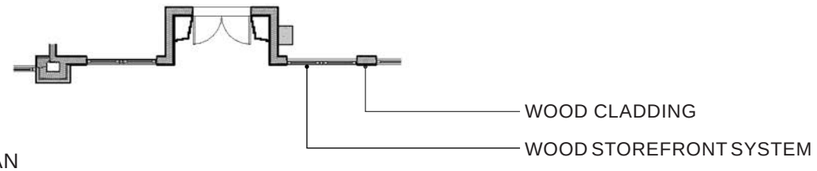
EAST

0 4 8 16 32

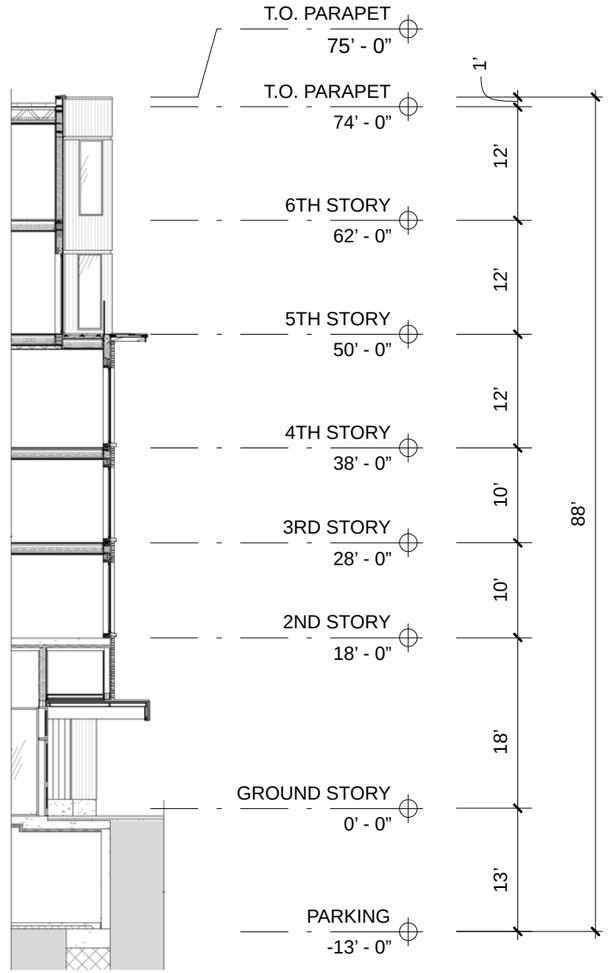
COURTYARD ELEVATION



ENLARGED ELEVATION



ENLARGED PLAN



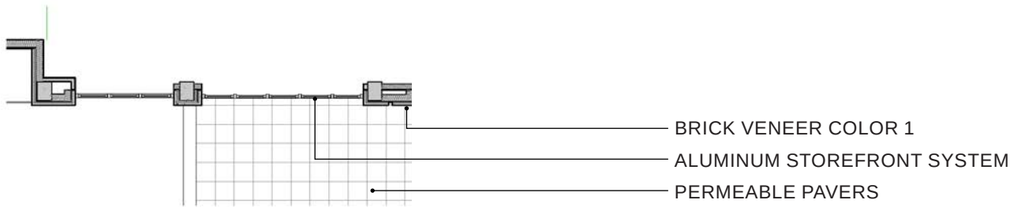
ENLARGED SECTION

0 4 8 16 32

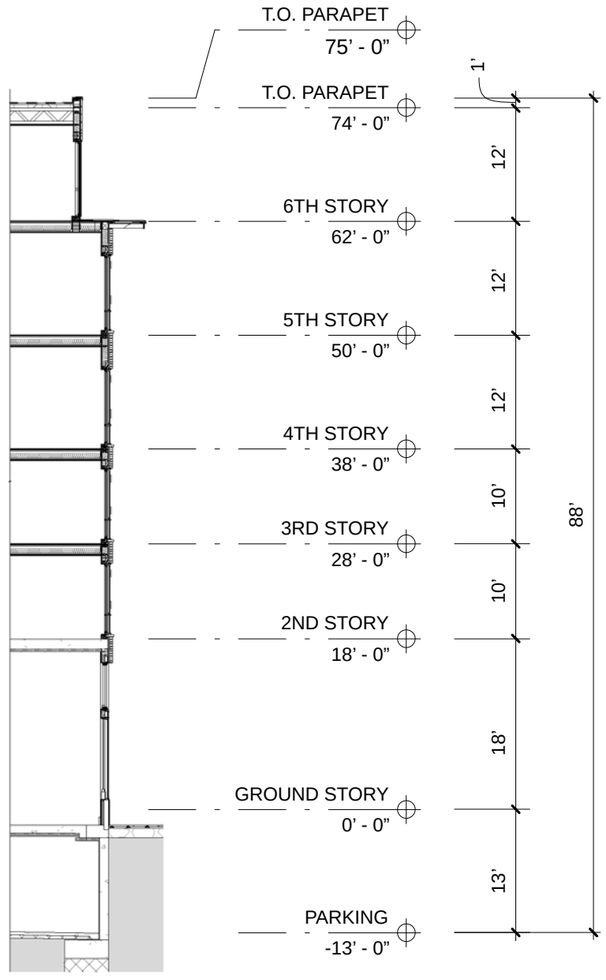
WALL SECTION - MAIN ST LOBBY



ENLARGED ELEVATION



ENLARGED PLAN

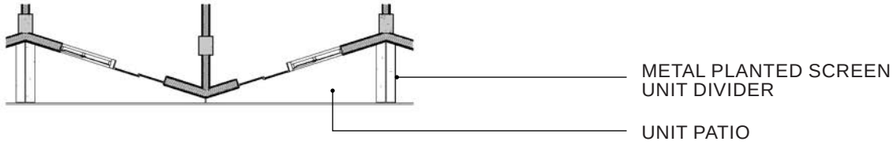


ENLARGED SECTION

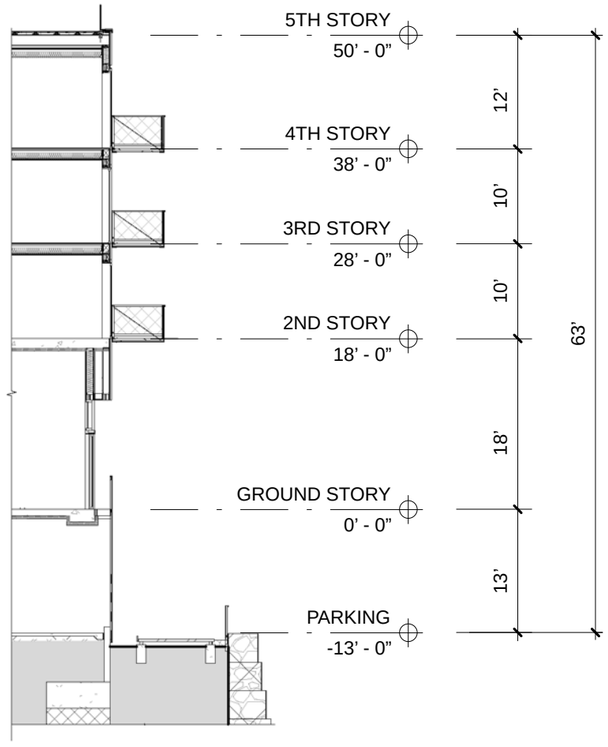
0 4 8 16 32



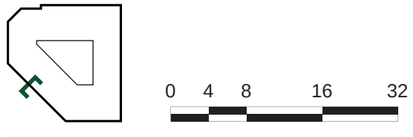
ENLARGED ELEVATION



ENLARGED PLAN



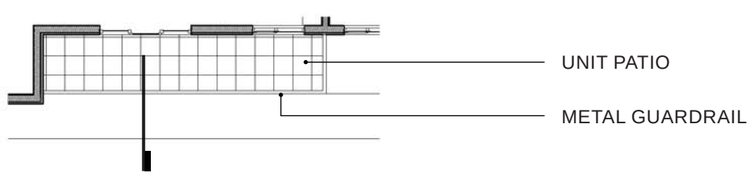
ENLARGED SECTION



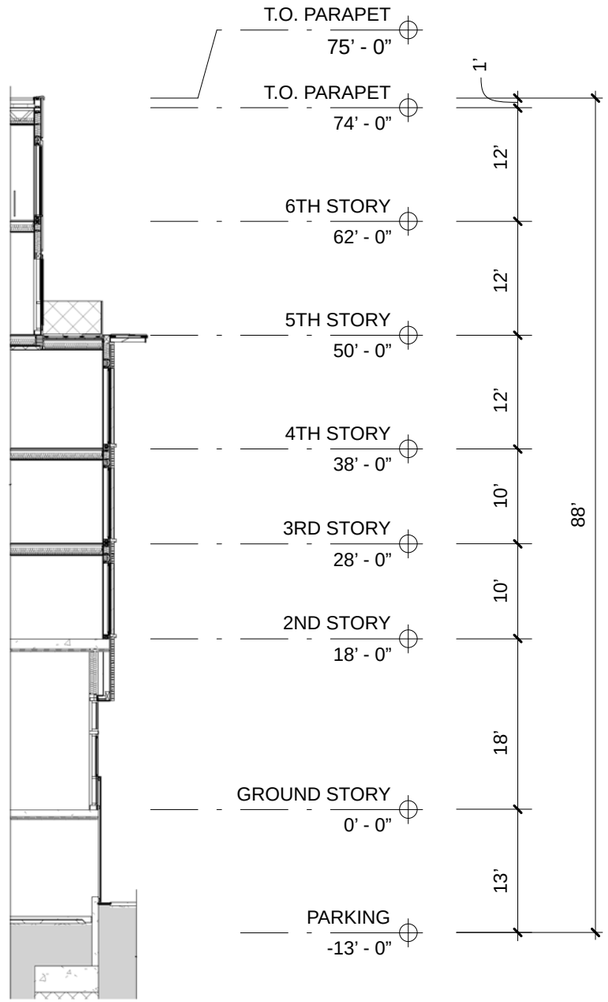
WALL SECTION - MCLOUGHLIN PEDESTRIAN PATH



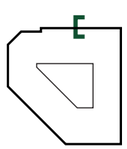
ENLARGED ELEVATION



ENLARGED PLAN



ENLARGED SECTION



0 4 8 16 32

WALL SECTION - WASHINGTON ST



MAIN/WASHINGTON STREET PERSPECTIVE



MAIN STREET ELEVATION



WASHINGTON STREET ELEVATION



WASHINGTON/MCLOUGHLIN PERSPECTIVE

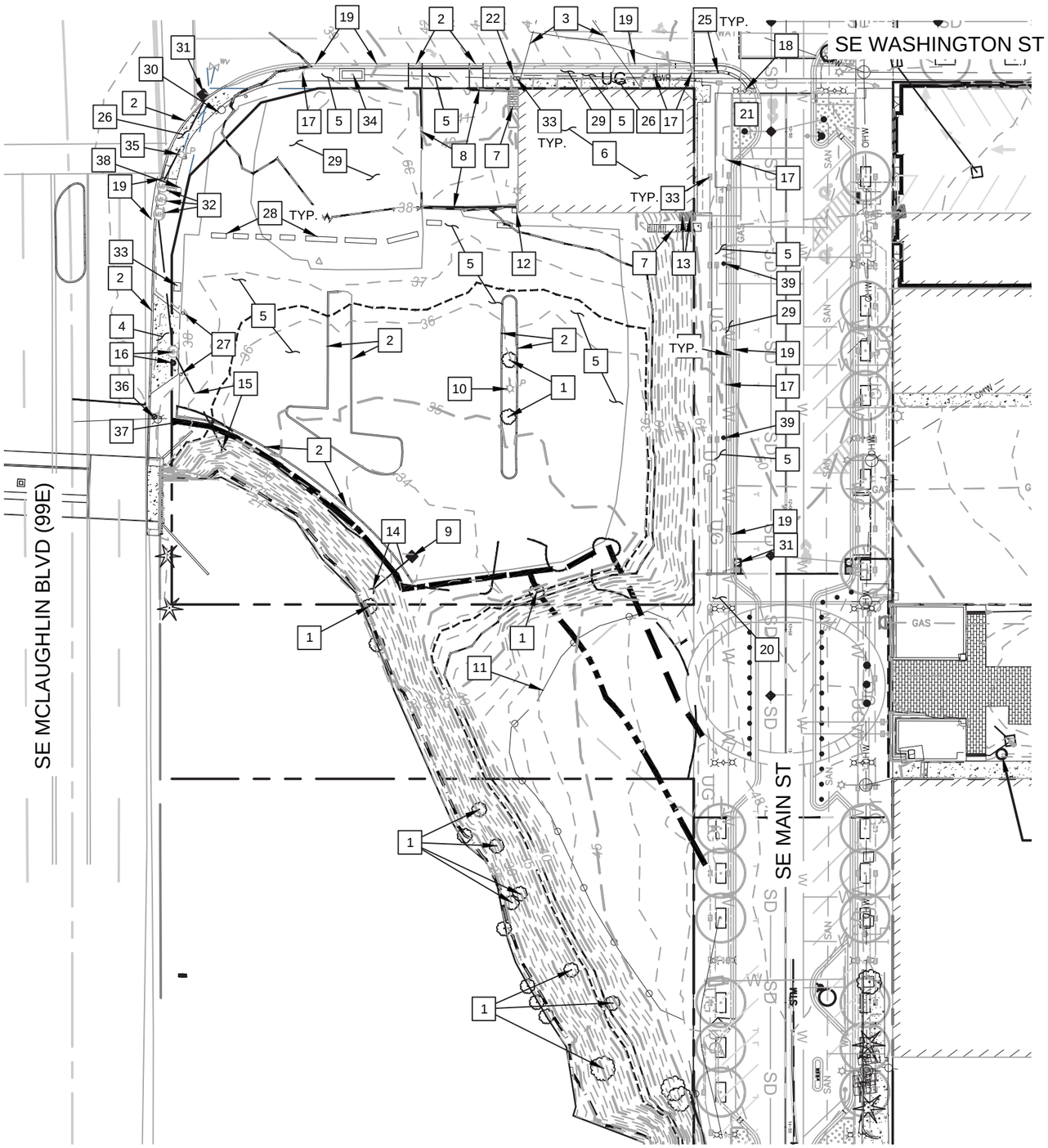


PARK PERSPECTIVE



MAIN STREET VIGNETTE





LEGEND

- EXISTING RIGHT-OF-WAY LINE
- CENTERLINE
- FENCE LINE
- EDGE OF CONCRETE
- POWER LINE (UG)
- OVERHEAD WIRE
- COMMUNICATIONS LINE
- FIBER OPTIC LINE
- GAS LINE
- STORM SEWER LINE (SD)
- SANITARY SEWER LINE (SS)
- WATER LINE (W)
- VEGETATED CORRIDOR
- FIELD VERIFIED HCA LINE
- ORDINARY HIGH WATER LINE (24.0')
- CITY MAPPED HCA LINE
- EXISTING 100-YR FLOODPLAIN (36.3')
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')

- EXISTING DECIDUOUS TREE
- EXISTING TREE TO BE REMOVED
- EXISTING CONIFEROUS TREE

N

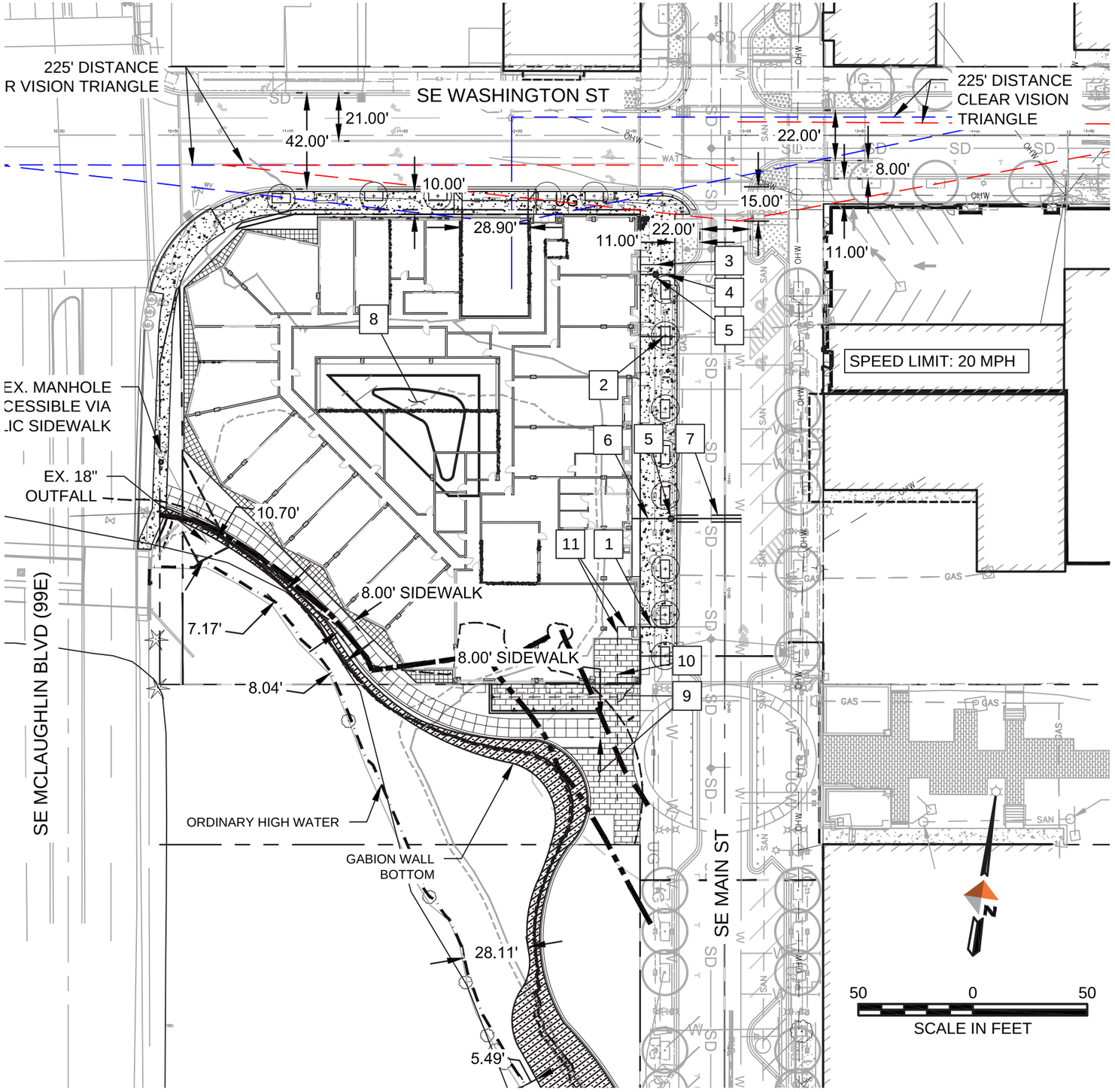
50 0 50

SCALE IN FEET

DEMOLITION NOTES

1. EXISTING TREE TO BE REMOVED.
2. EXISTING CURB TO BE REMOVED.
3. EXISTING OVERHEAD POWER LINE TO BE REMOVED.
4. EXISTING CONCRETE DRIVEWAY TO BE DEMOLISHED AND DISPOSED OF OFF-SITE.
5. EXISTING ASPHALT SURFACE TO BE DEMOLISHED AND DISPOSED OF OFFSITE.
6. EXISTING BUILDING TO BE DEMOLISHED.
7. EXISTING STAIRS AND HANDRAIL TO BE DEMOLISHED.
8. EXISTING 6" CONCRETE WALL TO BE DEMOLISHED.
9. EXISTING CATCH BASIN TO BE REMOVED.
10. EXISTING LIGHT POLE TO BE REMOVED.
11. EXISTING FENCING TO BE REMOVED.
12. EXISTING ELECTRIC METER TO BE REMOVED.
13. EXISTING GAS METER TO BE REMOVED.
14. EXISTING STORM LINE AND OUTFALL TO BE REMOVED.
15. EXISTING STORM LINE AND OUTFALL TO BE PROTECTED.
16. EXISTING MANHOLE AND CLEANOUT TO BE PROTECTED.
17. EXISTING SIGN TO REMAIN.
18. EXISTING LIGHT POLE TO BE PROTECTED.
19. EXISTING CURB AND GUTTER TO REMAIN.
20. EXISTING CONCRETE SIDEWALK TO REMAIN.
21. EXISTING STORMWATER PLANTER TO REMAIN.
22. EXISTING SIGN TO BE RELOCATED.
25. EXISTING BOLLARDS TO REMAIN.
26. EXISTING CONCRETE SIDEWALK TO BE DEMOLISHED AND DISPOSED OF OFF-SITE.
27. EXISTING BOLLARD TO BE REMOVED.
28. EXISTING CONCRETE JERSEY BARRIER TO BE REMOVED.
29. EXISTING GRAVEL SURFACE TO BE REMOVED.
30. EXISTING UTILITY POLE TO BE REMOVED.
31. EXISTING CATCH BASIN TO BE PROTECTED.
32. EXISTING CURB INLET AND MANHOLE TO BE PROTECTED.
33. EXISTING CARSON BOX TO BE PROTECTED.
34. EXISTING VAULT TO BE PROTECTED.
35. EXISTING SIGNAL POLE TO BE PROTECTED.
36. EXISTING UTILITY POLE TO BE PROTECTED.
37. EXISTING GUY WIRE TO BE RELOCATED.
38. EXISTING FIRE HYDRANT TO BE PROTECTED.
39. EXISTING STREET LIGHT BASE TO BE PROTECTED.

EXISTING CONDITIONS



LEGEND

- VEGETATED CORRIDOR
- FIELD VERIFIED HCA LINE
- ORDINARY HIGH WATER LINE (24.0')
- CITY MAPPED HCA LINE
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')
- PROPOSED 38.0' FLOODPLAIN BOUNDARY
- EXISTING/ PROPOSED FEMA 100-YR FLOODPLAIN (36.3')
- PROPOSED WATER LINE
- PROPOSED STORM LINE
- PROPOSED SANITARY SEWER
- PROPOSED CONCRETE SIDEWALK
- PROPOSED GABION WALL
- PROPOSED PERVIOUS PLAZA
- PROPOSED PERVIOUS (GRATE) WALKWAY
- EXISTING RIGHT-OF-WAY LINE
- FEMA FLOODWAY BOUNDARY

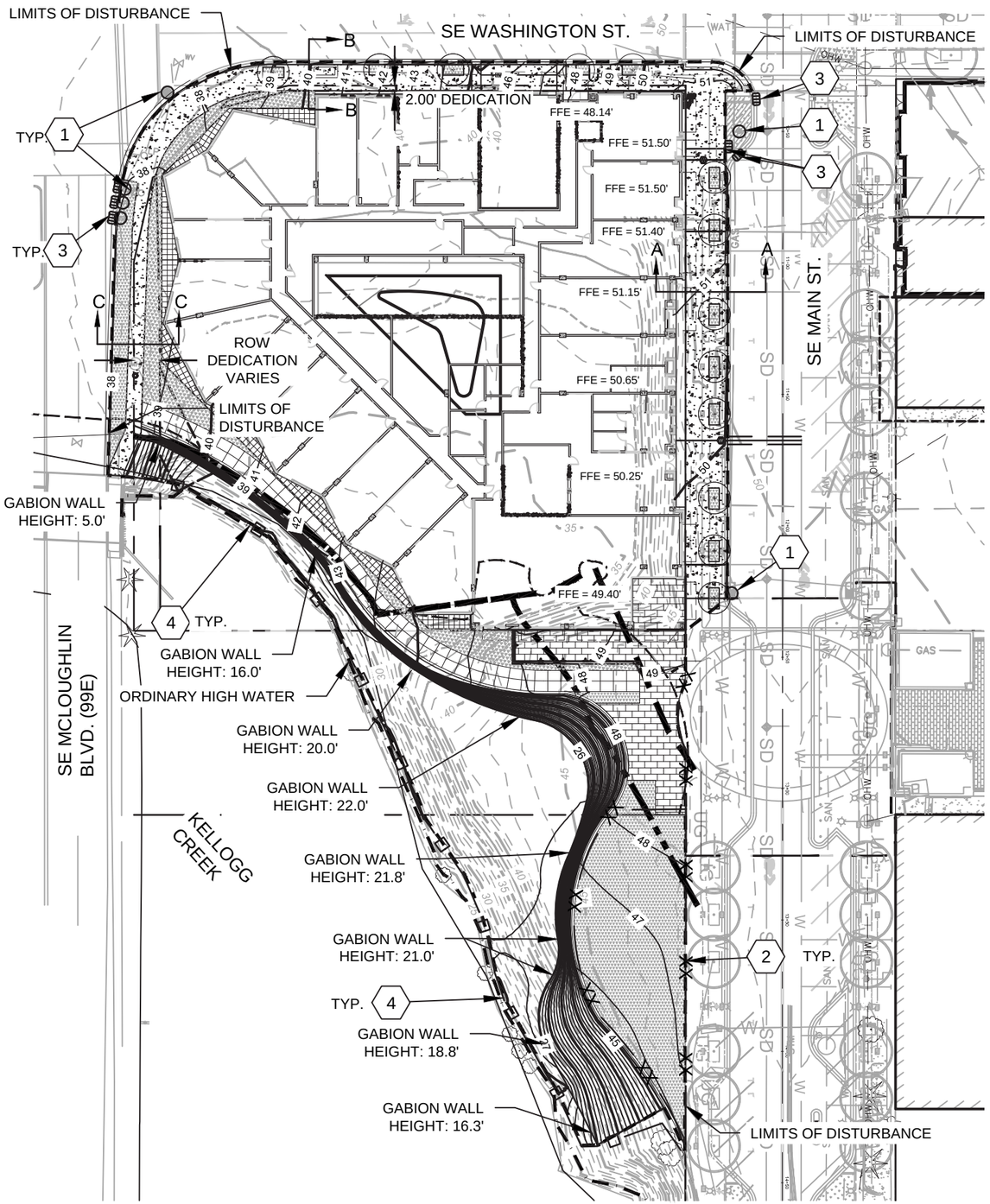
CONSTRUCTION NOTES

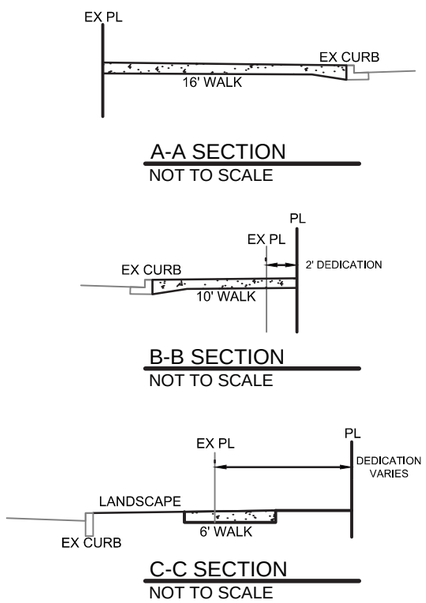
1. PROPOSED 15LF OF X" XXXX STORM LINE. CONNECT TO EXISTING STORM STUB AND STUB TO BUILDING.
2. PROPOSED 15LF OF 8" XXXX SANITARY SEWER LINE. CONNECT TO EXISTING SANITARY SEWER STUB AND STUB TO BUILDING.
3. PROPOSED 15LF OF 6" XXXX FIRE WATER LINE. CONNECT TO EXISTING WATER STUB AND STUB TO BUILDING. SEE MEP PLANS FOR DOUBLE CHECK DETECTOR ASSEMBLY.
4. PROPOSED 15LF OF 4" XXXX DOMESTIC WATER LINE. CONNECT TO EXISTING WATER STUB AND STUB TO BUILDING. SEE MEP PLANS FOR DOUBLE CHECK DETECTOR ASSEMBLY.
5. PROPOSED 4" DOMESTIC WATER METER.
6. PROPOSED 48LF OF 4" XXXX DOMESTIC WATER LINE. TIE INTO EXISTING XX" WATER MAIN.
7. PROPOSED SAWCUT LINE
8. STORMWATER PLANTER FACILITY ON ROOF. SEE LANDSCAPE AND ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
9. PROPOSED PERVIOUS PAVERS WITH 6" OF BASE ROCK AND IMPERMEABLE LINER.
10. PROPOSED 4" PERFORATED DRAIN PIPE
11. PROPOSED 13 LF OF X" XXXX STORM LINE RUNNING UNDER THE BUILDING TO CONNECT PROPOSED 4" PERFORATED DRAIN PIPE TO PROPOSED STORM STUB AT BUILDING

GENERAL NOTES:

- POWER AND COMMUNICATION CONDUIT WILL BE INSTALLED UNDERGROUND

UTILITY PLAN





LEGEND

- EXISTING MAJOR CONTOUR — 180
- EXISTING MINOR CONTOUR — 181
- PROPOSED MAJOR CONTOUR — 181
- PROPOSED MINOR CONTOUR — 180
- EXISTING RIGHT-OF-WAY LINE
- VEGETATED CORRIDOR
- FIELD VERIFIED HCA LINE
- ORDINARY HIGH WATER LINE (24.0')
- CITY MAPPED HCA LINE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED PERVIOUS PLAZA
- PROPOSED PERVIOUS (GRATE) WALKWAY
- EXISTING FEMA 100-YR FLOODPLAIN (36.3')
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')
- FEMA FLOODWAY BOUNDARY
- INLET PROTECTION
- BIOBAG
- SEDIMENT FENCE — XX — XX
- SEDIMENT CURTAIN

FLOODPLAIN CALCULATIONS

EX. 1996 FLOODPLAIN BOUNDARY ELEVATION PER NAVD88 DATUM: 38.00'

COHO AND ADAMS STREET/DOGWOOD PARK COMBINED:
EXISTING FLOODPLAIN VOLUME: 3,417 CF
PROPOSED FLOODPLAIN VOLUME: 3,576 CF (4.6% INCREASE)

COHO SITE
EXISTING FLOODPLAIN VOLUME: 2,486 CF
PROPOSED FLOODPLAIN VOLUME: 347 CF

ADAMS STREET/DOGWOOD PARK:
EXISTING FLOODPLAIN VOLUME: 931 CY
PROPOSED FLOODPLAIN VOLUME: 3,229 CY

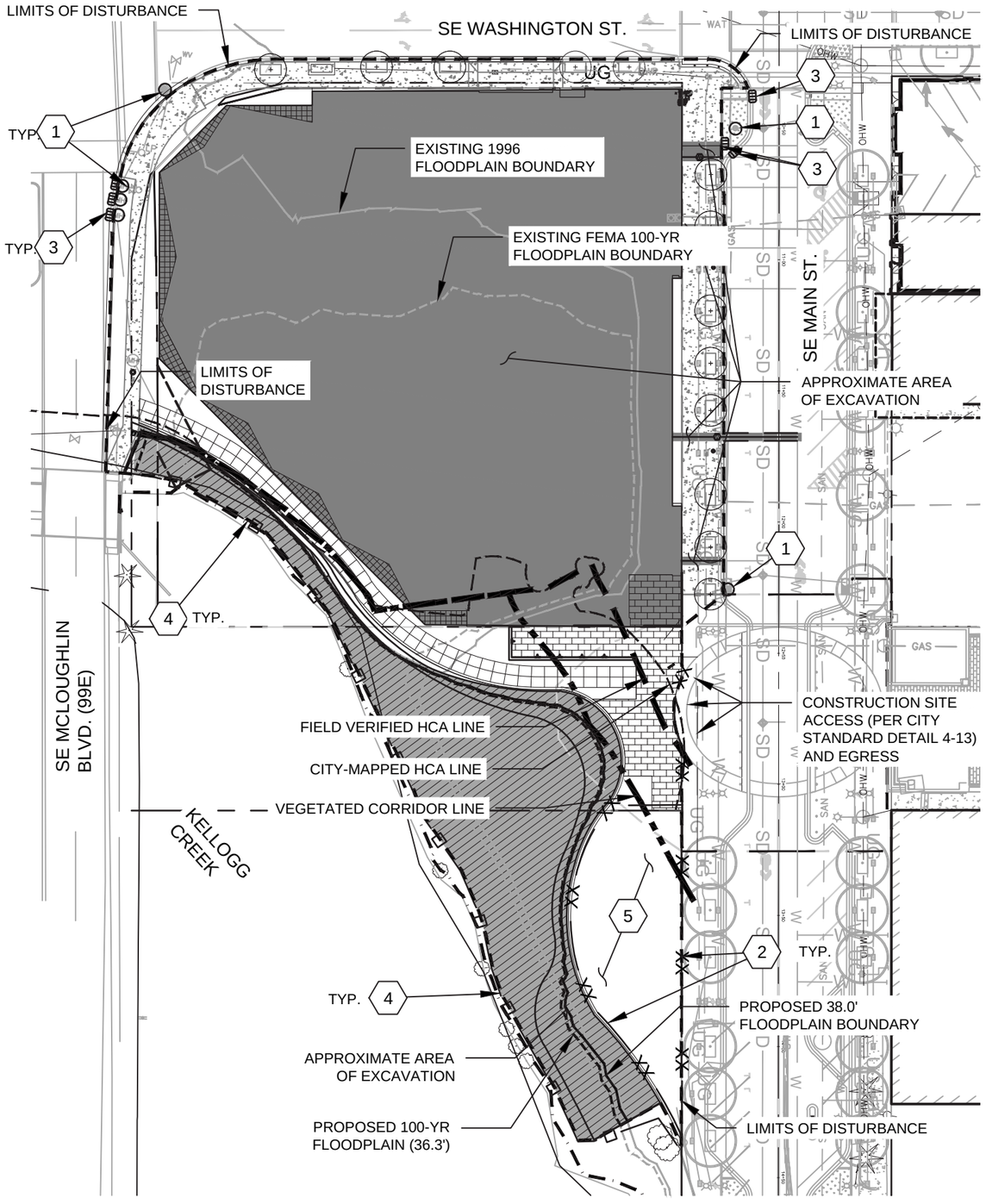
EROSION CONTROL NOTES

1. PROPOSED INLET PROTECTION.
2. PROPOSED SEDIMENT FENCE.
3. PROPOSED BIOBAG.
4. PROPOSED SEDIMENT CURTAIN.

N

50 0 50
SCALE IN FEET

GRADING PLAN



LEGEND

- EXISTING MAJOR CONTOUR — 180
- EXISTING MINOR CONTOUR — 181
- PROPOSED MAJOR CONTOUR — 181
- PROPOSED MINOR CONTOUR — 180
- EXISTING RIGHT-OF-WAY LINE
- VEGETATED CORRIDOR
- FIELD VERIFIED HCA LINE
- ORDINARY HIGH WATER LINE (24.0')
- CITY MAPPED HCA LINE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED PERVIOUS PLAZA
- PROPOSED PERVIOUS (GRATE) WALKWAY
- EXISTING / PROPOSED FEMA 100-YR FLOODPLAIN (36.3')
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')
- PROPOSED 38.0' FLOODPLAIN BOUNDARY
- INLET PROTECTION
- BIOBAG
- SEDIMENT FENCE — XX — XX
- SEDIMENT CURTAIN
- PROPOSED BUILDING & UTILITY EXCAVATION AREA
- PROPOSED GABION WALL EXCAVATION AREA

EROSION CONTROL NOTES

1. PROPOSED INLET PROTECTION.
2. PROPOSED SEDIMENT FENCE.
3. PROPOSED BIOBAG.
4. PROPOSED SEDIMENT CURTAIN.
5. PROPOSED STOCKPILE AREA

DESCRIPTION OF WORK

THE PROPOSED PROJECT IS A MULTI-USE BUILDING ALONG SE MCLOUGHLIN BLVD (99E), SE MAIN ST, AND SE WASHINGTON ST. SITE WORK TO INCLUDE A GABION WALL ALONG THE EDGE OF KELLOGG CREEK TO BALANCE THE FLOODPLAIN, AS WELL AS NEW SIDEWALK AND NEW STREET TREES ALONG THE SURROUNDING RIGHTS-OF-WAY. WORK TO ALSO INCLUDE CONCRETE PAVER PLAZA, WALKWAY BETWEEN SE MAIN ST AND SE MCLOUGHLIN BLVD, AND INSTALLATION OF NEW UTILITY LINES INCLUDING SANITARY, STORM, AND FIRE AND DOMESTIC WATER.

N

50 0 50
SCALE IN FEET

CONSTRUCTION MANAGEMENT PLAN



OPTION 1



OPTION 2

FUTURE BIKE PATH ALIGNMENT



MAIN ST ELEVATION

RESIDENTIAL GLAZING : MIN 30% REQ'D
MORE THAN 60% VERTICAL WINDOWS
ENVELOPE AREA : 12,365SF
GLAZING/DOOR AREA : (126) OPENINGS = 3,863SF
TOTAL GLAZING RATIO : 31%

COMMERCAL GLAZING : MIN 50% REQ'D
ENVELOPE AREA : 3,080SF
GLAZING/DOOR AREA : (14) OPENINGS = 1,327SF
TOTAL GLAZING RATIO : 43%



MCLOUGHLIN ST ELEVATION

RESIDENTIAL GLAZING : MIN 30% REQ'D
MORE THAN 60% VERTICAL WINDOWS
ENVELOPE AREA : 11,797SF
GLAZING/DOOR AREA : (74) OPENINGS = 3,657SF
TOTAL GLAZING RATIO : 31%

GROUND STORY RESIDENTIAL GLAZING : MIN 30% REQ'D
ENVELOPE AREA : 3,405SF
GLAZING/DOOR AREA : (16) OPENINGS = 1,328SF
TOTAL GLAZING RATIO : 39%

GLAZED AREA CALCULATIONS



UPPER LEVEL GLAZING

GROUND STORY GLAZING

ADAMS ST ELEVATION

RESIDENTIAL GLAZING : MIN 30% REQ'D

MORE THAN 60% VERTICAL WINDOWS

ENVELOPE AREA : 5,747SF

GLAZING/DOOR AREA : (51) OPENINGS = 1,724SF

TOTAL GLAZING RATIO : 30%

COMMERCIAL GLAZING : MIN 50% REQ'D

ENVELOPE AREA : 1,449SF

GLAZING/DOOR AREA : (5) OPENINGS = 536SF

TOTAL GLAZING RATIO : 37%



UPPER LEVEL GLAZING

GROUND STORY GLAZING

WASHINGTON ST ELEVATION

RESIDENTIAL GLAZING : MIN 30% REQ'D

MORE THAN 60% VERTICAL WINDOWS

ENVELOPE AREA : 9,932SF

GLAZING/DOOR AREA : (79) OPENINGS = 3,079SF

TOTAL GLAZING RATIO : 31%

COMMERCIAL/RESIDENTIAL GLAZING : MIN 40% REQ'D

ENVELOPE AREA : 2,576SF

GLAZING/DOOR AREA : (9) OPENINGS = 953SF

TOTAL GLAZING RATIO : 37%

GLAZED AREA CALCULATIONS

COHO POINT

Preliminary Drainage Report

Prepared for:

Jones Architecture
120 NW 9th Ave, Suite 210
Portland, Oregon 97209

Prepared by:

DOWL

720 SW Washington Street, Suite 750
Portland, Oregon 97205
971-280-8641
mgillette@dowl.com

March 2021

2322.14464.01
Revision 1



TABLE OF CONTENTS

1.0 PROJECT OVERVIEW 1
1.1 Project Description 1
1.2 Location 1
1.3 Stormwater Hierarchy 1

2.0 SITE CONDITIONS 2
2.1 Topography 2
2.2 Climate 2
2.3 Geology 2
2.4 Hydrology 2
2.5 Basin Areas 2

3.0 WATER QUALITY 3
3.1 Design Guidelines 3
3.2 Stormwater Planters 3
3.3 Permeable Pavers and Concrete 3

4.0 WATER QUANTITY 4
4.1 Design Overview 4

5.0 CONVEYANCE ANALYSIS 4
5.1 Design Overview 4
5.2 Hydrologic Method 4
5.3 Design Storm 4
5.4 System Performance 5

6.0 SUMMARY 5

FIGURES

Figure 1-1 Vicinity Map 1
Figure 5-1 Type 1A Rainfall Distribution 5

TABLES

Table 2-1 Basin Areas 3
Table 3-1 Planter Facility Summary 3
Table 5-1 Precipitation Depth 4

EXECUTIVE SUMMARY

The proposed Coho Point development will construct a multi-story mixed use building (33,000 SF ground level) with associated landscape and pedestrian areas, and improvements to Dogwood park and the public ROW. The proposed development will also construct public sidewalks along SE Main St, SE Washington St, and along a portion of SE McLoughlin Blvd. The project is located at 11100 SE McLoughlin road in Milwaukie, Oregon.

The purpose of this report is to describe the stormwater management strategy being proposed for the Coho Point development. The design follows the standards and regulations developed by the City of Portland, which have been adopted by the City of Milwaukie. These regulations are identified in the City of Portland's Stormwater Management Manual, Bureau of Environmental Services, revised August 2016.

Stormwater from the hardscape and plaza areas around the building will be managed through permeable pavers and pervious concrete. Stormwater from the roof area will be treated in a planter facility located on the second-floor terrace. This facility will provide water quality treatment only. Detention is not proposed with this project since the discharge point is a storm-only pipe in Main St that outfalls to the river at Dogwood Park, roughly 500 ft away. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

I hereby certify that this Stormwater Management Report for the Coho Point development has been prepared by me or under my supervision and meets minimum standards of the City of Portland and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.

1.0 PROJECT OVERVIEW

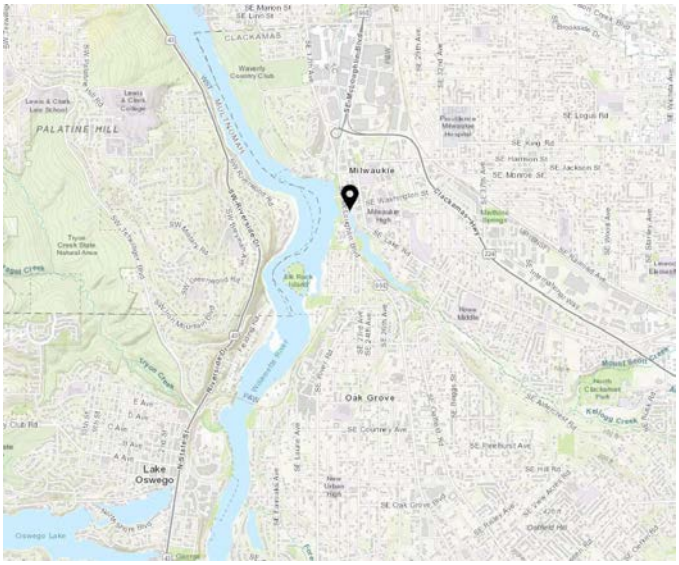
1.1 Project Description

The proposed Coho Point development will construct a multi-story mixed use building (33,000 SF ground level) with associated landscape and pedestrian areas, and improvements to Dogwood park and the public ROW. The proposed development will also construct public sidewalks along SE Main St, SE Washington St, and along a portion of SE McLoughlin Blvd

1.2 Location

The project is located at 11100 SE McLoughlin road in Milwaukie, Oregon.

Figure 1-1 Vicinity Map



1.3 Stormwater Hierarchy

The disposal hierarchy found in the City of Portland *Stormwater Management Manual* was used to evaluate stormwater management options at the site. Per Section 1.3.1 – Infiltration and Discharge Hierarchy:

> *"Stormwater must be infiltrated onsite to the maximum extent feasible, before any flows are discharged offsite... The appropriate use of infiltration depends on a number of factors, including soil type, soil conditions, slopes, and depth to groundwater."*

Category 1: Requires total onsite infiltration with vegetated infiltration facilities.

Category 2: Requires total onsite infiltration with vegetated facilities that overflow to a subsurface infiltration facility.

The proposed building will be constructed adjacent to the property and ROW lines on the west, north, and east sides. Additionally, the SW side of the building is bordered by Kellogg Creek, and the city is requiring a pedestrian connection along this side of the building to connect SE Main St to SE McLoughlin Blvd. Due to the size of the building and limited space on site, infiltration facilities are infeasible since they would need to be located too close to the building and would potentially undermine the foundation.

Category 3: Requires onsite detention with vegetated facilities that overflow to a drainageway, river, or storm pipe.

The project will be designed under Hierarchy Category 3. Since the discharge point is a storm only pipe that flows directly to the river, detention is not proposed. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

Category 4: Requires onsite detention with vegetated facilities that overflow to the combined sewer system.

2.0 SITE CONDITIONS

2.1 Topography

Site slopes range from moderate to steep towards Kellogg Creek to the southwest. The highest elevation of 42 is located in the northeast property corner. The lowest elevation of 32 is located in the southeast property corner.

2.2 Climate

The site is located in Milwaukie, Oregon. There is a gradual change in seasons with defined seasonal characteristics. Average daily temperatures range from 41°F to 69°F. Average annual rainfall recorded in this area is 45 inches.

2.3 Geology

The underlying soil type on the existing site as classified by the United States Department of Agriculture Soil Survey of Multnomah County, Oregon as Urban Land, with 3 to 8 percent slopes (See Appendix A: USGS Soils Map - Multnomah County). A hydrologic soil group is not assigned to this soil type.

2.4 Hydrology

Existing
The existing site contains an asphalt parking lot and 3,500 SF building at the northeast corner of the property. Runoff from the existing site generally sheet flows to the southwest to a catch basin which discharges directly to Kellogg Creek. Pollution reduction and flow control are not present on the existing site.

Proposed
Stormwater from the proposed development will be managed using permeable pavers and a stormwater planter on the second-floor terrace. The planter facility will provide water quality treatment only and discharge to the storm pipe in SE Main St. Since the discharge point is a storm only pipe that flows directly to the river, detention is not proposed. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

2.5 Basin Areas

Table 2-1 lists the basin areas under existing and proposed conditions (See Technical Appendix: Figure 1 – Existing Conditions and Figure 2 – Proposed Conditions). Note the proposed conditions site impervious area includes only the building roof. The pedestrian plaza will be constructed with permeable pavers or pervious concrete, and the walkway connecting SE Main St and SE McLoughlin Blvd will be constructed as an elevated steel grated walkway. Both the plaza and walkway are counted as pervious area.

The proposed public improvements along the frontages were not included in the below table since these areas are not routed to on-site storm facilities. The City of Milwaukie Main Street Improvement project recently installed new stormwater planter facilities that manage runoff from the public ROW in this area. The planters are assumed to have been designed to include the future sidewalks along the site frontages.

Table 2-1 Basin Areas

Site Condition	Impervious Area (ac)	Pervious Area (ac)	Total Area (ac)	Percent Impervious (%)
Existing	0.77	0.25	1.02	75.5%
Proposed	0.76	0.26	1.02	74.5%

3.0 WATER QUALITY

3.1 Design Guidelines

The project is designed under Hierarchy Category 3 and requires pollution reduction for stormwater management of the site.

3.2 Stormwater Planters

Stormwater from the building roof area will be treated with a vegetated stormwater planter designed using the Portland Presumptive Approach Calculator (PAC). Vegetated planters are landscaped depressions used to collect and hold stormwater runoff, allowing pollutants to settle and filter out as water passes through the soil media. The planter facility is designed as follows:

- Freeboard = 3”
- Storage Depth = 6”
- Growing Medium Depth = 18”
- Underdrain Rock Depth = 12”

The planter was designed using PAC Facility Configuration D: Lined Facility with Rock Storage and Underdrain. The facility is lined due to its location on the second-floor terrace roof. Table 3-1 below shows a summary of the proposed planter facility. (See Technical Appendix: PAC Report). An overflow standpipe with a dome grate will be included to provide an emergency bypass route (See Technical Appendix: BES Detail SW-141).

Table 3-1 Planter Facility Summary

Basin ID	Impervious Area (sf)	Planter Bottom Area (sf)	Surface Capacity Used (%)	PAC Facility Type
Roof Area	33,052	614	87%	Planter (Flat)

3.3 Permeable Pavers and Concrete

The pedestrian plaza and will be constructed using permeable pavers and pervious concrete. The system is designed under the simplified approach and will include 6” of rock beneath the pavers per City of Portland BES detail SW-110. The pavers will replace the impervious surfaces at a 1:1 ratio; no other areas of the site will be managed by this system.

4.0 WATER QUANTITY

4.1 Design Overview

Detention is not proposed with this project since the discharge point is a storm-only pipe in Main St that outfalls to the river at Dogwood Park, roughly 500 ft away. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

The intent with this design is to get the proposed site runoff to the creek before runoff from the rest of the developed upstream areas makes its way downstream to the System 6 Outfall near Dogwood Park. The existing site currently discharges 0.77 ac of untreated impervious area directly to the creek through its own outfall on-site. The proposed development will remove this outfall, and instead route 0.76 ac of treated impervious area to the 30" city storm line which discharges at the System 6 Outfall roughly 400 LF southeast. Detaining the proposed site runoff would mean it releases to the city storm main at a similar time as the rest of the upstream areas, which would increase the potential for surcharge in this pipe during and after large storm events.

5.0 CONVEYANCE ANALYSIS

5.1 Design Overview

The analysis and design criteria used for stormwater management described in this section follows the City of Portland *Sewer and Drainage Facilities Design Manual*, revised in March 2020. The manual requires storm drainage facilities be designed to pass the 10-year storm event without surcharging and a means to pass the 25-year storm event without damage to property.

5.2 Hydrologic Method

The Santa Barbara Urban Hydrograph (SBUH) method was used for this analysis. The SBUH method is based on the curve number (CN) approach and uses the Natural Resource Conservation Service's (NRCS) equations for computing soil absorption and precipitation excess. The SBUH method converts the incremental runoff depths into instantaneous hydrographs, which are then routed through an imaginary reservoir with a time delay equal to the basin time of concentration.

The XPSWMM software version 18.1 was used for the hydrology and hydraulics analysis. The runoff function of XPSWMM generates surface and subsurface runoff based on design or measured rainfall conditions, land use and topography. The XPSWMM software is based on the public EPA SWMM program and is an approved method of analysis by City of Portland.

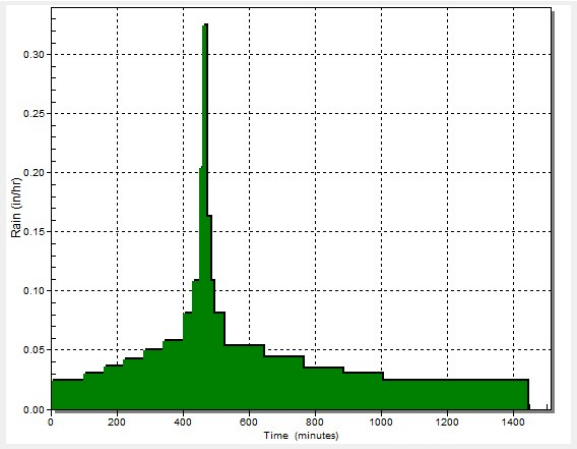
5.3 Design Storm

The rainfall distribution used within the City of Portland's jurisdiction is the design storm of 24-hour duration based on the standard NRCS Type 1A rainfall distribution. Table 5-1 shows total precipitation depths for different storm events which were used for the type 1A 24-hour rainfall distribution in XPSWMM. A typical NRCS Type 1A 24-hour rainfall distribution is shown in Figure 5-1.

Table 5-1 Precipitation Depth

Reoccurrence Interval (Years)	24-Hour Depth (Inches)
2	2.4
5	2.9
10	3.4
25	3.9
100	4.4

Figure 5-1 Type 1A Rainfall Distribution



5.4 System Performance

The City of Milwaukie provided DOWL with an XPSWMM model of the public conveyance system and the City Stormwater Master Plan dated January 2014. The public conveyance system draining to the System 6 Outfall was modeled to determine the system performance before and after the Coho Point development (See Technical Appendix: Pages from City of Milwaukie Stormwater Master Plan).

The city model was updated per the South Downtown Improvements project along SE Main St in 2018. The model was updated to show the new 30" storm line in SE Main St. Other than this update, no other changes to the city model were made. The total areas, percent impervious, curve numbers, and times of concentration remained the same since no other major developments/land use changes occurred in the upstream areas after the model was created in 2013. The composite curve number of the upstream areas is approximately 82, which is representative of a residential/commercial urban development.

Results from the model show the downstream conveyance system can adequately convey the 25-year storm event with no surcharge. A minimum of 5.41 ft of freeboard is maintained within the system through the 25-yr storm (see Technical Appendix: XPSWMM Results – Conveyance Tables).

A comparison of the existing vs proposed conditions shows only minor changes to the downstream conveyance system. The 30" storm line in SE Main St flows at 91% full just downstream of the Coho Point tie in. This is only a slight increase, as the storm line flows at 90% full under existing conditions (see Technical Appendix: XPSWMM Results – Conveyance Tables). The addition of the Coho Point area to the system does not cause surcharge in the SE Main St conveyance line during the 25-yr event.

6.0 SUMMARY

The design follows the standards and regulations developed by the City of Portland, which have been adopted by the City of Milwaukie. These regulations are identified in the City of Portland's Stormwater Management Manual, Bureau of Environmental Services, revised August 2016.

Stormwater from the hardscape and plaza areas around the building will be managed through permeable pavers. Stormwater from the roof area will be treated in a planter facility located on the second-floor terrace. This facility will provide water quality treatment only and discharge to the storm pipe in SE Main St. Since the discharge point is a storm only pipe that flows directly to the river, detention is not proposed. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

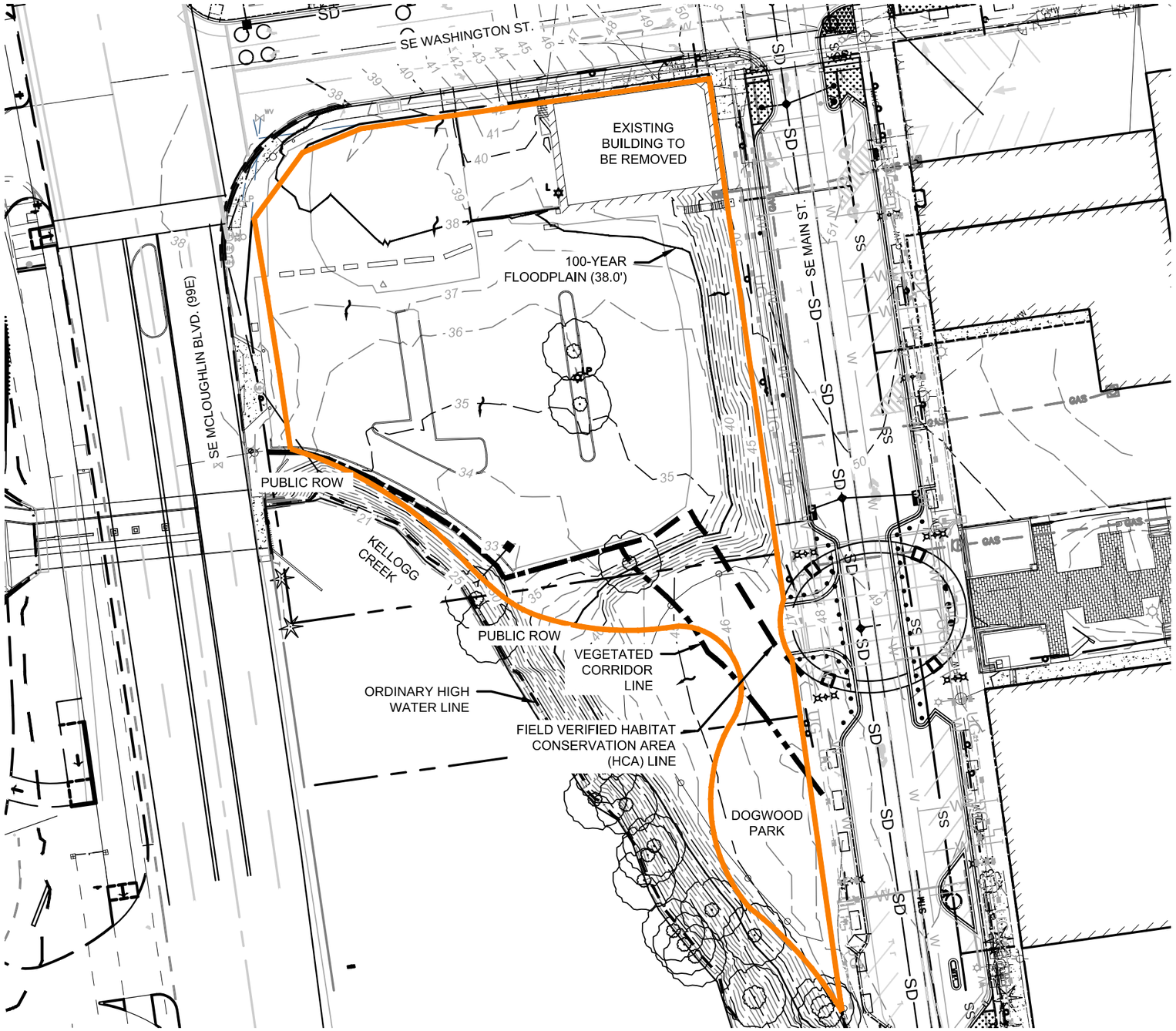
TECHNCIAL APPENDIX - SUPPORTING DATA

- Figure 1 – Existing Conditions
- Figure 2 – Proposed Conditions

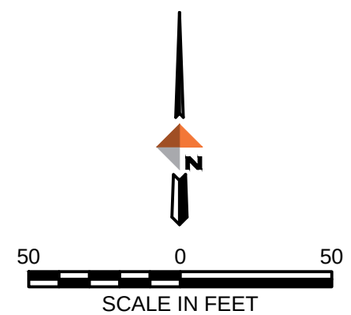
- PAC Report
- XPSWMM Results – Coho Point
    - Schematic
    - Dynamic Long Sections
    - Runoff Data
    - Conveyance Data

- City of Portland BES Standard Detail SW 141 – Lined Planter
- City of Milwaukie Stormwater Master Plan Basin Map
- City of Milwaukie: Pages SD01 – SD03 of the Main Street Reconstruction Plans – August 2018
- Composite Curve Number Calculation for Upstream Areas

- Soil Map - Multnomah County
- Geotechnical Report – GeoDesign – September 2018



Site Condition	Impervious Area (ac)	Pervious Area (ac)	Total Area (ac)	Percent Impervious (%)
Existing	0.77	0.25	1.02	75.5%



DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8941

COHO POINT
EXISTING CONDITIONS
MILWAUKIE, OREGON

PROJECT	14464
DATE	12/17/2020

FIGURE 1

\\BIL-FS\BIL-projects\22\14464-01\40\Study\drain\cad\14464-existing.dwg PLOT DATE 2021-1-5 11:40 SAVED DATE 2021-01-05 11:39 USER: mgillette



Site Condition	Impervious Area (ac)	Pervious Area (ac)	Total Area (ac)	Percent Impervious (%)
Proposed	0.76	0.26	1.02	74.5%

N

50 0 50

SCALE IN FEET

DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8911

COHO POINT
PROPOSED CONDITIONS
MILWAUKIE, OREGON

PROJECT 14464
DATE 12/17/2020

FIGURE 2

\\BIL-FS\BIL-projects\22\14464-01\40\Study\drain\cad\14464-prop.dwg PLOT DATE 2021-1-6 12:58 SAVED DATE 2021-01-06 12:58 USER: mgillette

PAC Report

Project Name Coho Point	Permit No.	Created 12/16/20 12:36 PM
Project Address 11100 SE McLoughlin Rd Milwaukie, OR 97222	Designer Mike Gillette	Last Modified 12/16/20 2:23 PM
	Company DOWL	Report Generated 12/16/20 2:23 PM

Project Summary

Mixed Use Building

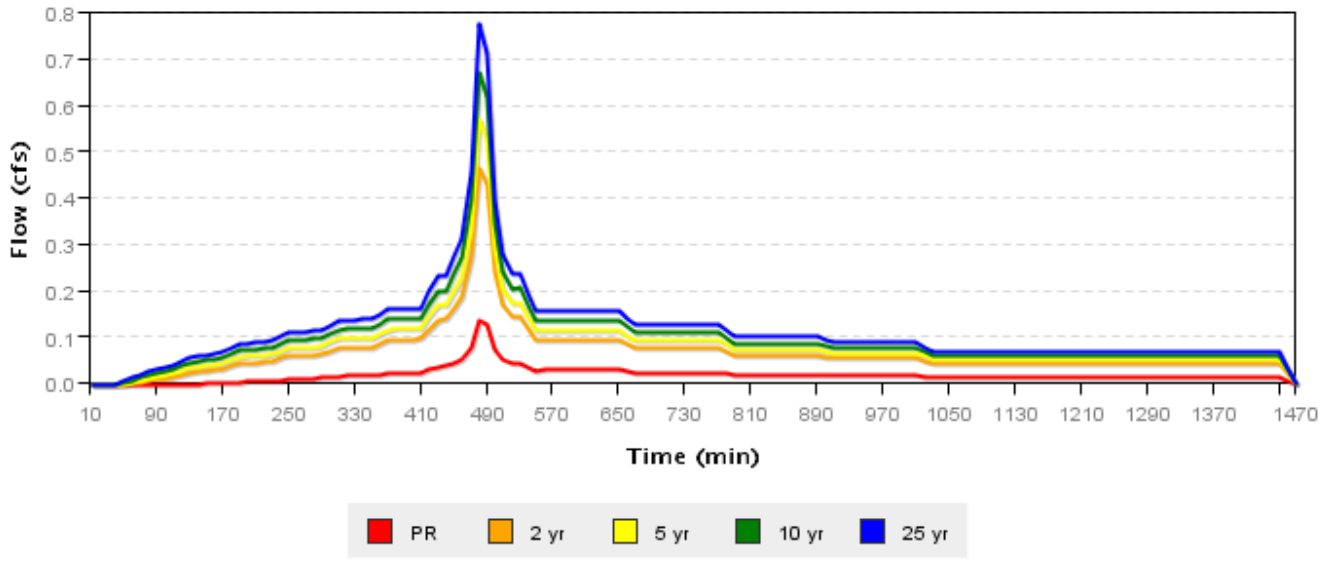
Catchment Name	Impervious Area (sq ft)	Native Soil Design Infiltration Rate	Hierarchy Category	Facility Type	Facility Config	Facility Size (sq ft)	Facility Sizing Ratio	PR Results	Flow Control Results
Roof	33052	0.00	3	Planter (Flat)	D	614	1.9%	Pass	Not Used

Catchment Roof

Site Soils & Infiltration Testing Data	Infiltration Testing Procedure	**Open Pit Falling Head**
	Native Soil Infiltration Rate (I_{test})	**0.00** ⚠
Correction Factor	CF_{test}	**2**
Design Infiltration Rates	Native Soil (I_{dsgn})	**0.00 in/hr** ⚠
	Imported Growing Medium	**2.00 in/hr**
Catchment Information	Hierarchy Category	**3**
	Disposal Point	**A**
	Hierarchy Description	**Off-site flow to drainageway, river, or storm-only pipe system**
	Pollution Reduction Requirement	**Pass**
	10-year Storm Requirement	**N/A**
	Flow Control Requirement	**N/A**
	Impervious Area	**33052 sq ft** **0.759 acre**
	Time of Concentration (Tc)	**5**
	Pre-Development Curve Number (CN_{pre})	**72**
	Post-Development Curve Number (CN_{post})	**98**

⚠ Indicates value is outside of recommended range

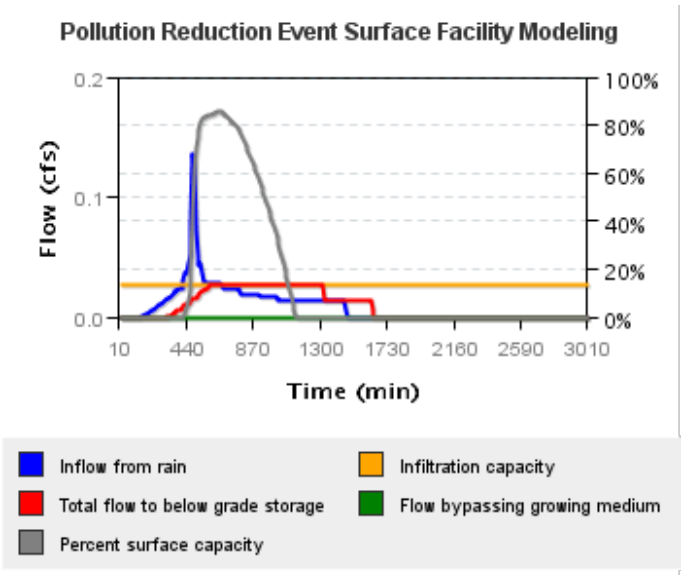
SBUH Results

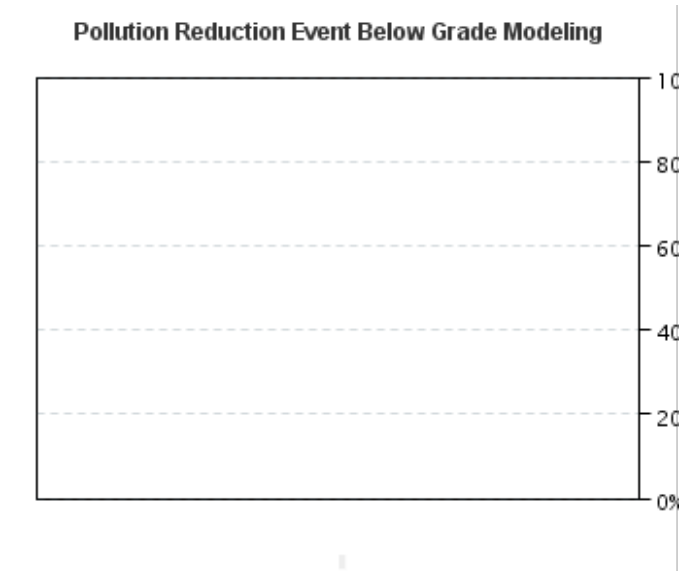


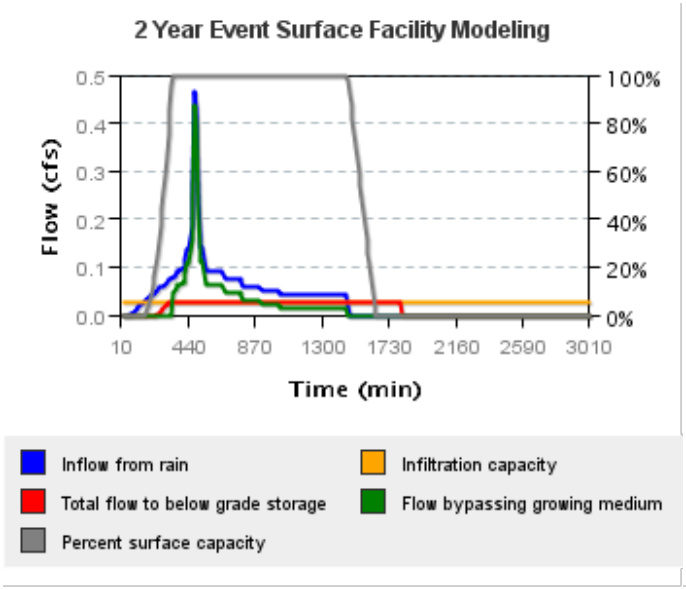
	Pre-Development Rate and Volume		Post-Development Rate and Volume	
	Peak Rate (cfs)	Volume (cf)	Peak Rate (cfs)	Volume (cf)
PR	0	1.906	0.136	1727.06
2 yr	0.041	1315.219	0.467	5980.623
5 yr	0.095	2063.685	0.57	7350.485
10 yr	0.157	2908.71	0.673	8722.397
25 yr	0.226	3829.634	0.775	10095.602

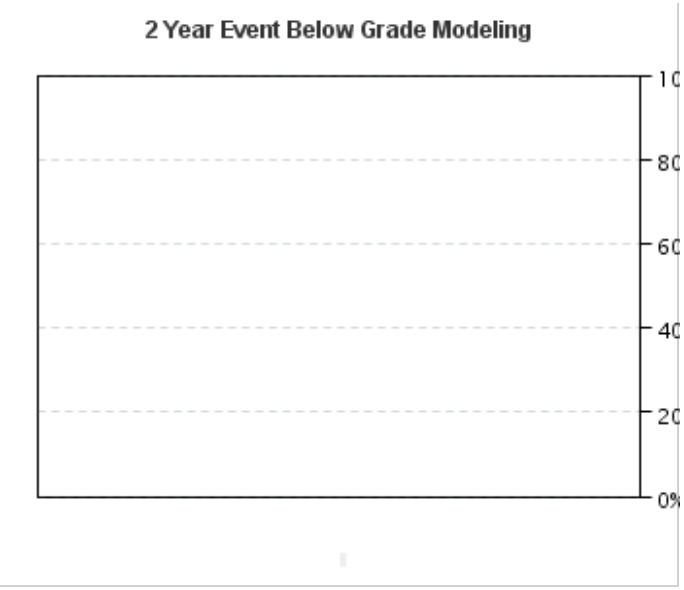
Facility Roof

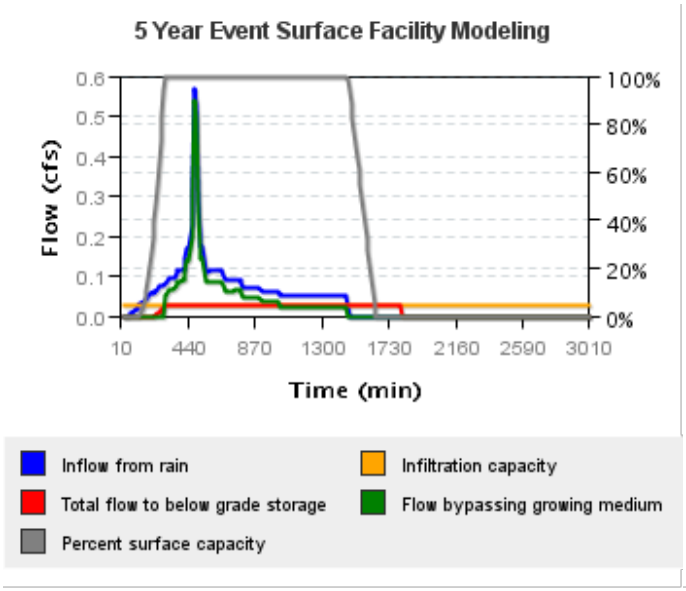
Facility Details	Facility Type	**Planter (Flat)**
	Facility Configuration	**D: Lined Facility with RS and Ud**
	Facility Shape	**Planter**
	Above Grade Storage Data	
	Bottom Area	**614 sq ft**
	Bottom Width	**10.00 ft**
	Storage Depth 1	**6.0 in**
	Growing Medium Depth	**18 in**
	Surface Capacity at Depth 1	**307.0 cu ft**
	Design Infiltration Rate for Native Soil	**0.000 in/hr**
	Infiltration Capacity	**0.028 cfs**
Facility Facts	Total Facility Area Including Freeboard	**614.00 sq ft**
	Sizing Ratio	**1.9%**
Pollution Reduction Results	Pollution Reduction Score	**Pass**
	Overflow Volume	**1725.068 cf**
	Surface Capacity Used	**87%**
Flow Control Results	Flow Control Score	**Not Used**
	Overflow Volume	**8758.447 cf**
	Surface Capacity Used	**100%**

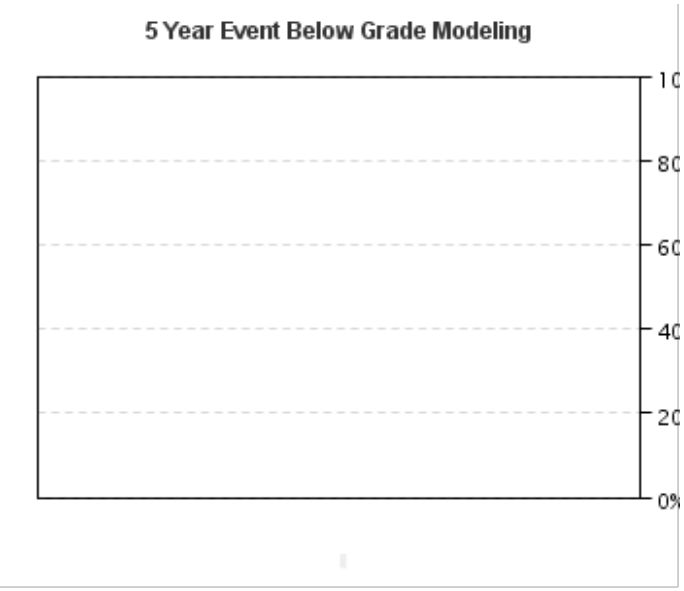


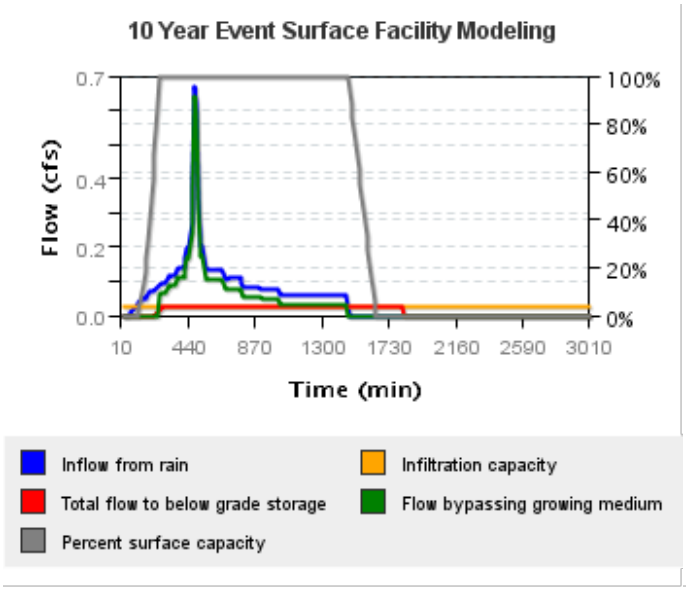


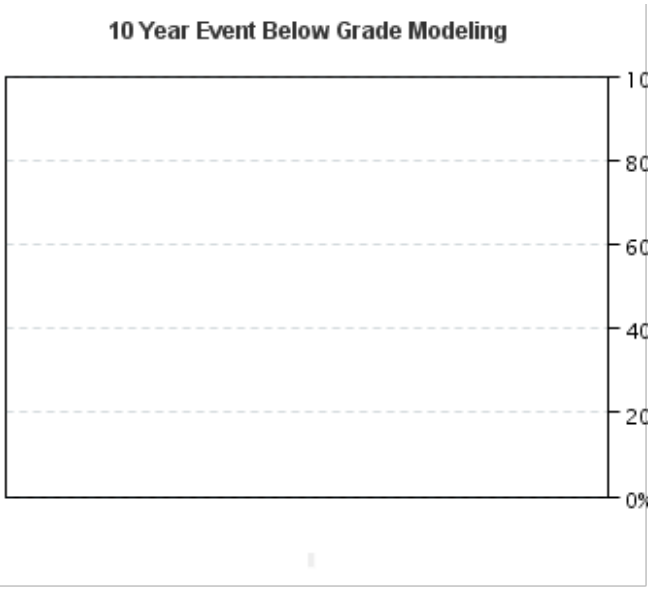

2 Year Event Surface Facility Modeling
Flow (cfs)
0.5
0.4
0.3
0.2
0.1
0.0
100%
80%
60%
40%
20%
0%
10
440
870
1300
1730
2160
2590
3010
Time (min)
Inflow from rain
Infiltration capacity
Total flow to below grade storage
Flow bypassing growing medium
Percent surface capacity

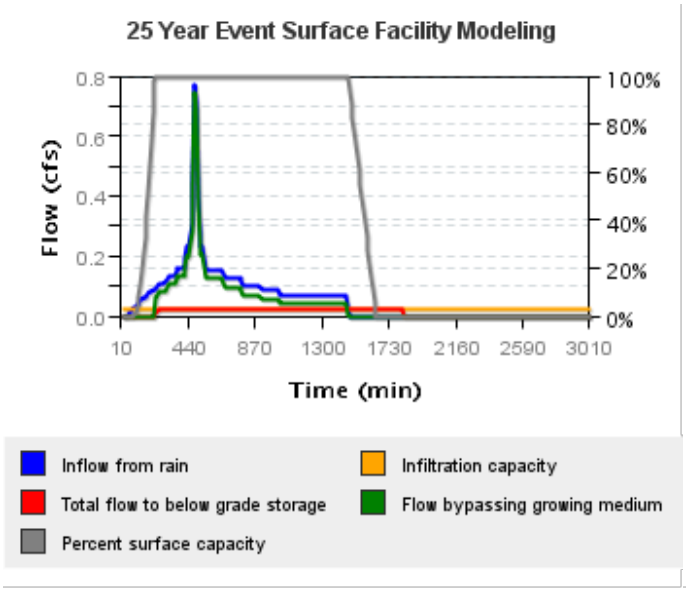

2 Year Event Below Grade Modeling

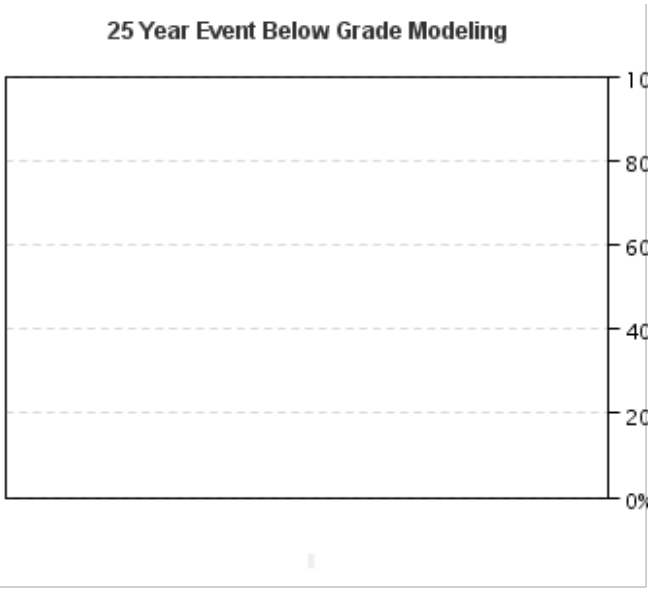

5 Year Event Surface Facility Modeling
Flow (cfs)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
100%
80%
60%
40%
20%
0%
10
440
870
1300
1730
2160
2590
3010
Time (min)
Inflow from rain
Infiltration capacity
Total flow to below grade storage
Flow bypassing growing medium
Percent surface capacity


5 Year Event Below Grade Modeling


10 Year Event Surface Facility Modeling
Flow (cfs)
0.7
0.4
0.2
0.0
100%
80%
60%
40%
20%
0%
10
440
870
1300
1730
2160
2590
3010
Time (min)
Inflow from rain
Infiltration capacity
Total flow to below grade storage
Flow bypassing growing medium
Percent surface capacity


10 Year Event Below Grade Modeling


25 Year Event Surface Facility Modeling
Flow (cfs)
0.8
0.6
0.4
0.2
0.0
100%
80%
60%
40%
20%
0%
10
440
870
1300
1730
2160
2590
3010
Time (min)
Inflow from rain
Infiltration capacity
Total flow to below grade storage
Flow bypassing growing medium
Percent surface capacity

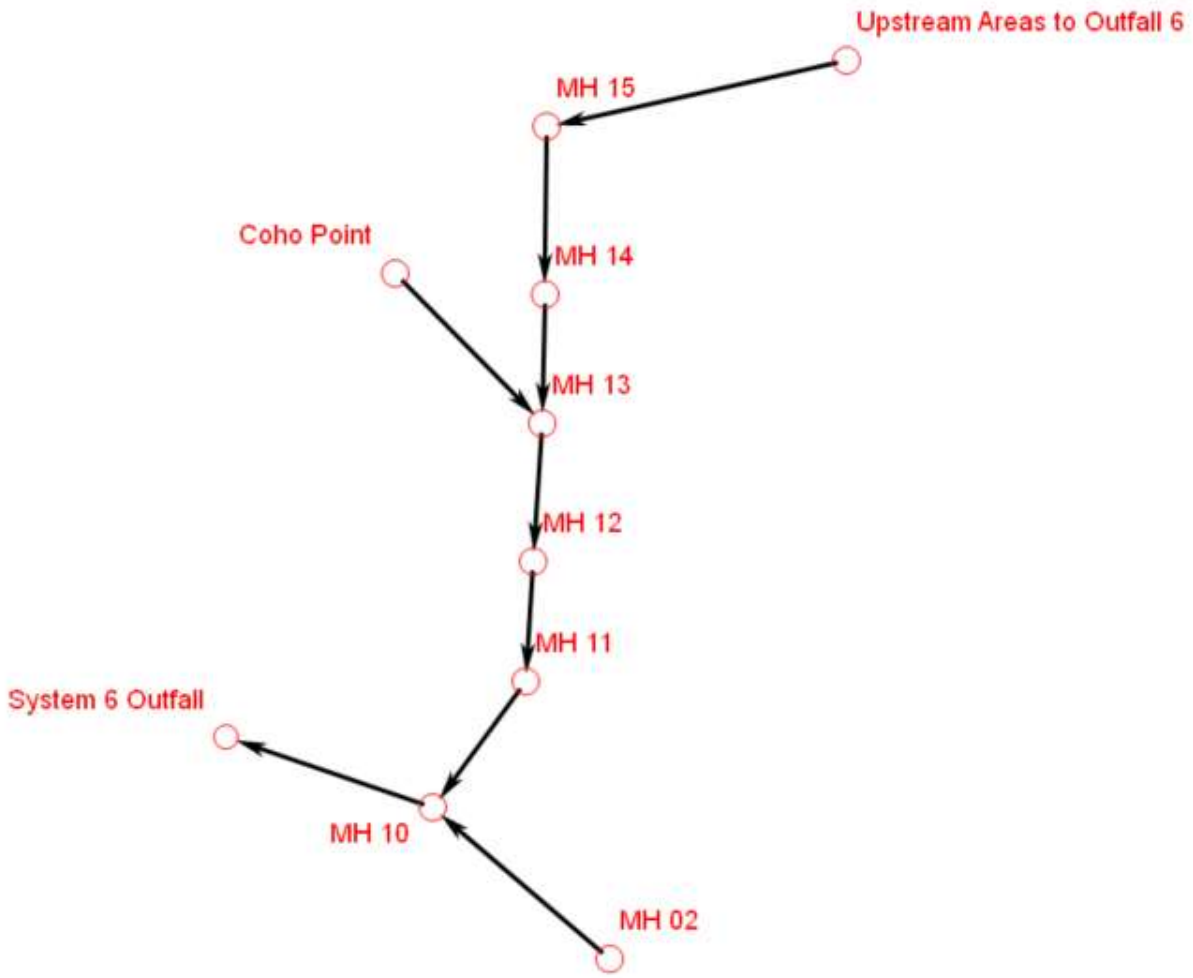

25 Year Event Below Grade Modeling

Schematic

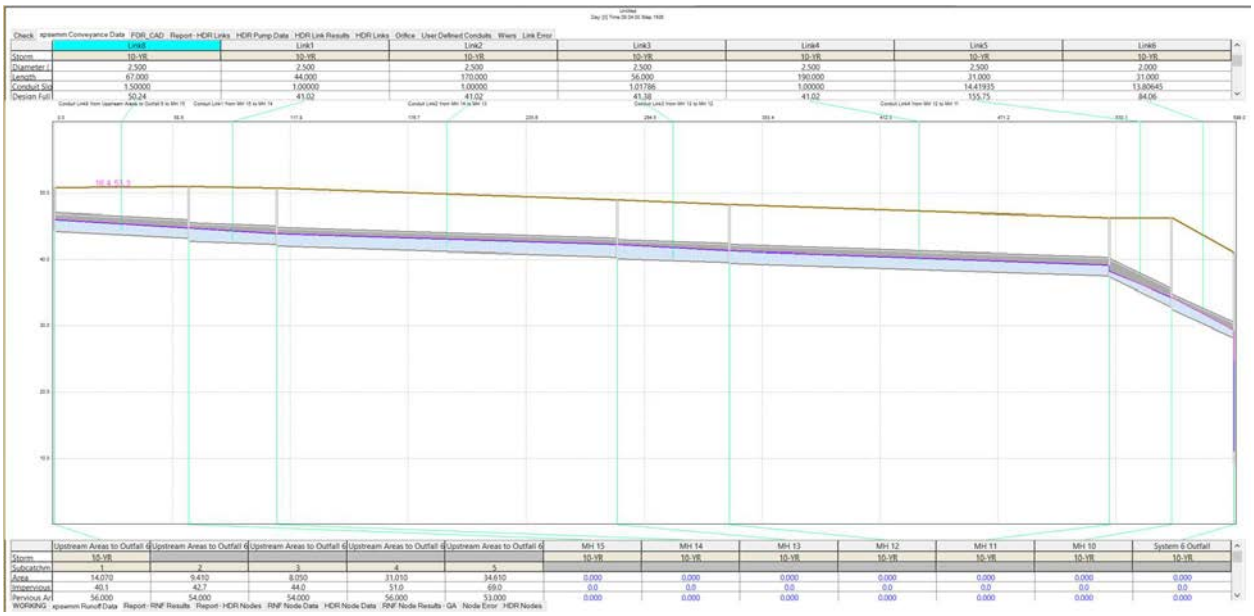
The “Upstream Areas to Outfall 6” node includes data from nodes 41069, 41065, 41032, 4119, and 21101 of the City of Milwaukie model. The “MH 02” node includes data from nodes 41020 and 41011 of the City of Milwaukie model. Basin areas, percent impervious, Tc, and CNs were all input into the below model to accurately represent the System 6 Outfall drainage basin.

The links shown below were modeled per pages SD01 – SD03 of the South Downtown Improvements plans dated August 14, 2018. These sheets are included below.

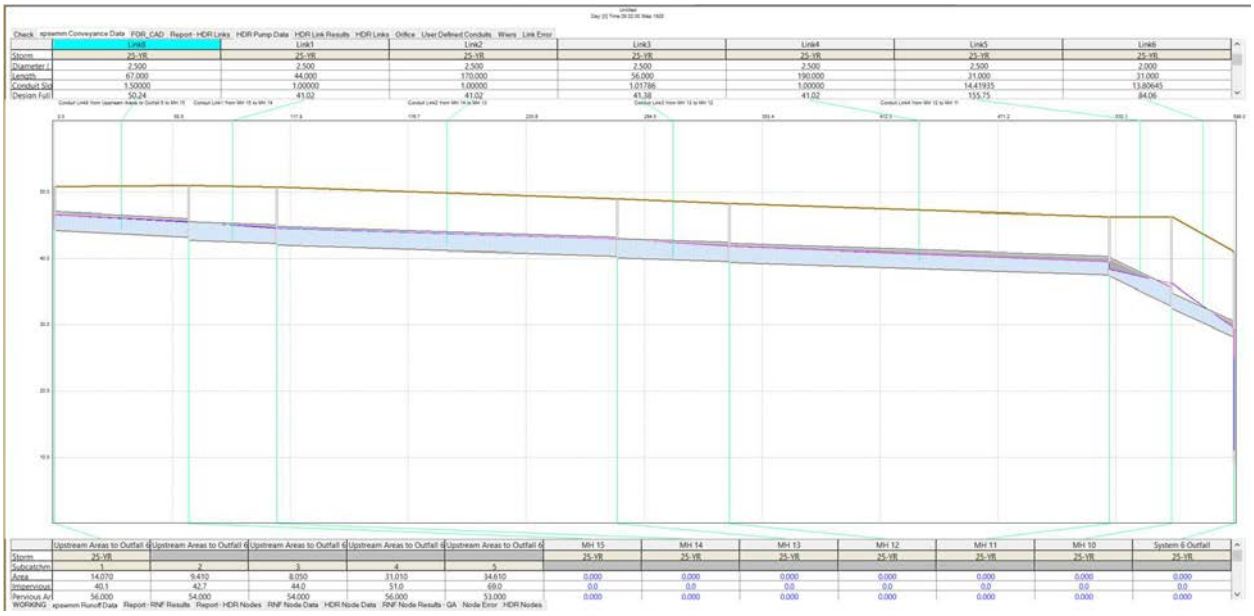
The proposed conditions model is shown below. The existing conditions model is the same, but with the Coho Point node turned off since the site currently discharges straight to the creek.



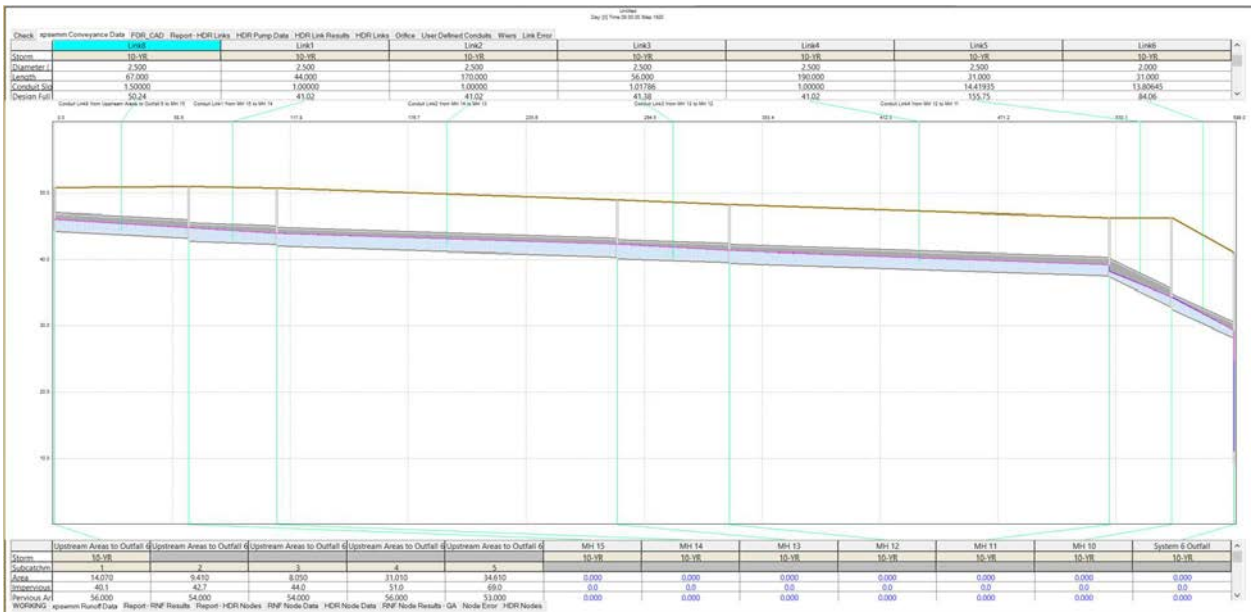
Existing Conditions – 10yr storm event



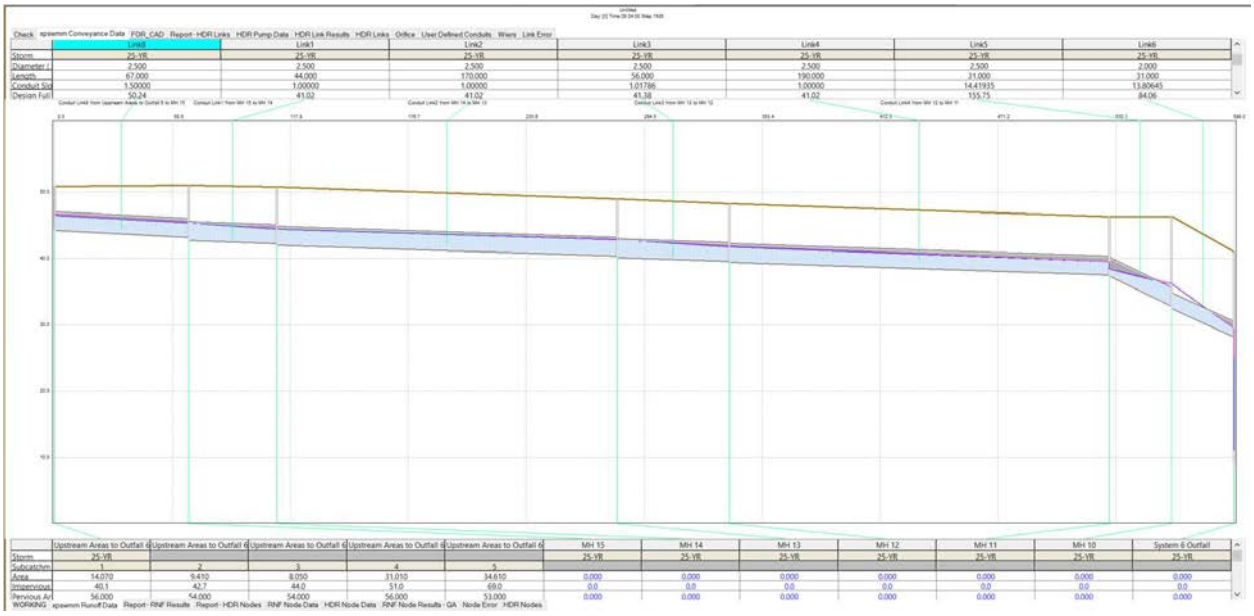
Existing Conditions – 25yr storm event



Proposed Conditions – 10yr storm event



Proposed Conditions – 25yr storm event



Runoff Tables

XPSWMM RUNOFF DATA
Coho Point - Milwaukie, Oregon

Node Information					Runoff Information			
Node Name	Area	Impervious	Pervious SCS Curve Number	Tc	Rainfall	Infiltration	Surface Runoff	
	acre	%		min.	in	in	in	cfs
10-Year Storm Event								
Coho Point	0.80	100	74	5	3.40	0.00	3.06	0.63
MH 02	10.53	66	51	19	3.40	1.80	1.60	10.53
MH 02	23.20	66	51	19				
Upstream Areas to Outfall 6	14.07	40	56	10	3.40	1.64	1.76	27.68
Upstream Areas to Outfall 6	9.41	43	54	10				
Upstream Areas to Outfall 6	8.05	44	54	10				
Upstream Areas to Outfall 6	31.01	51	56	11				
Upstream Areas to Outfall 6	34.61	69	53	12				

XPSWMM RUNOFF DATA
Coho Point - Milwaukie, Oregon

Node Information					Runoff Information			
Node Name	Area	Impervious	Pervious SCS Curve Number	Tc	Rainfall	Infiltration	Surface Runoff	
	acre	%		min.	in	in	in	cfs
25-Year Storm Event								
Coho Point	0.80	100	74	5	3.90	0.00	3.56	0.73
MH 02	10.53	66	51	19	3.90	1.89	2.02	13.69
MH 02	23.20	66	51	19				
Upstream Areas to Outfall 6	14.07	40	56	10	3.90	1.71	2.19	36.98
Upstream Areas to Outfall 6	9.41	43	54	10				
Upstream Areas to Outfall 6	8.05	44	54	10				
Upstream Areas to Outfall 6	31.01	51	56	11				
Upstream Areas to Outfall 6	34.61	69	53	12				

Coho Point Conveyance Data

XPSWMM CONVEYANCE DATA - 10 YEAR STORM EVENT
Coho Point - Milwaukie, Oregon

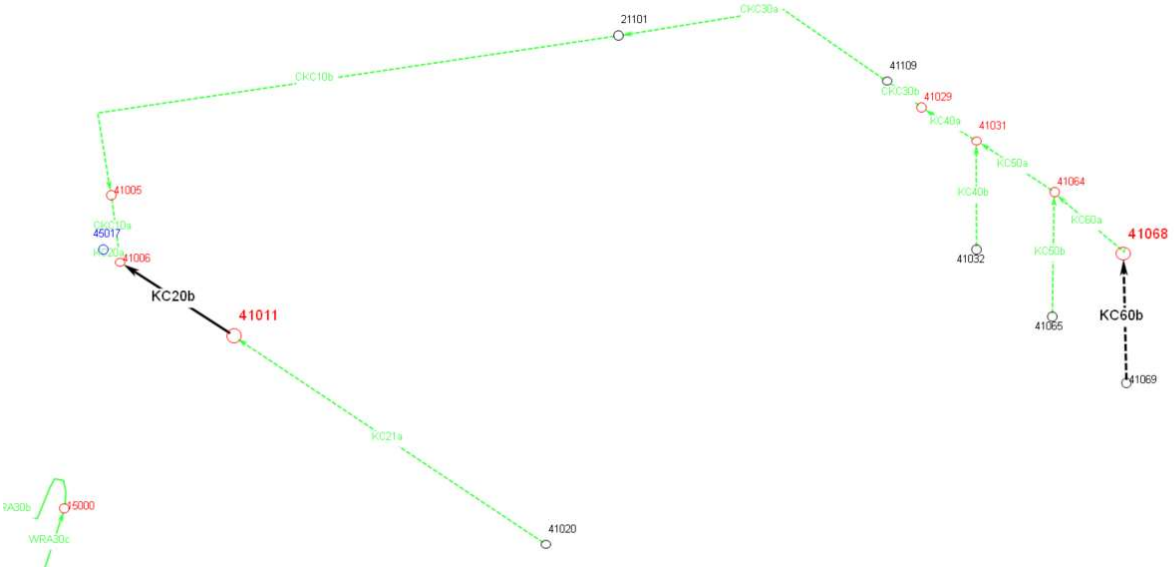
Location		Conduit Properties			Conduit Results						Node Information							
Station		Diameter	Length	Slope	Design Capacity	Qmax / Qdesign	Max Flow	Max Velocity	Max Flow Depth	y/d0	US Ground Elev.	DS Ground Elev.	US IE	DS IE	US Freeboard	DS Freeboard	US HGL	DS HGL
From	To	ft	ft	%	cfs		cfs	ft/s	ft		ft	ft	ft	ft	ft	ft	ft	ft
EXISTING CONDITIONS																		
Upstream Areas to Outfall 6	MH 15	2.50	67.00	1.50	50.24	0.55	27.67	8.39	1.71	0.69	50.90	51.05	44.40	43.40	4.79	6.20	46.11	44.85
MH 15	MH 14	2.50	44.00	1.00	41.02	0.68	27.67	7.55	1.95	0.78	51.05	50.79	42.90	42.46	6.20	6.81	44.85	43.99
MH 14	MH 13	2.50	170.00	1.00	41.02	0.68	27.67	7.68	1.73	0.69	50.79	48.98	42.26	40.56	6.81	6.70	43.99	42.28
MH 13	MH 12	2.50	56.00	1.02	41.38	0.67	27.66	7.56	1.92	0.77	48.98	48.30	40.36	39.79	6.70	6.96	42.28	41.34
MH 12	MH 11	2.50	190.00	1.00	41.02	0.67	27.65	8.13	1.75	0.70	48.30	46.35	39.59	37.69	6.96	8.15	41.34	38.20
MH 11	MH 10	2.50	31.00	14.42	155.75	0.18	27.65	16.18	1.31	0.52	46.35	46.30	37.49	33.02	8.15	11.97	38.20	34.33
MH 10	System 6 Outfall	2.00	31.00	13.81	84.06	0.45	38.16	17.14	1.71	0.85	46.30	41.00	32.62	28.34	11.97	30.01	34.33	10.99
MH 02	MH 10	2.00	53.00	1.53	27.97	0.38	10.52	5.80	1.51	0.75	43.63	46.30	33.63	32.82	8.96	11.97	34.67	34.33
PROPOSED CONDITIONS																		
Upstream Areas to Outfall 6	MH 15	2.50	67.00	1.50	50.24	0.55	27.67	8.39	1.71	0.69	50.90	51.05	44.40	43.40	4.79	6.20	46.11	44.85
MH 15	MH 14	2.50	44.00	1.00	41.02	0.68	27.67	7.55	1.95	0.78	51.05	50.79	42.90	42.46	6.20	6.81	44.85	43.98
MH 14	MH 13	2.50	170.00	1.00	41.02	0.68	27.67	7.62	1.75	0.70	50.79	48.98	42.26	40.56	6.81	6.67	43.98	42.31
MH 13	MH 12	2.50	56.00	1.02	41.38	0.68	28.26	7.58	1.95	0.78	48.98	48.30	40.36	39.79	6.67	6.93	42.31	41.37
MH 12	MH 11	2.50	190.00	1.00	41.02	0.69	28.25	8.16	1.78	0.71	48.30	46.35	39.59	37.69	6.93	8.14	41.37	38.21
MH 11	MH 10	2.50	31.00	14.42	155.75	0.18	28.25	16.21	1.34	0.53	46.35	46.30	37.49	33.02	8.14	11.94	38.21	34.36
MH 10	System 6 Outfall	2.00	31.00	13.81	84.06	0.46	38.76	17.17	1.74	0.87	46.30	41.00	32.62	28.34	11.94	30.01	34.36	10.99
MH 02	MH 10	2.00	53.00	1.53	27.97	0.38	10.52	5.77	1.54	0.77	43.63	46.30	33.63	32.82	8.95	11.94	34.68	34.36
Coho Point	MH 13	1.00	100.00	1.00	3.56	0.17	0.62	2.11	1.75	1.75	47.00	48.98	41.56	40.56	4.66	6.67	42.34	42.31

XPSWMM CONVEYANCE DATA - 25 YEAR STORM EVENT
Coho Point - Milwaukie, Oregon

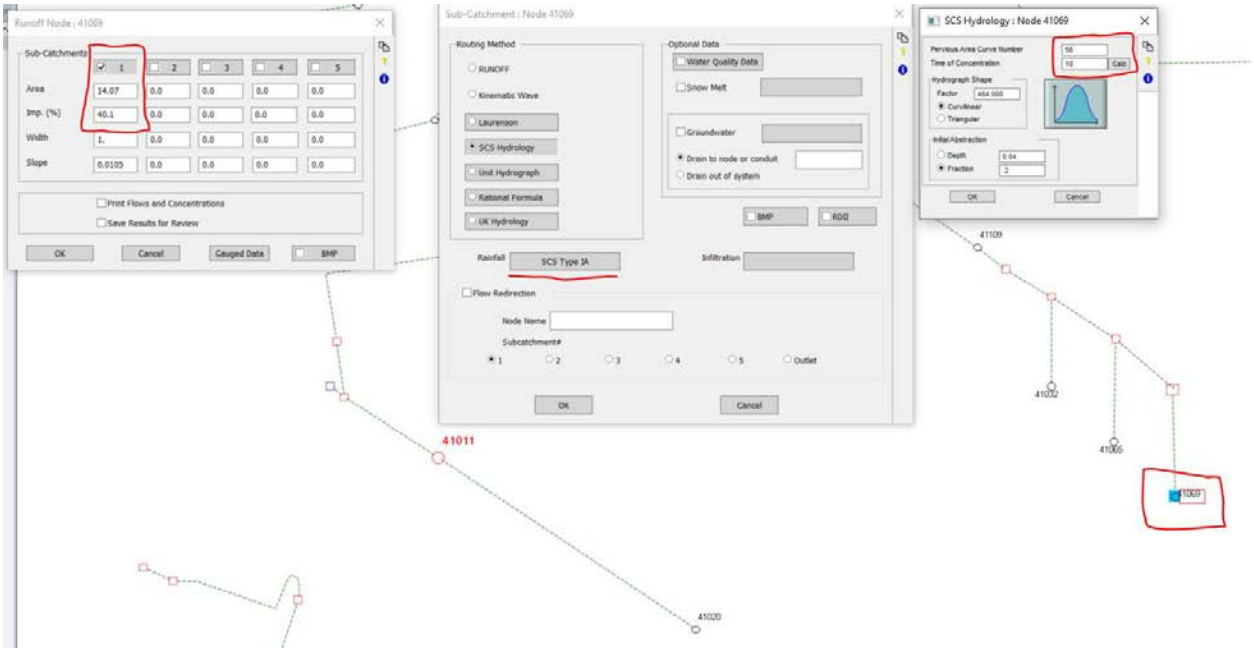
Location		Conduit Properties			Conduit Results						Node Information							
Station		Diameter	Length	Slope	Design Capacity	Qmax / Qdesign	Max Flow	Max Velocity	Max Flow Depth	y/d0	US Ground Elev.	DS Ground Elev.	US IE	DS IE	US Freeboard	DS Freeboard	US HGL	DS HGL
From	To	ft	ft	%	cfs		cfs	ft/s	ft		ft	ft	ft	ft	ft	ft	ft	ft
EXISTING CONDITIONS																		
Upstream Areas to Outfall 6	MH 15	2.50	67.00	1.50	50.24	0.74	36.93	8.41	2.27	0.91	50.90	51.05	44.40	43.40	4.23	5.47	46.67	45.58
MH 15	MH 14	2.50	44.00	1.00	41.02	0.90	36.90	7.73	2.68	1.07	51.05	50.79	42.90	42.46	5.47	6.13	45.58	44.66
MH 14	MH 13	2.50	170.00	1.00	41.02	0.90	36.83	7.79	2.40	0.96	50.79	48.98	42.26	40.56	6.13	6.07	44.66	42.91
MH 13	MH 12	2.50	56.00	1.02	41.38	0.89	36.81	7.91	2.55	1.02	48.98	48.30	40.36	39.79	6.07	6.47	42.91	41.83
MH 12	MH 11	2.50	190.00	1.00	41.02	0.90	36.80	8.56	2.24	0.90	48.30	46.35	39.59	37.69	6.47	7.97	41.83	38.38
MH 11	MH 10	2.50	31.00	14.42	155.75	0.24	36.81	16.20	3.19	1.27	46.35	46.30	37.49	33.02	7.97	10.09	38.38	36.21
MH 10	System 6 Outfall	2.00	31.00	13.81	84.06	0.60	50.45	19.79	3.59	1.79	46.30	41.00	32.62	28.34	10.09	30.01	36.21	10.99
MH 02	MH 10	2.00	53.00	1.53	27.97	0.49	13.68	5.69	3.39	1.69	43.63	46.30	33.63	32.82	7.06	10.09	36.57	36.21
PROPOSED CONDITIONS																		
Upstream Areas to Outfall 6	MH 15	2.50	67.00	1.50	50.24	0.74	36.92	8.41	2.29	0.92	50.90	51.05	44.40	43.40	4.21	5.41	46.69	45.64
MH 15	MH 14	2.50	44.00	1.00	41.02	0.90	36.84	7.76	2.74	1.10	51.05	50.79	42.90	42.46	5.41	6.04	45.64	44.75
MH 14	MH 13	2.50	170.00	1.00	41.02	0.89	36.63	7.72	2.49	1.00	50.79	48.98	42.26	40.56	6.04	6.03	44.75	42.95
MH 13	MH 12	2.50	56.00	1.02	41.38	0.90	37.31	7.93	2.59	1.04	48.98	48.30	40.36	39.79	6.03	6.43	42.95	41.87
MH 12	MH 11	2.50	190.00	1.00	41.02	0.91	37.32	8.58	2.28	0.91	48.30	46.35	39.59	37.69	6.43	7.93	41.87	38.42
MH 11	MH 10	2.50	31.00	14.42	155.75	0.24	37.32	16.23	3.28	1.31	46.35	46.30	37.49	33.02	7.93	10.00	38.42	36.30
MH 10	System 6 Outfall	2.00	31.00	13.81	84.06	0.61	50.99	19.95	3.68	1.84	46.30	41.00	32.62	28.34	10.00	30.01	36.30	10.99
MH 02	MH 10	2.00	53.00	1.53	27.97	0.49	13.68	5.66	3.48	1.74	43.63	46.30	33.63	32.82	6.96	10.00	36.67	36.30
Coho Point	MH 13	1.00	100.00	1.00	3.56	0.21	0.73	2.14	2.39	2.39	47.00	48.98	41.56	40.56	4.00	6.03	43.00	42.95

City of Milwaukie XPSWMM model:

The XPSWMM model provided by the City of Milwaukie was created in 2013. The below schematic shows the pipe network draining to the System 6 outfall, which is where the Coho Point Development will discharge to. The relevant portions of this model (upstream node areas) were copied to the DOWL / Coho Point xpswmm model to accurately represent the existing upstream areas.



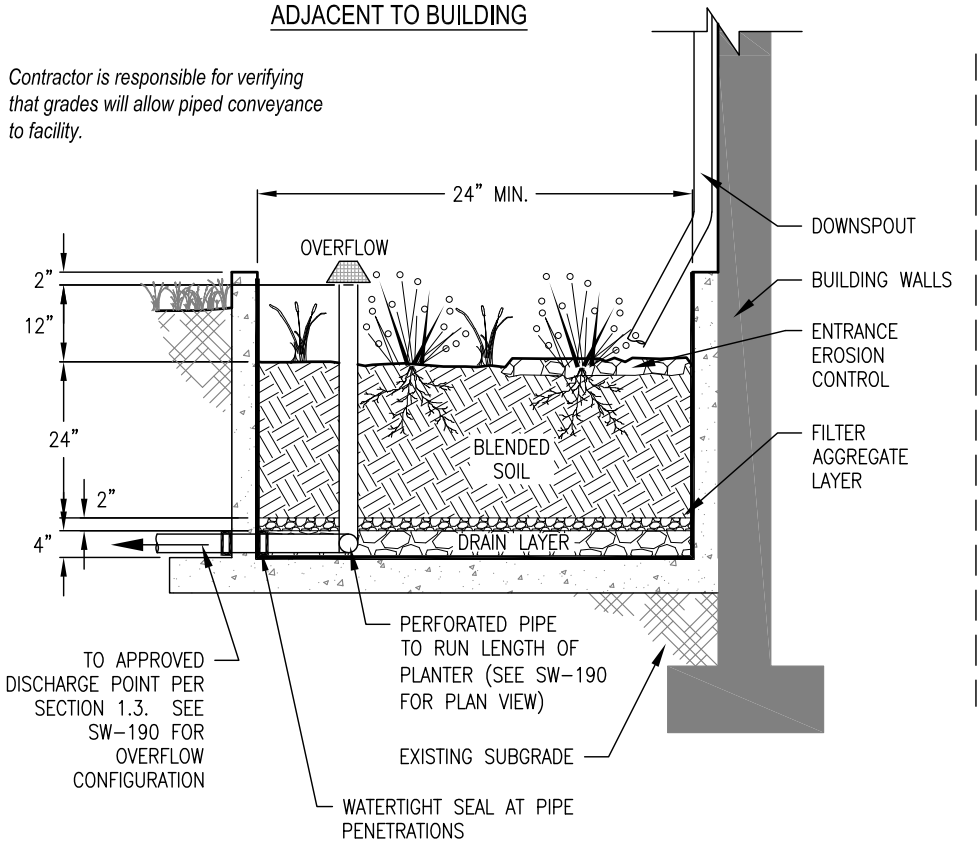
The below screenshot shows the information within one of the City of Milwaukie xpswmm model nodes. The rest of the upstream area node information can be found in the runoff data table above. Please note the curve number shown is for the pervious areas only. The composite curve numbers for the upstream areas are in the 75-80 range depending on site use.



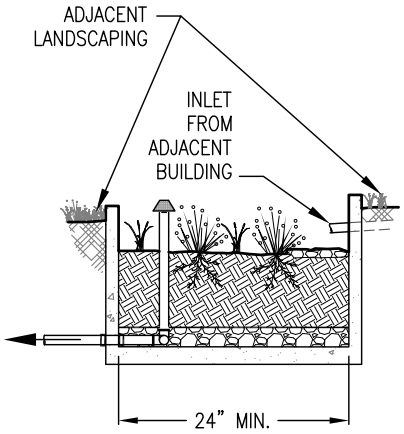
SIMPLIFIED DESIGN APPROACH

ADJACENT TO BUILDING

Contractor is responsible for verifying that grades will allow piped conveyance to facility.



FREESTANDING PLANTER



1. Setbacks: No setback is required for lined planters. Walls can't exceed 30" height above grade if within 5' of property line including right-of-way.
2. Facility Slope (planted floor): Maximum of 0.5% in all directions.
3. Planter Structure: A single-pour monolithic concrete shell, without cold joints, is required to avoid the requirement for liner. Include walls on foundation plans. Check state structural standards for foundations.
4. Waterproofing: No additional waterproofing is needed if structure is monolithically poured.
5. Piping: Conform with Oregon Plumbing Specialty Code (OPSC) requirements.
6. Drain Layer: 4" of $\frac{3}{4}$"-1 $\frac{1}{2}$" washed drain rock. Filter aggregate layer: 2-3" of $\frac{1}{4}$"-No.10 washed angular aggregate.
7. Overflow: Overflow elevation must allow for 2" of freeboard, minimum. Protect from debris and sediment with strainer or grate.
8. Blended Soil: Use BES' standard soil blend for stormwater facilities (SWMM Section 6.3) unless otherwise approved. Install minimum of 24" of blended soil.
9. Vegetation: Refer to plant list in SWMM Section 3.5. Minimum container size is 1 gal. Number of plantings per 100sf of facility area: 80 herbaceous plants OR 72 herbaceous plants and 4 small shrubs.
10. Entrance Erosion Control: Install river rock, flagstone, or similar to dissipate the energy of incoming water at entrances and ends of downspout extensions.
11. Inspections: Call BDS IVR Inspection Line, (503) 823-7000, request 487. 3 inspections required.

CONSTRUCTION REQUIREMENTS

Do not allow temporary storage of construction waste or materials in the facilities. Do not allow entry of runoff or sediment during construction.

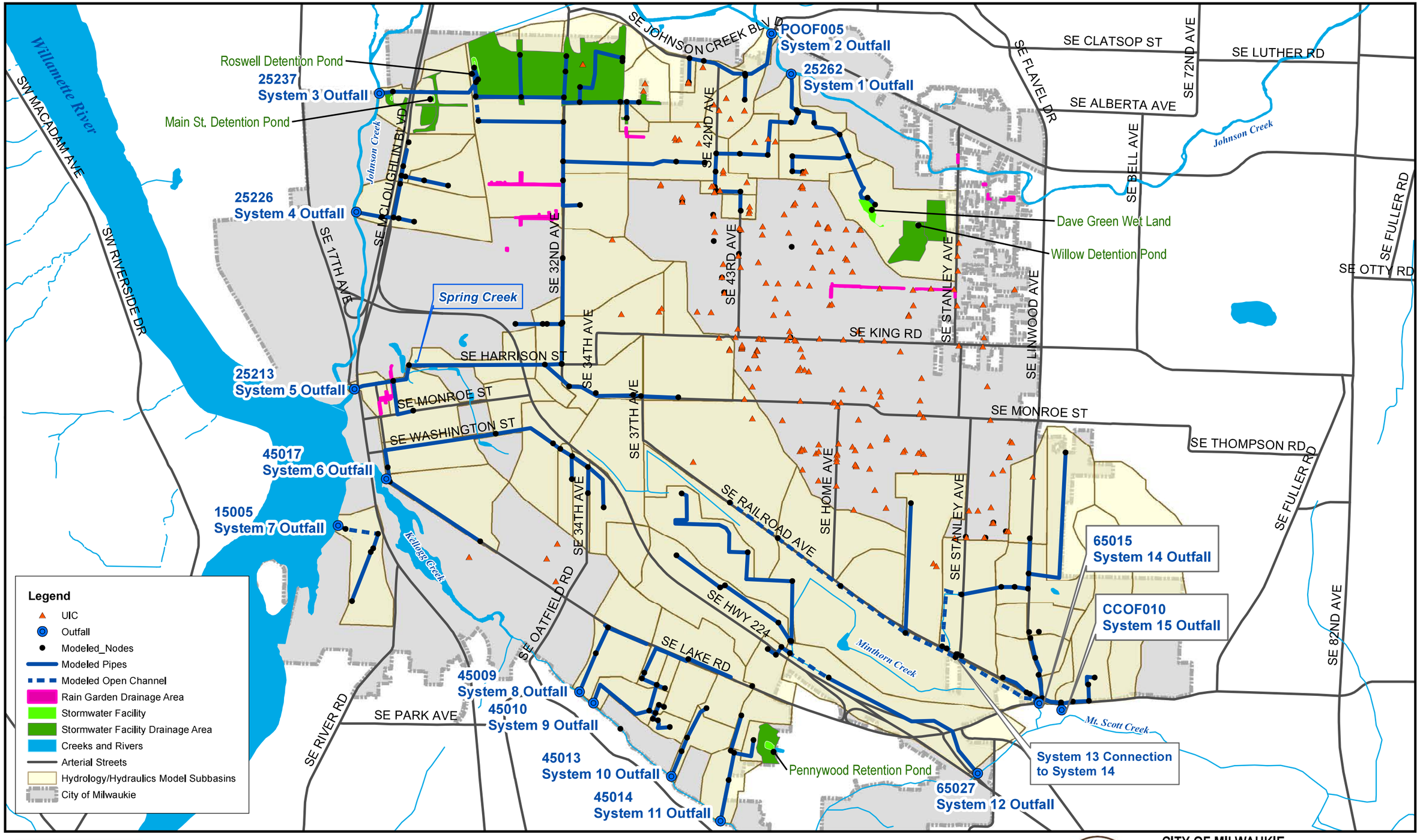
- DRAWINGS NOT TO SCALE -

Bureau of Environmental Services

STORMWATER MANAGEMENT TYPICAL DETAILS FOR PRIVATE PROPERTY

LINED PLANTER SW-141

9-2-20



Brown AND Caldwell

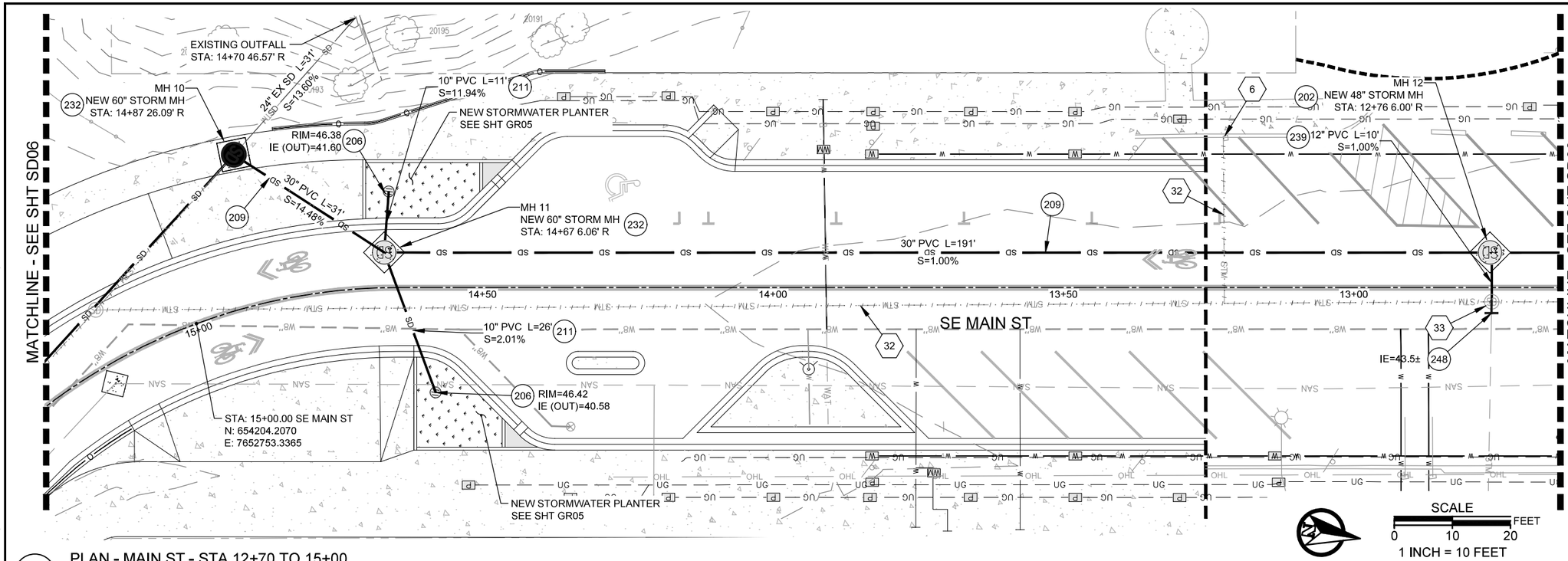
March 19th, 2013

0 1,500 3,000 Feet

N

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE

BMP COVERAGE
FIGURE 2-5



SCALE
0 10 20 FEET
1 INCH = 10 FEET

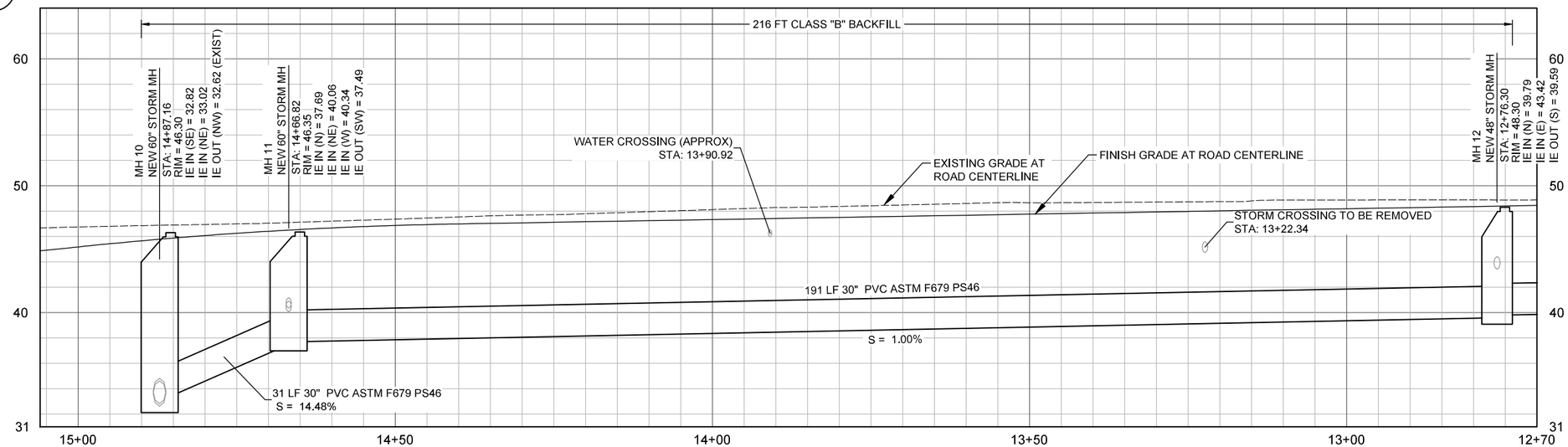
UTILITY CONSTRUCTION NOTES:

202	INSTALL 48" MANHOLE. SEE ODOT STANDARD DRAWING RD335.
206	CONSTRUCT BEEHIVE INLET. SEE DTL 5 ON SHT DT11.
209	INSTALL 30" STORM PIPE
210	INSTALL 24" STORM PIPE.
211	INSTALL 10" STORM PIPE.
231	CONNECT EXISTING PIPE TO NEW MANHOLE.
232	INSTALL 60" MANHOLE.
239	INSTALL 12" STORM PIPE
248	CONNECT TO EXISTING LATERAL WITH WATERTIGHT COUPLING.

DEMOLITION NOTES:

6	REMOVE EXISTING CATCH BASIN.
9	REMOVE STORM PIPE.
32	FILL AND ABANDON EXISTING STORM PIPE IN PLACE. SEE SHEET SD01-SD07 FOR MORE DETAILS.
33	ABANDON EXISTING MANHOLE. REMOVE STRUCTURE TO DEPTH OF EXISTING LATERAL. SEE SHEET SD01-SD07 FOR MORE DETAILS.

1 PLAN - MAIN ST - STA 12+70 TO 15+00



2 PROFILE - MAIN ST - STA 12+70 TO STA 15+00

H: 1" = 10' V: 1" = 5'

PLAN

PROFILE

NO.	DATE	BY	REVISIONS
	12/07/18	NMR	CONFORMED SET

NMR/CTF DESIGNED	03/23/2018 DATE
CTF DRAFTED	03/23/2018 DATE
NMR/JGR CHECKED	03/23/2018 DATE
JGR APPROVED	03/23/2018 DATE

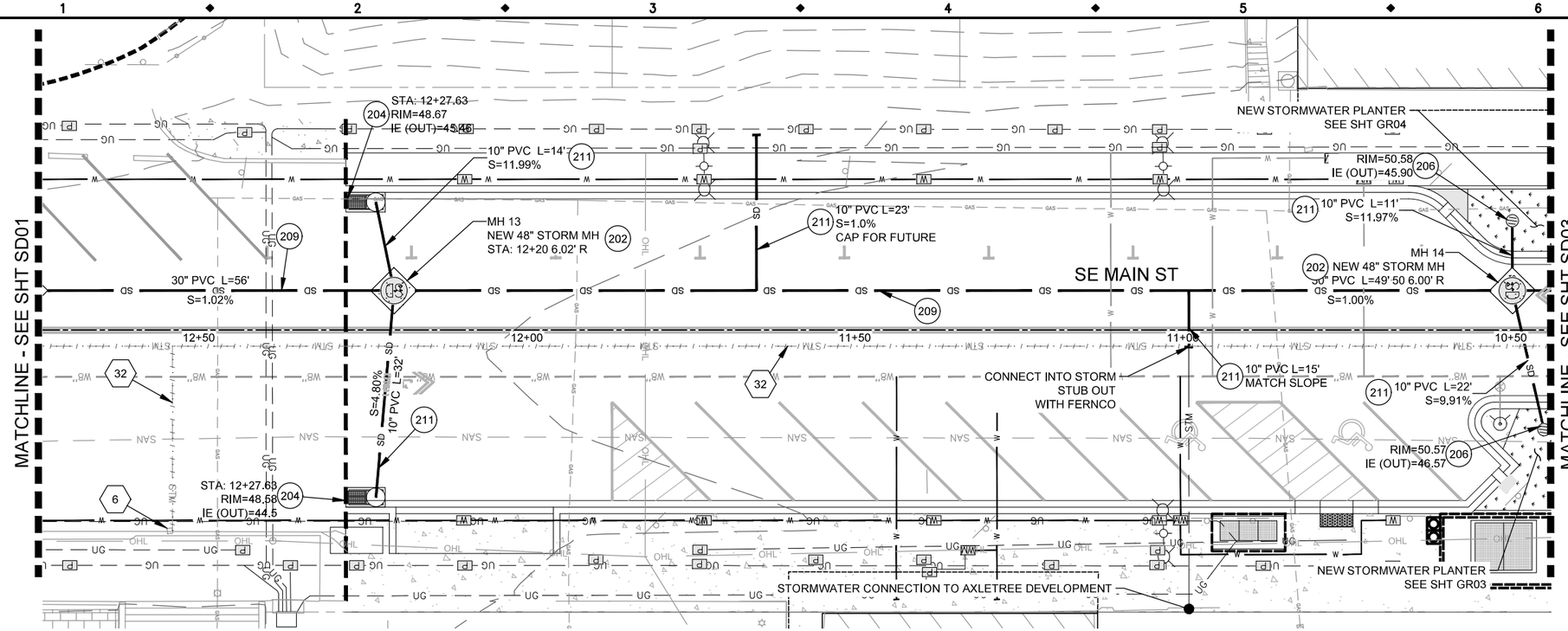
REGISTERED PROFESSIONAL ENGINEER
88690PE
OREGON
MAY 21, 2014
NATHAN M. ROBINSON
RENEWAL DATE 12-31-18

CITY OF MILWAUKIE
6101 SE JOHNSON CREEK BLVD.
MILWAUKIE, OR 97206
PHONE: 503-786-7600
FAX: 503-774-8236

MAIN STREET RECONSTRUCTION

STORM PIPE PLAN AND PROFILE
MAIN ST STA: 12+70 TO 15+00

PROJECT NO.:	CONTRACT NO.:	DATE:	SHEET NO.:
CIP2018-Y18	C2018-051	08/14/2018	SD01



UTILITY CONSTRUCTION NOTES:

(202) INSTALL 48" MANHOLE. SEE ODOT STANDARD DRAWING RD335.

(204) INSTALL CONTECH STORMWATER CATCH BASIN. SEE SHEET DT08.

(206) CONSTRUCT BEEHIVE INLET. SEE DTL 5 ON SHT DT11.

(209) INSTALL 30" STORM PIPE

(210) INSTALL 24" STORM PIPE.

(211) INSTALL 10" STORM PIPE.

(231) CONNECT EXISTING PIPE TO NEW MANHOLE.

DEMOLITION NOTES:

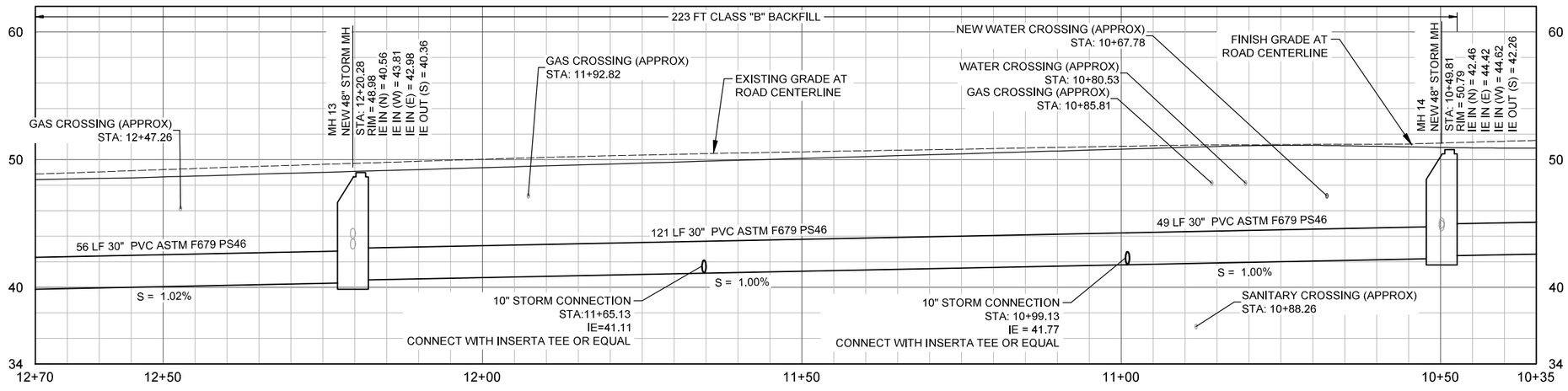
(6) REMOVE EXISTING CATCH BASIN.

(32) FILL AND ABANDON EXISTING STORM PIPE IN PLACE. SEE SHEET SD01-SD07 FOR MORE DETAILS.

SCALE
0 10 20 FEET
1 INCH = 10 FEET

1 PLAN - MAIN ST - STA 10+50 TO 12+70

PLAN



2 PROFILE - MAIN ST - STA 10+50 TO 12+70

H: 1" = 10'
V: 1" = 5'

PROFILE

NO.	DATE	BY	REVISIONS
	12/07/18	NMR	CONFORMED SET

NMR/CTF	DESIGNED	03/23/2018 DATE
CTF	DRAFTED	03/23/2018 DATE
NMR/JGR	CHECKED	03/23/2018 DATE
JGR	APPROVED	03/23/2018 DATE

REGISTERED PROFESSIONAL ENGINEER 88690PE OREGON MAY 21, 2014 NATHAN M. ROBINSON
RENEWAL DATE 12-31-18

CITY OF MILWAUKIE
6101 SE JOHNSON CREEK BLVD.
MILWAUKIE, OR 97206
PHONE: 503-786-7600
FAX: 503-774-8236

MAIN STREET RECONSTRUCTION

STORM PIPE PLAN AND PROFILE
MAIN ST STA: 10+50 TO 12+70

PROJECT NO.:	CONTRACT NO.:	DATE:	SHEET NO.:
CIP2018-Y18	C2018-051	08/14/2018	SD02

UTILITY CONSTRUCTION NOTES:

(202) INSTALL 48" MANHOLE. SEE ODOT STANDARD DRAWING RD335.

(206) CONSTRUCT BEEHIVE INLET. SEE DTL 5 ON SHT DT11.

(207) CONNECT EXISTING ROOF DRAIN TO NEW CATCH BASIN WITH 6-INCH PVC PIPE.

(209) INSTALL 30" STORM PIPE

(210) INSTALL 24" STORM PIPE

(211) INSTALL 10" STORM PIPE

(231) CONNECT EXISTING PIPE TO NEW MANHOLE.

(232) INSTALL 60" MANHOLE.

(239) INSTALL 12" STORM PIPE

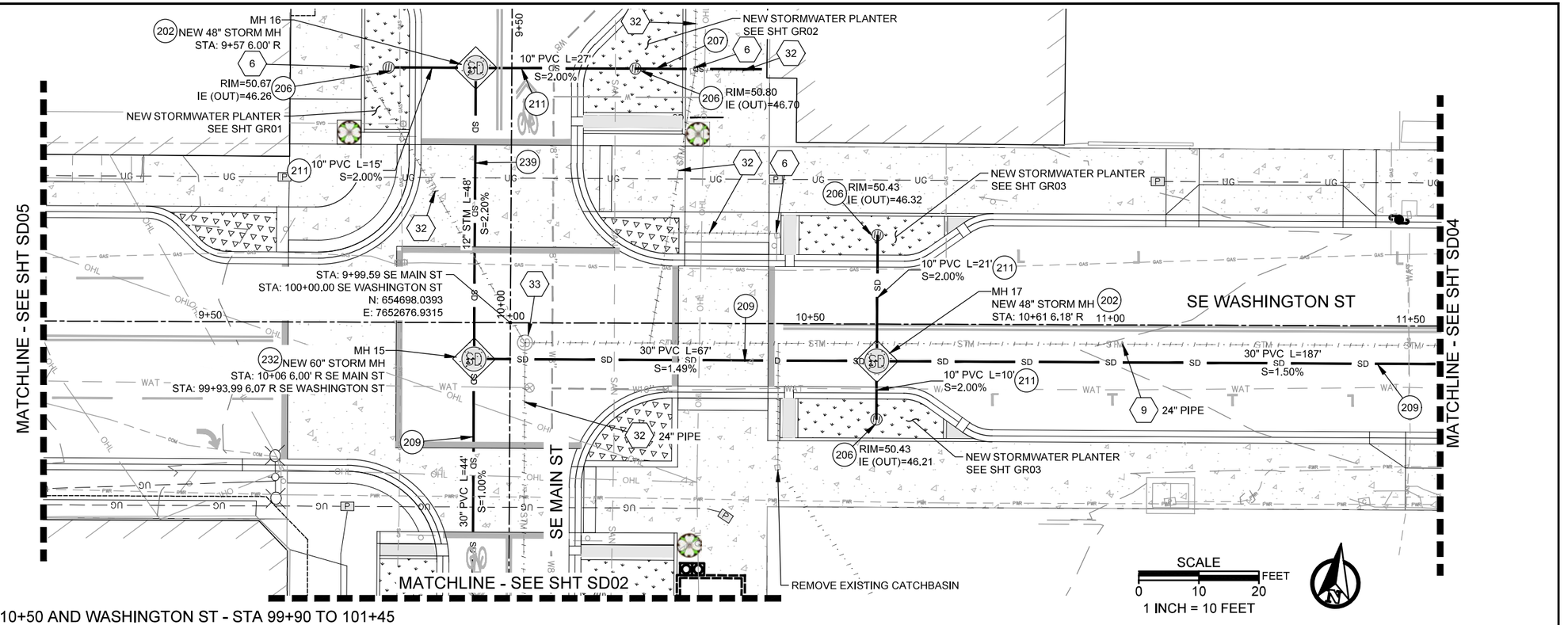
DEMOLITION NOTES:

(6) REMOVE EXISTING CATCH BASIN.

(9) REMOVE STORM PIPE.

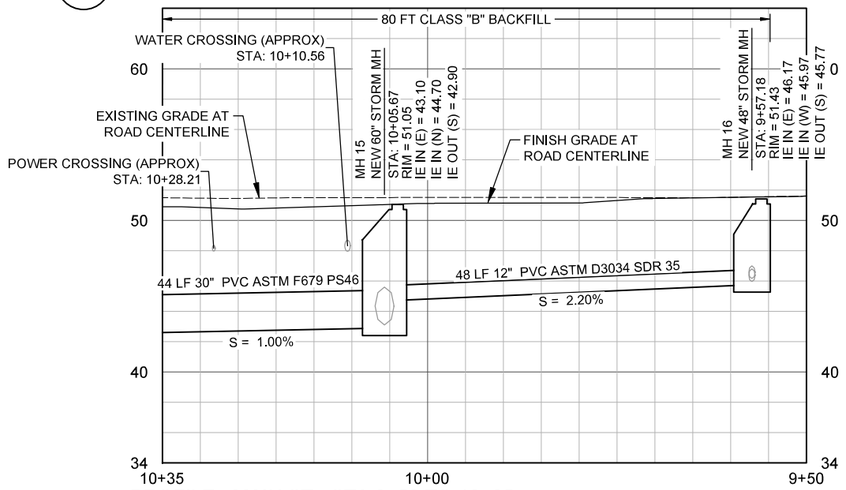
(32) FILL AND ABANDON EXISTING STORM PIPE IN PLACE. SEE SHEET SD01-SD07 FOR MORE DETAILS.

(33) ABANDON EXISTING MANHOLE. REMOVE STRUCTURE TO DEPTH OF EXISTING LATERAL. SEE SHEET SD01-SD07 FOR MORE DETAILS.



1 PLAN - MAIN ST - STA 9+50 TO 10+50 AND WASHINGTON ST - STA 99+90 TO 101+45

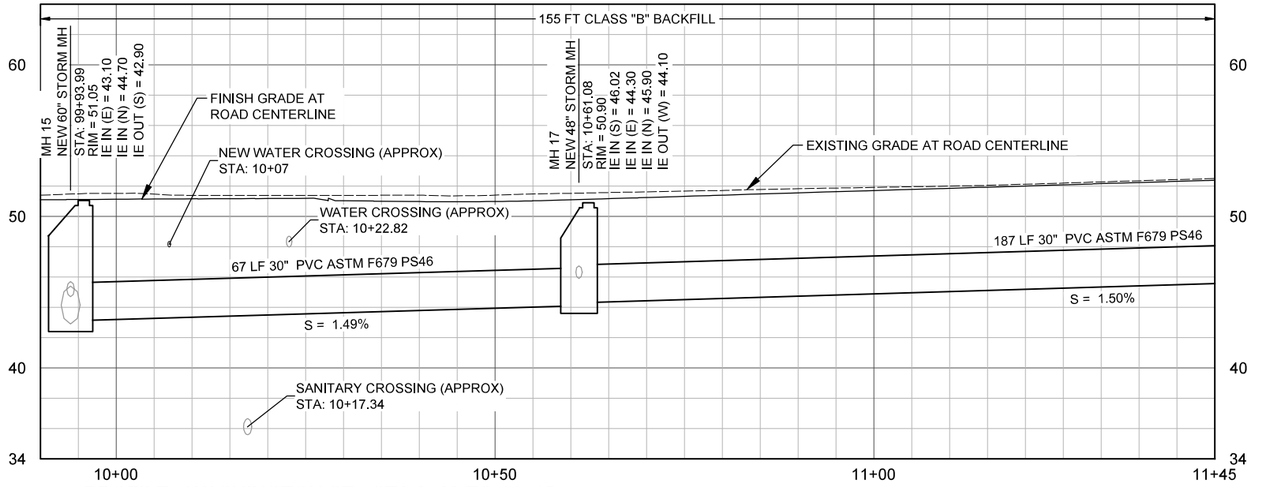
PLAN



2 PROFILE - MAIN ST - STA 9+50 TO 10+35

H: 1" = 10'
V: 1" = 5'

PROFILE



3 PROFILE - WASHINGTON ST - STA 9+90 TO 11+45

H: 1" = 10'
V: 1" = 5'

PROFILE

NO.	DATE	BY	REVISIONS
	12/07/18	NMR	CONFORMED SET

NMR/CTF DESIGNED 03/23/2018 DATE
CTF DRAFTED 03/23/2018 DATE
NMR/JGR CHECKED 03/23/2018 DATE
JGR APPROVED 03/23/2018 DATE

REGISTERED PROFESSIONAL ENGINEER 88690PE OREGON MAY 21, 2014 NATHAN M. ROBINSON
RENEWAL DATE 12-31-18

CITY OF MILWAUKIE

6101 SE JOHNSON CREEK BLVD.
MILWAUKIE, OR 97206

PHONE: 503-786-7600
FAX: 503-774-8236

MAIN STREET RECONSTRUCTION

STORM PIPE PLAN AND PROFILE
MAIN ST STA: 9+50 TO 10+50 AND WASHINGTON ST STA: 99+90 TO 101+45

PROJECT NO.:	CONTRACT NO.:	DATE:	SHEET NO.:
CIP2018-Y18	C2018-051	08/14/2018	SD03

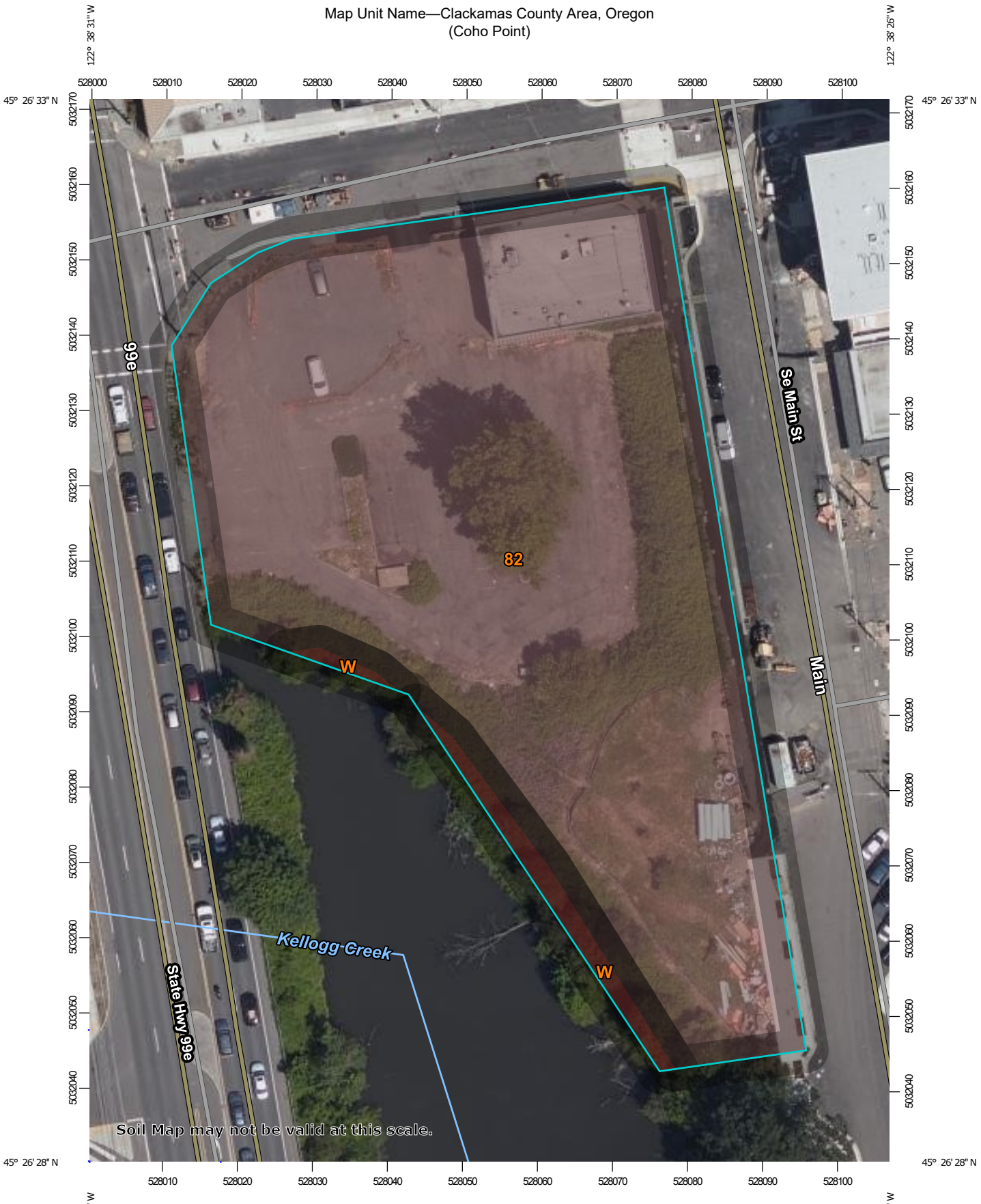
Composite Curve Number Calculations

Subject	Coho Point Upstream Areas	By	MSG	Date	3/5/2021
Project	14464				

Composite CN Example Calculation for Upstream Basins

Soil Name and Hydrologic group	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connect impervious area ratio)	Curve Number HSG A	HSG B	HSG C	HSG D	Area (ac)	Product of CN **X** area
C	Open Space Good Condition (Amended Soils			56		15.01	840.56
C	Impervious surfaces-pavement, roofs, etc.			98		16.00	1568
	$CN(Weighted) = \frac{Total_Product}{Total_Area}$			Totals		31.01	2409
				Use CN		78	

Map Unit Name—Clackamas County Area, Oregon
(Coho Point)



Map Scale: 1:687 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Urban land
- Water
- Not rated or not available

Soil Rating Lines
- Urban land
- Water
- Not rated or not available

Soil Rating Points
- Urban land
- Water
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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 Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
82	Urban land	Urban land	1.4	97.4%
W	Water	Water	0.0	2.6%
Totals for Area of Interest			**1.4**	**100.0%**

Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

GeoDesign Inc

REPORT OF GEOTECHNICAL ENGINEERING SERVICES

Coho Point at Kellogg Creek
11100 SE McLoughlin Boulevard
Milwaukie, Oregon

For
City of Milwaukie
September 24, 2018

GeoDesign Project: Milwaukie-7-01

GeoDesign INC

September 24, 2018

City of Milwaukie
6101 SE Johnson Creek Boulevard
Milwaukie, OR 97206

Attention: Leila Aman

Report of Geotechnical Engineering Services
Coho Point at Kellogg Creek
11100 SE McLoughlin Boulevard
Milwaukie, Oregon
GeoDesign Project: Milwaukie-7-01

GeoDesign, Inc. is pleased to submit this report of geotechnical engineering services for the proposed Coho Point at Kellogg Creek development located southwest of the intersection of SE Main Street and SE Washington Street in Milwaukie, Oregon. This report has been prepared in accordance with our proposal dated July 10, 2018.

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this report.

Sincerely,

GeoDesign, Inc.

Brett A. Shipton, P.E., G.E.
Principal Engineer

JTW:RSK:BAS:kt
Attachments
One copy submitted (via email only)
Document ID: Milwaukie-7-01-092418-geor.docx
© 2018 GeoDesign, Inc. All rights reserved.

EXECUTIVE SUMMARY

The following is a summary of our findings and recommendations for design and construction of the proposed development. This executive summary is limited to an overview of the project. We recommend that the report be referenced for a more thorough description of the subsurface conditions and geotechnical recommendations for the project.

- The underlying sand and silty sand are susceptible to liquefaction during a seismic event. Our analysis indicates liquefaction settlement of 4 inches is possible with differential settlement estimated equal to the total predicted settlement. If the buildings cannot tolerate this settlement, we recommend the soil beneath the buildings be improved to mitigate liquefaction or the buildings be supported on foundations that limit differential settlement.
- The near-surface soil at the site consists of variable fill and soft native soil that is not suitable to support the proposed building loads. Foundations, at a minimum, will need to be supported on improved soil.
- Floor slabs should be structurally supported by ground improvements or deep foundations to limit damage from seismic settlements. Alternatively, floor slabs can be installed directly on the existing subgrade; however, they will be subject to the liquefaction settlement described above.
- Because liquefiable soil is present at the site, the site class is F. This site class requires all building footings to be structurally tied together.
- Up to 20 feet of fill is present in portions of the site. The presence of undocumented fill can affect the performance of floor slabs and pavements at the site. We recommend that all subgrades be evaluated prior to placing base rock and pavements. If soft, loose, or deleterious material is encountered, we recommend that the material be over-excavated and replaced with crushed rock.
- The on-site soil can be sensitive to small changes in moisture content and difficult, if not impossible, to adequately compact during wet weather or when the moisture content of the soil is more than a couple of percent above the optimum required for compaction. As discussed in the report, the moisture content of the soil currently is above optimum and drying will be required if used as structural fill.
- The on-site soil will provide inadequate support for construction equipment during periods of wet weather or when above optimum moisture. Granular haul roads and working pads should be employed if earthwork will occur during the wet winter months.

TABLE OF CONTENTS PAGE NO.

ACRONYMS AND ABBREVIATIONS

1.0 INTRODUCTION 1
2.0 PROJECT UNDERSTANDING 1
3.0 PURPOSE AND SCOPE 1
4.0 SITE CONDITIONS 2
4.1 Geologic Setting 2
4.2 Surface Conditions 2
4.3 Subsurface Conditions 4
4.4 Geologic Hazards 4
5.0 CONCLUSIONS AND RECOMMENDATIONS 4
5.1 General 4
5.2 Site Preparation 5
5.3 Excavation 5
5.4 Permanent Slopes 6
5.5 Structural Fill 6
5.6 Drainage 7
6.0 FOUNDATION SUPPORT RECOMMENDATIONS 8
6.1 General 8
6.2 Foundations on Ground Improvement 8
6.3 Driven Pile Foundations 10
7.0 SLABS ON GRADE 12
8.0 PERMANENT RETAINING STRUCTURES 12
9.0 SEISMIC DESIGN CRITERIA 13
10.0 CONSTRUCTION CONSIDERATIONS 13
10.1 Wet Weather Construction 13
10.2 Erosion Control 14
11.0 OBSERVATION OF CONSTRUCTION 14
12.0 LIMITATIONS 14

REFERENCES 16

FIGURES
Vicinity Map Figure 1
Site Plan Figure 2

TABLE OF CONTENTS **PAGE NO.**

APPENDIX

Field Explorations	A-1
Laboratory Testing	A-1
Exploration Key	Table A-1
Soil Classification System	Table A-2
Boring Logs	Figures A-1 – A-3
Atterberg Limits Test Results	Figure A-4
Summary of Laboratory Data	Figure A-5
SPT Hammer Calibration	

ACRONYMS AND ABBREVIATIONS

AC	asphalt concrete
ASTM	American Society for Testing and Materials
BGS	below ground surface
CAPWAP	case pile wave analysis program
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
IBC	International Building Code
MCE	maximum considered earthquake
NAVD	North American Vertical Datum
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
pci	pounds per cubic inch
PDA	Pile Driving Analyzer®
PGA	peak ground acceleration
psf	pounds per square foot
SPT	standard penetration test
SOSSC	State of Oregon Structural Specialty Code
UST	underground storage tank
WEAP	wave equation analysis program

1.0 INTRODUCTION

This report provides geotechnical engineering recommendations for the proposed Coho Point at Kellogg Creek development located southwest of the intersection of SE Main Street and SE Washington Street in Milwaukie, Oregon. Figure 1 shows the site relative to existing topographic and physical features. Figure 2 shows the existing conditions and our approximate exploration locations.

The exploration logs and laboratory test results are presented in the Appendix. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

2.0 PROJECT UNDERSTANDING

We understand that the project includes Tax Lots 1100, 1200, 1300, 1301, and 1302. The proposed development will include mixed-use buildings likely constructed at grade. The structures will have four to five stories of wood framing over two stories of concrete. The preliminary building loads provided to us indicate maximum column and wall loads of 530 kips and 15 kips per linear foot, respectively. We anticipate floor loads will be less than 150 psf.

We understand the building on Tax Lot 1200 will be demolished as part of the project. The south side of the site is currently within the flood plain; site grades may be raised to remove it from the flood plain.

3.0 PURPOSE AND SCOPE

The purpose of our services is to provide geotechnical engineering recommendations for design and construction of the proposed development. The specific scope of our services is summarized as follows:

- Reviewed readily available, published geologic data and our in-house files for existing information on subsurface conditions in the site vicinity.
- Coordinated and managed the field explorations, including public and private utility locates, access preparation, and scheduling of contractors and GeoDesign staff.
- Conducted a subsurface exploration program that consisted of drilling three borings to depths between 30.5 and 86.3 feet BGS.
- Maintained continuous logs of the explorations and collected soil samples at representative intervals.
- Performed a laboratory testing program that included the following:
  - Seventeen moisture content determinations in general accordance with ASTM D2216
  - Two particle-size analyses in general accordance with ASTM D1140
  - Two Atterberg limits tests in general accordance with ASTM D4318
- Provided recommendations for site preparation and grading, including temporary and permanent slopes, fill placement criteria, suitability of on-site soil for fill, and subgrade preparation.
- Provided recommendations for wet weather construction.

- Provided foundation support options for the proposed buildings. Our recommendations include preferred foundation type, allowable bearing pressure, and lateral resistance parameters.
- Provided recommendations for floor slab support.
- Provided recommendations for use in design of conventional retaining walls, including backfill and drainage requirements and lateral earth pressures.
- Evaluated groundwater conditions at the site and provided general recommendations for dewatering during construction and subsurface drainage (if required).
- Provided seismic design recommendations in accordance with the procedures outlined in the 2012 IBC and 2014 SOSSC.
- Prepared this geotechnical engineering report that presents our findings, conclusions, and recommendations.

4.0 SITE CONDITIONS

4.1 GEOLOGIC SETTING

The site is located in the southernmost part of the Portland Basin physiographic province, which is a smaller basin within the Willamette Valley-Puget Sound Lowland. The lowland is a tectonically active forearc basin located along the convergent Cascadia margin (Orr and Orr, 1999). The Portland Basin is bound by the Tualatin Mountains to the west and south and the Cascade Range to the east and north.

Surface geology at the site is mapped as catastrophic flood deposits resulting from the Missoula Floods, a series of catastrophic floods caused by the repeated failure of a glacial ice dam that impounded glacial Lake Missoula in present day Montana during the Pleistocene. (Beeson et al., 1989). These floods swept across eastern Washington and followed the Columbia River channel out to sea, backfilling the Willamette Valley with flood waters and sediment during each event. Beeson et al. (1989) classify the flood deposits at the site as channel facies (variable silts, sands, and gravels deposited in major flood pathways and re-worked by subsequent events). Beeson et al. (1989) further note that irregular surfaces, abandoned drainages, and scours left by the floods at this location have been filled in by bog and pond sediment, as well as sediment transported by local creeks, including Kellogg Creek.

Bedrock at the site is mapped as the Basalt of Waverly Heights, a sequence of subaerial basaltic lava flows and oceanic sediments, deposited as part of an island arc during the Eocene (approximately 40 million years ago) and subsequently accreted to western Oregon (Madin, 2004).

4.2 SURFACE CONDITIONS

The site consists of approximately 0.81 acre located in downtown Milwaukie. It is bound by SE Washington Street to the north, SE Main Street to the east, and SE McLoughlin Boulevard to the west. Kellogg Creek and an adjacent public park (Dogwood Park) border the site to the south. A two-story structure with a daylight basement occupies the northeast corner of the parcel; we understand this structure will be demolished as part of the project. Most of the site consists of an AC parking lot. Two large deciduous trees occupy a planter area in the center of the site, and small shrubs, deciduous trees, and brush are present along the bank of Kellogg Lake. The site

generally slopes gently towards Kellogg Lake to the south with elevations between 35 and 42 feet (NAVD88). There is an approximately 12-foot-high 1.5H:1V to 1.7H:1V slope along the east site boundary and a 1.3H:1V to 2H:1V bank down to Kellogg Lake.

4.3 SUBSURFACE CONDITIONS

4.3.1 General

We completed three borings (B-1 through B-3) at the site to depths between 30.5 and 86.3 feet BGS. The approximate locations of our explorations are shown on Figure 2. Descriptions of the field exploration and laboratory testing programs, logs of the explorations, and results of laboratory testing presented in the Appendix.

Subsurface conditions generally consist of fill underlain by alluvial and flood deposits overlying weathered basalt. A more detailed description of the subsurface conditions at the site is presented below.

4.3.2 Fill

Undocumented fill was observed in all borings completed at the site. The fill generally consists of silt with gravel, gravelly silt, silty gravel, and gravel with silt. Trace amounts of concrete and metal debris were observed in boring B-1 within the silty gravel. The fill extends to depths between approximately 4.5 and 20.2 feet BGS. Moisture contents varied from 12 to 30 percent at the time of our explorations.

4.3.3 Alluvial Silt and Sand

Underlying the fill are layers of gray to dark gray silt, sand, and organic silt. The silt is generally sandy to with sand, and the sand is generally silty. Within this section clayey sand and organic silt were encountered. Based on SPT blow counts the silt is generally very soft to medium stiff and the sand is very loose to loose. The natural moisture content varied from 40 to 82 percent at the time of our explorations.

4.3.4 Weathered Basalt

Underlying the alluvial soil is medium dense to very dense, silty gravel to gravel with silt that we interpret to be weathered basalt of the Waverly Heights Formation. The depth to weathered basalt appears to very drastically across the site with decomposed basalt encountered at 83.0 and 21.0 feet BGS in borings B-1 and B-2, respectively.

4.3.5 Groundwater

We did not observe groundwater in our borings due to the mud rotary drilling techniques used. Samples were generally observed to be wet at depths of approximately 15 feet BGS and below. Groundwater is anticipated to correspond to the level of Kellogg Lake to the south. The existing conditions survey completed by Statewide Land Surveying Inc. indicates that the ordinary high water line for Kellogg Lake is at an elevation of 26 feet (NAVD88).

The depth to groundwater may fluctuate in response to seasonal changes, prolonged rainfall, changes in surface topography, and other factors not observed in this study. We anticipate that perched water may be present within a few feet of the ground surface during the wet season or during extended periods of precipitation.

4.4 GEOLOGIC HAZARDS

4.4.1 Liquefaction

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction. Silty soil with low plasticity is moderately susceptible to liquefaction under relatively higher levels of ground shaking.

We performed a liquefaction analysis for the site using the data collected from the field explorations and our laboratory testing program. We considered both subduction zone and crustal earthquake scenarios. For our analysis, we modeled a subduction zone earthquake as a magnitude 9.0 event with a PGA of 0.20 g. We modeled a crustal earthquake as a magnitude 6.8 event with a PGA of 0.42 g. We assumed groundwater was present at a depth of 12 feet BGS. We evaluated the liquefaction potential using the method proposed by Boulanger and Idriss (2014) employing the depth weighting methods from Cetin (2009).

Based on our analysis, the silty sand and sand layers are susceptible to liquefaction during a design-level earthquake. Our analysis indicates that total liquefaction settlement of approximately 4 inches is possible with differential settlement estimated equal to the total predicted settlement.

If these seismic settlements cannot be tolerated, we recommend the soil beneath the buildings be improved to mitigate liquefaction or the buildings be supported on foundations that limit differential settlement.

4.4.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard and occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a river or creek bank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement. The primary difference between a conventional slope stability failure and lateral spreading is that no distinct failure plane is formed during a lateral spreading event. Liquefied soil flows downslope or to an exposed bank similar to the behavior of a viscous fluid. We expect the risk of lateral spreading to be low as gravel was encountered in boring B-3 to 20 feet BGS. This assumes the depth of Kellogg Creek is shallower than this.

4.4.3 Fault Surface Rupture

The Portland Hills fault is mapped approximately 0.72 mile northeast of the site (Beeson et al., 1991; Madin, 1990). Consequently, it is our opinion that the probability of surface fault rupture beneath the site is low.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL

Based on our geotechnical evaluation, we conclude that the site is feasible for development provided the site is prepared as recommended in this report. The "Executive Summary" provides a brief overview of the primary geotechnical considerations for the project. Our specific recommendations are presented in the following sections.

5.2 SITE PREPARATION

5.2.1 Stripping and Grubbing

Stripping and grubbing will be required at this site to remove the trees and shrubs in the landscaped areas adjacent to the parking areas. The existing root zone material should be removed from all proposed structure and pavement areas. The actual stripping and grubbing depth should be based on field observations at the time of construction. Stripping and grubbing should extend at least 5 feet beyond the limits of proposed structural areas. Organic material should be transported off site for disposal or used as fill in landscaped areas.

5.2.2 Demolition

Demolition includes complete removal of the existing buildings, concrete pavement, sidewalks, utilities, USTs, and any other underlying structural elements. The slab, walls, and footings of the existing building should be completely removed. Any monitoring wells or USTs should be abandoned in accordance with state and local regulations prior to site redevelopment. Abandoned utility lines under new structural components should be completely removed. Excavations resulting from the demolition of existing improvements should be backfilled with compacted structural fill as recommended in this report. The base of the excavations should be excavated to expose firm subgrade. The sides of the temporary excavations should be cut into firm material and sloped no steeper than 1½H:1V.

5.2.3 Undocumented Fill

Undocumented fill was observed in all borings completed at the site to depths ranging approximately 4.5 to 20.2 feet BGS. The fill is of variable composition and some old construction debris, including concrete and metal fragments, were observed within it. We recommend that the undocumented fill be evaluated during construction where it exists beneath slabs, pavements, and other structures to determine if over-excavation will be necessary.

5.2.4 Subgrade Evaluation

A member of our geotechnical staff should observe the exposed footing, slab, and pavement subgrade after stripping, excavation, and placement of structural fill have been completed to confirm that there are no areas of unsuitable or unstable soil. The subgrade should be evaluated using moisture-density testing, a hand probe, and/or proof rolling with a fully loaded dump truck (or similar heavy, rubber tire construction equipment). If soft, loose, or otherwise unsuitable soil is found at the subgrade level, we recommend that the soil be over-excavated and replaced with structural fill.

5.3 EXCAVATION

Excavations will be required for the installation of foundation elements, utilities, and other earthwork. Conventional earthmoving equipment in proper working condition should be capable of making the necessary excavations. It is possible that buried obstructions may be encountered, which could result in difficult excavation conditions and trenches being wider than anticipated. Excavations in the silt and sand may be prone to raveling. Excavations deeper than 4 feet BGS will require shoring or should be sloped. Sloped excavations may be used to vertical depths of 10 feet BGS and should have side slopes no steeper than 1½H:1V, provided groundwater seepage does not occur. We recommend a minimum horizontal distance of 5 feet from the edge of the existing improvements to the top of any temporary slope. All cut slopes

should be protected from erosion by covering them during wet weather. If seepage, sloughing, or instability is observed, the slope should be flattened or shored. Shoring will be required where slopes are not possible. The contractor should be responsible for selecting the appropriate shoring system.

Excavations should not be allowed to undermine adjacent improvements. If existing roads or structures are located near a proposed excavation, unsupported excavations can be maintained outside of a 1H:1V downward projection that starts 5 feet from the base of the existing footings. Excavations that must be inside of this zone should be supported by temporary or permanent shoring designed for moment resistance for the full height of the excavation, including kick-out for the full buried depth of the retaining system.

We anticipate that excavations for this project will not extend below the groundwater level. We anticipate that significant dewatering will not be required for this project. Perched water or rainwater can likely be removed by pumping from sumps located within the excavation.

While we have described certain approaches to performing excavations, it is the contractor's responsibility to select the excavation and dewatering methods, monitor the excavations for safety, and provide any shoring required to protect personnel and adjacent improvements. All excavations should be in accordance with applicable OSHA and state regulations.

5.4 PERMANENT SLOPES

Permanent cut or fill slopes should not exceed a gradient of 2H:1V, unless specifically evaluated for stability. Upslope buildings, access roads, and pavements should be set back a minimum of 5 feet from the crest of such slopes. Slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

5.5 STRUCTURAL FILL

Structural fill includes fill beneath foundations, slabs, pavements, any other areas intended to support structures, or within the influence zones of structures. Structural fill should be free of organic matter and other deleterious material and, in general, should consist of particles no larger than 3 inches in diameter. Recommendations for suitable fill material are provided in the following sections.

5.5.1 On-Site Soil

The on-site silt, sand, and silty gravel soil will be suitable for use as structural fill only if it can be moisture conditioned. Based on our experience, the soil is very sensitive to small changes in moisture content and may be difficult, if not impossible, to compact. Laboratory testing indicates that the moisture content of the on-site soil is significantly greater than the anticipated optimum moisture content required for satisfactory compaction. Therefore, this soil may require extensive drying if it is used as structural fill. We recommend using imported granular material for structural fill if the moisture content of the on-site soil cannot be reduced.

5.5.2 Imported Granular Material

Imported granular material should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand that is fairly well graded between coarse and fine and has less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve. All granular material must be durable such that there is no degradation of the material during and after installation as structural fill. The percentage of fines can be increased to 12 percent if the fill is placed during dry weather and provided the fill material is moisture conditioned, as necessary, for proper compaction. The material should be placed in lifts with a maximum uncompacted thickness of 8 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 1557. During the wet season or when wet subgrade conditions exist, the initial lift should have a maximum thickness of 12 inches and compacted by rolling with a smooth-drum, non-vibratory roller.

5.5.3 Recycled Concrete

Recycled concrete from the existing building foundations can be used for structural fill provided the concrete is broken to a maximum particle size of 6 inches. This material can be used as trench backfill and pavement base rock if it meets the requirements for imported granular material, which would require a smaller maximum particle size. The material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 1557.

5.5.4 Trench Backfill Material

Trench backfill for the utility pipe base and pipe zone should consist of durable, well-graded granular material that has a maximum particle size of 1 inch, has less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve, and does not contain organic or other deleterious material. Backfill above the pipe zone should meet the requirements above, except that the maximum particle size may be increased to 1½ inches.

Backfill for the pipe base and within the pipe zone should be placed in maximum 12-inch-thick lifts and compacted to not less than 90 percent of the maximum dry density, as determined by ASTM D 1557, or as recommended by the pipe manufacturer. Backfill above the pipe zone should be placed in maximum 12-inch-thick lifts and compacted to not less than 92 percent of the maximum dry density, as determined by ASTM D 1557. Trench backfill located within 2 feet of finish subgrade elevation should be placed in maximum 12-inch-thick lifts and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D 1557. Outside of structural areas, trench backfill material should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 1557.

5.6 DRAINAGE

5.6.1 Surface

Pavement surfaces and open space areas should be sloped such that surface water runoff is collected and routed to suitable discharge points. The finished ground surface around the buildings should be sloped away from foundations at a minimum 2 percent gradient for a distance of at least 5 feet. Runoff water should not be directed to the top of the slope.

5.6.2 Temporary

During grading the contractor should be made responsible for temporary drainage of surface water as necessary to prevent standing water and/or erosion at the working surface. During rough and finished grading of the building site, the contractor should keep all footing excavations and building pads free of water.

6.0 FOUNDATION SUPPORT RECOMMENDATIONS

6.1 GENERAL

As described in the "Geologic Hazards" section, the soil at the site is potentially liquefiable during a seismic event. Our analysis indicates liquefaction settlement at the ground surface on the order of 4 inches is possible with differential settlement estimated equal to the total predicted settlement.

These seismic settlements may be acceptable for the proposed structures to be founded on conventional spread footings underlain by ground improvement such as short rammed aggregate piers. If liquefaction settlement exceeds building tolerances for conventional spread footings or a mat foundation, the soil will need to be improved.

We note that pavement and landscaped areas will also experience liquefaction; however, they are not typically mitigated for liquefaction due to the high costs of ground improvement and lower cost for pavement (and potentially utility) repair.

The near-surface soil at the site consists of variable fill and very soft to soft native soil that is not suitable to support the proposed building loads. Foundations, at a minimum, regardless of liquefaction settlement, will need to be founded on improved soil.

Options for supporting the proposed buildings are discussed below. Based on the Site Class F designation, all building footings must be structurally tied together.

1. Improve the soil beneath the foundations and floor slabs and support the structures on a mat. Soil improvement would most likely include stone columns or deep soil mix columns that extend through the liquefiable zone and extend to a depth of approximately 50 feet.

2. Support the structures on deep foundations consisting of driven piles or drilled shafts that extend through the compressible and liquefiable soil.

6.2 FOUNDATIONS ON GROUND IMPROVEMENT

6.2.1 Stone Columns

Stone columns can be used to mitigate liquefaction and provide support for the proposed structures on a mat underlain by improved ground, provided that resulting settlement from the structure loads are within suitable tolerances. Design of stone columns should be performed by a specialty contractor. Typically, stone columns beneath structural elements are installed on 7-

to 9-foot centers, with diameters that vary from 36 to 42 inches. Additional explorations may be completed by design-build contractors to assist in design of soil improvement. GeoDesign can also provide these services.

6.2.2 Deep Soil Mix Columns

Soil mixing consists of drilling into the soil using a specialty drill rig that injects cement slurry into the ground. Paddles along the shaft blend the soil and cement slurry together until a relatively uniform column of soil and cement is formed. A mat foundation can be constructed directly on top of the columns similar to stone columns. The allowable bearing pressure for shallow foundations supported on deep soil mix columns is typically 4,000 to 6,000 psf. Soil mix columns are typically between 36 and 60 inches in diameter and installed on a regular or semi-regular layout under the spread footings and floor slabs. Spoils generated during installation can be used as on-site fill or hauled off site following approval and environmental profiling, which should be identified in the project Contaminated Media Management Plan. Soil mix columns are more rigid than stone columns, can support larger loads, and more efficiently mitigate liquefaction in fine-grained soil.

6.2.3 Rammed Aggregate Piers

Rammed aggregate pier foundation systems consist of compacted aggregate piers that reinforce and improve the soil. These systems are proprietary and designed and constructed by a specialty contractor. Conventional spread foundations are placed over the completed rammed aggregate piers. The allowable bearing pressure for shallow foundations supported on rammed aggregate piers is typically 4,000 to 6,000 psf.

We anticipate that static foundation settlement of the rammed aggregate pier foundation system will be less than 1 inch with differential settlement of 0.5 inch. Seismic settlement will be as described in the "Geologic Hazards" section. The design-build contractor should be provided with this report to complete settlement analysis for the aggregate piers.

6.2.4 Spread Footings on Soil Improvements or Rammed Aggregate Piers

6.2.4.1 Dimensions and Capacities

Footings established on improved soil as described above can be used to support structures at the site. Footings should be proportioned on an allowable bearing pressure provided by the soil improvement contractor. For preliminary purposes, we estimate that the allowable bearing pressure for footings installed on stone columns, deep soil mix columns, or rammed aggregate piers will be as discussed above. The specialty contractor will specify the allowable bearing pressure.

Continuous wall and isolated spread footings should be at least 16 and 20 inches wide, respectively. The bottom of exterior footings should be at least 18 inches below the lowest adjacent exterior grade. The bottom of interior footings should be established at least 12 inches below the base of the slab.

6.2.4.2 Resistance to Sliding

Lateral loads on footings can be resisted by passive earth pressure on the sides of the structures and by friction on the base of the footings. Our analysis indicates that the available passive earth

pressure for footings confined by on-site soil and structural fill is 300 pcf, modeled as an equivalent fluid pressure. Adjacent floor slabs, pavements, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. A coefficient of friction equal to 0.4 can be used for the resistance to sliding for footings in contact with the improved soil.

6.3 DRIVEN PILE FOUNDATIONS

As an alternative to ground improvement, driven steel or grout piles can be used to support the structures. The piles will obtain the majority of their capacity through end bearing in the underlying weathered basalt. Pile lengths will vary across the site as the weathered basalt unit was encountered at depths between approximately 21.0 and 83.0 feet BGS. Due to the variation in depth to the gravel across the site, we recommend the piling contractor install indicator piles to help define the required length of piles during early production driving. The following sections provide specific design recommendations for deep foundations

6.3.1 Downward Axial Capacity

Table 1 presents the calculated allowable compressive capacity of steel pipe and driven grout piles driven to basalt bedrock. The allowable capacities in Table 1 assume the piles are spaced at least 3 pile diameters on-center.

Table 1. Axial Allowable Compressive Capacity

Pile Type	Allowable Compressive Capacity (tons)
12-inch-diameter steel pipe pile (closed-end)	220
18-inch-diameter steel pipe pile (closed-end)	220
16-inch-diameter driven grout pile	160
18-inch-diameter driven grout pile	220

1. Lower and higher value assumes weathered basalt at 21.0 and 83.0 feet BGS, respectively.

The capacity of driven steel piling will be limited by the structural capacity of the pile section. High-strength, 12-inch-diameter steel pipes have been used in the Portland Metropolitan area and have achieved an allowable capacity of 220 tons. These types of piles are not readily available. Eighteen-inch-diameter pipe piles are more easily available and can achieve an allowable capacity of 220 tons.

A factor of safety of 2 was used in our analysis; therefore, verification of capacity will be required in the field using a PDA and full-time observation during pile driving for both steel pipe and driven grout piles. PDA testing on a driven grout pile will require installation and re-driving of a sacrificial pile to conduct the PDA testing.

All piles should be driven to refusal on the gravel or the terminal driving criteria as determined by PDA and CAPWAP analysis, whichever is less.

Depth of penetration of the piles will vary depending on the depth and consistency of the

weathered basalt unit; however, we estimate that 5 to 10 feet of penetration into the weathered basalt unit will achieve the allowable compressive capacities presented in Table 1. Pipe piles should be driven closed-ended with steel plates designed to withstand the force caused by hard driving into the weathered basalt unit.

6.3.2 Uplift Resistance

Uplift capacity of the piles will be mobilized through skin friction between the pile and the surrounding soil for the length of the pile installed into the underlying weathered basalt unit. We compute the following allowable uplift capacity for each pile type.

Table 2. Allowable Uplift Capacity

Pile Type	Allowable Uplift Capacity[1] (tons)
12-inch-diameter steel pipe pile (closed-end)	40
18-inch-diameter steel pipe pile (closed-end)	60
16-inch-diameter driven grout pile	65
18-inch-diameter driven grout pile	75

1. Assumes minimum 5 feet embedment in weathered basalt

The computed uplift capacity should assume the pile will penetrate no more than 5 feet into the weathered basalt and the piles are spaced at least 3 pile diameters on-center. These uplift capacities may not be achievable due to drilling refusal. Supplemental anchors may be necessary to resist uplift.

6.3.3 Lateral Resistance

Resistance to lateral loads can be developed by passive pressure on the face of pile caps, grade beams, tie beams, and other buried foundation elements. Sliding friction on the base of pile-supported foundation elements should be ignored. Assuming a minimum translation of 1.0 inch, the allowable passive resistance on the face of buried foundation elements may be computed using an equivalent fluid pressure of 300 pcf for foundation elements cast neat against the existing soil or backfilled with structural fill. Adjacent floor slabs, pavements, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. We will provide the design team with lateral pile response curves when the pile size has been selected.

6.3.4 Other Considerations

The terminal blow counts will depend on the pile type and driving equipment. The structural integrity of the steel pipe pile or the mandrel should be evaluated to confirm that they will withstand the stresses induced by pile driving. GeoDesign should be consulted to select the appropriate hammer energy to develop the required capacity while avoiding excessive driving stresses. Terminal blow criteria should be based on WEAP analysis considering the pile type, required capacity, and the selected driving equipment. Our analysis should be verified in the field using a PDA.

The piling should be installed with suitable alignment tolerances. Vertical alignment should be within 3 percent of plumb or as determined by the structural engineer. Lateral alignment should be within tolerances determined by the structural engineer, considering the pile cap design. Settlement of piles driven to refusal in the lower gravel will be negligible beyond the elastic compression of the pile.

If buried obstructions are encountered during driving, the pile should be extracted and the obstruction removed. If the buried obstruction cannot be removed, the structural engineer should be consulted to select a new pile location. Each pile should be carefully inspected for damage caused by impacting buried obstructions during driving.

We recommend full-time monitoring of pile installation to confirm that the piles are driven in accordance with the recommendations in this report and with the project specifications.

7.0 SLABS ON GRADE

If slabs on grade will be constructed for this project, satisfactory subgrade support for slabs supporting floor loads of up to 150 psf can be obtained on the near-surface soil or on structural fill. If fill is present at the slab subgrade level, we recommend that the fill be evaluated during construction to determine if scarifying and re-compaction or over-excavation will be required.

A minimum 6-inch-thick layer of imported granular material should be placed and compacted over the prepared subgrade to assist as a capillary break. The imported granular material should have a maximum particle size of 1½ inches, less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve, and at least two mechanically fractured faces. The imported granular material should be placed in one lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

A soil subgrade modulus of 120 pci should be used to design floor slabs supported on near-surface soil or structural fill. Settlement of the slab supporting the anticipated design loads and constructed as recommended is not expected to exceed approximately 1 inch of total and differential settlement.

Flooring manufacturers often require vapor barriers to protect flooring and flooring adhesives. Many flooring manufacturers will warrant their product only if a vapor barrier is installed according to their recommendations. Selection and design of an appropriate vapor barrier, if needed, should be based on discussions among members of the design team. We can provide additional information to assist you with your decision.

8.0 PERMANENT RETAINING STRUCTURES

Permanent retaining structures free to rotate slightly around the base should be designed for active earth pressures using an equivalent fluid unit pressure of 35 pcf. If retaining walls are restrained against rotation during backfilling, they should be designed for an at-rest earth pressure of 55 pcf. This value is based on the assumption that (1) the retained soil is level, (2) the retained soil is drained, and (3) the wall is less than 15 feet in height. If retaining walls

with more than one level of bracing will be constructed, GeoDesign should be contacted to provide additional recommendations. If surcharges (i.e., retained slopes, foundations, vehicles, etc.) are located within a horizontal distance of twice the height of the wall from the back of the wall, additional pressures will need to be account for in the wall design. Our office should be contacted for the appropriate wall surcharges based on the actual magnitude and configuration of the applied loads. Seismic lateral forces can be calculated using a dynamic force equal to $7.5H^2$ pounds per linear foot of wall, where H is the wall height. The seismic force should be applied as a distributed load with the centroid located at 0.6H from the wall base.

Drains consisting of a perforated drainpipe wrapped in a geotextile filter should be installed behind retaining walls. The pipe should be embedded in a zone of coarse sand or gravel containing less than 2 percent by dry weight passing the U.S. Standard No. 200 sieve and should outlet to a suitable discharge.

9.0 SEISMIC DESIGN CRITERIA

Seismic design is prescribed by the 2014 SOSSC and 2012 IBC. Table 3 presents the site design parameters prescribed by the 2012 IBC for the site. The building code require that seismic design parameters associated with a percent probability of being exceeded in a 50-year period be used in design.

Due to the potential for liquefaction, the site is considered a Site Class F. When using the code-based seismic design parameters and provided the buildings have a fundamental period of less than 0.5 second, a Site Class E can be used when completing a site-specific analysis. Table 3 provides the IBC seismic design parameters for the site.

Table 3. Seismic Design Parameters

Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration, S	S_s = 0.983 g	S_1 = 0.421 g
Site Class	F	
Site Coefficient, F	F_a = 0.920	F_v = 2.400
MCE Spectral Acceleration Parameters, S_M	S_{MS} = 0.905 g	S_{M1} = 1.010 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.603 g	S_{D1} = 0.673 g

10.0 CONSTRUCTION CONSIDERATIONS

10.1 WET WEATHER CONSTRUCTION

Trafficability of soil at the ground surface may be difficult during extended wet periods or when the moisture content of the surface soil is more than a few percentage points above optimum. At the time of our explorations, the moisture contents were significantly higher than optimum. If

not carefully executed, the earthwork activities can create extensive soft areas, resulting in significant repair costs. When the subgrade is wet, site preparation may need to be accomplished using track-mounted equipment and loading material into trucks supported on granular haul roads.

Haul roads and working blankets will be required to support construction equipment when the subgrade is wet of optimum. Based on our experience, at least 12 inches of granular material is typically required for light staging areas and at least 18 inches of granular material for haul roads subject to repeated equipment traffic. We typically recommend that imported granular material for haul roads and working blankets consist of durable crushed rock that is well graded and has less than 8 percent by dry weight passing the U.S. Standard No. 200 sieve. Where silt is exposed at the ground surface, a geotextile should be placed on the subgrade before placing the granular material. The granular material should be placed in a single lift and the surface compacted until well keyed. Although we have presented typical recommendations for haul road and working blankets, the actual thickness and material should be determined by the contractor based on their sequencing of the project and the type and frequency of construction equipment.
The base rock thickness for pavement and structural slab areas is intended to support post-construction design loads and will not support construction traffic or pavement construction when the subgrade soil is wet. If construction is planned for periods when the subgrade soil is wet, an increased thickness of base rock will be required.

10.2 EROSION CONTROL

The on-site soil is moderately susceptible to erosion. Consequently, we recommend that slopes be covered with an appropriate erosion control product if construction occurs during periods of wet weather. We recommend that all permanent slope surfaces be planted as soon as practical to minimize erosion. Surface water runoff should be collected and directed away from slopes to prevent water from running down the slope face. Erosion control measures such as straw bales, sediment fences, and temporary detention and settling basins should be used in accordance with local and state ordinances.

11.0 OBSERVATION OF CONSTRUCTION

Satisfactory earthwork and foundation performance depends to a large degree on the quality of construction. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. In addition, sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications.

12.0 LIMITATIONS

We have prepared this preliminary report for use by City of Milwaukie and members of the design and construction teams for the proposed development. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions and are not applicable to other sites.

Soil explorations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary.

The site development plans and design details were not finalized at the time this report was prepared. When the design has been finalized and if there are changes in the site grades or location, configuration, design loads, or type of construction, the conclusions and recommendations presented may not be applicable. If design changes are made, we should be retained to review our conclusions and recommendations and to provide a written evaluation or modification.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences or procedures, except as specifically described in our report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

♦ ♦ ♦

We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

GeoDesign, Inc.

Joe Westergreen, P.E. (Washington)
Project Engineer

Brett A. Shipton, P.E., G.E.
Principal Engineer



REFERENCES

Beeson, M.H., Tolan, T.L., Madin, I.P., 1989, Geologic Map of the Lake Oswego Quadrangle, Clackamas, Multnomah and Washington Counties, Oregon. Oregon Department of Geology and Mineral Industries, Geological Map Series GMS-59, 1 map, scale 1:24,000.

Beeson, M.H., Tolan, T.L., and Madin, I.P., 1991, Geologic Map of the Portland Quadrangle, Multnomah and Washington Counties, Oregon, and Clark County, Washington. Oregon Department of Geology and Mineral Industries Geological Map GMS-75, scale 1:24,000.

Boulanger, R. W., and Idriss, I. M., 2014, "CPT and SPT based liquefaction triggering procedures." Report No. UCD/CGM-14/01, Center for Geotechnical Modeling, Department of Civil and Environmental Engineering, University of California, Davis, CA, 134 pp. Boulanger_Idriss_CPT_and_SPT_Liq_triggering_CGM-14-01_2014.

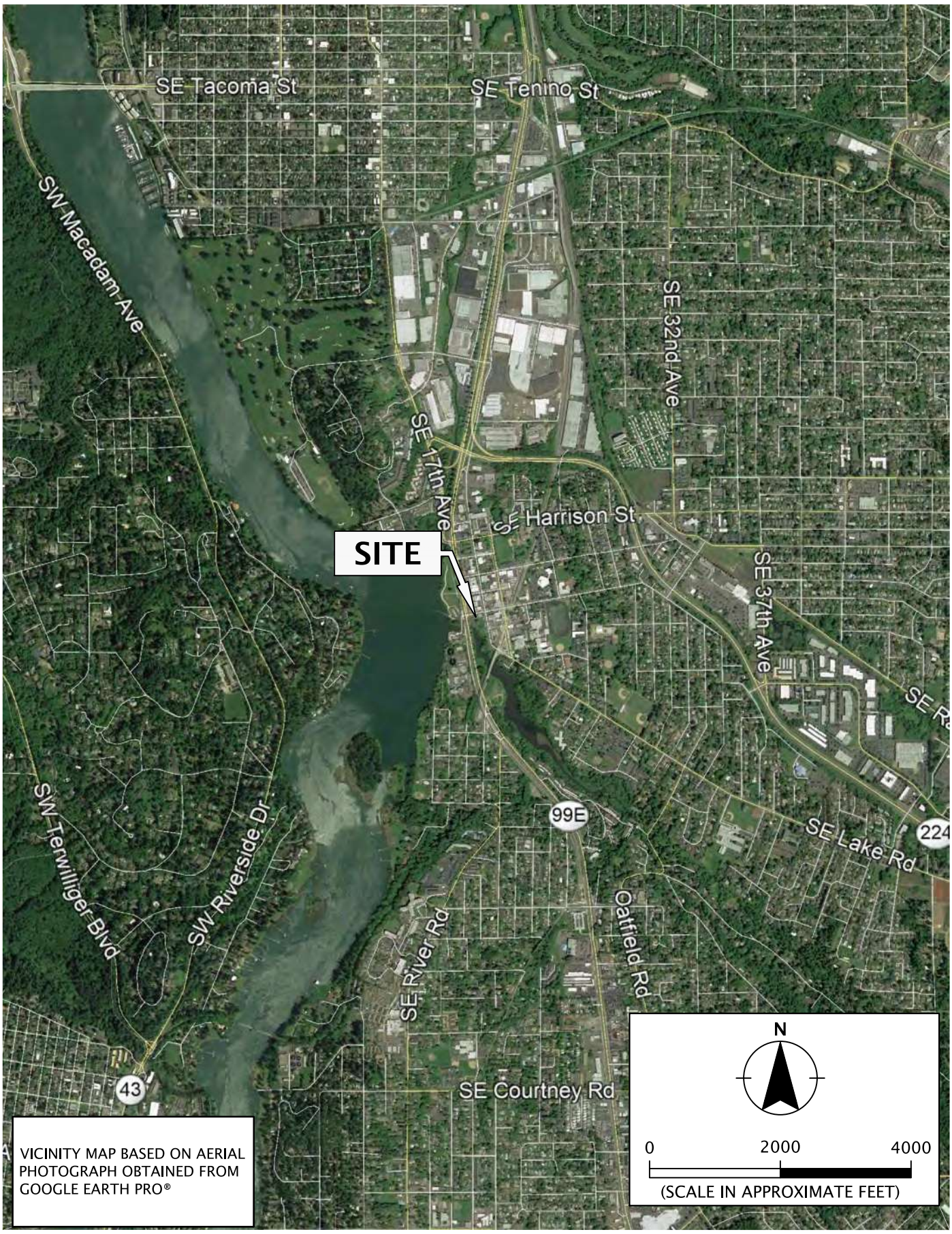
Cetin, K, Bilge; H. Tolga; Wu, Jiaer; Kammerer, Annie, M; and Raymond Seed, 2009. Probabilistic Model for the Assessment of Cyclically Induced Reconsolidation (Volumetric) Settlements. Journal of Geotechnical and GeoEnvironmental Engineering. March 2009.

Madin, Ian P., 1990, Earthquake-Hazard Geology Maps of the Portland Metropolitan Area, Oregon: Text and Map Explanation. Oregon Department of Geology and Mineral Industries, Open-File Report O-90-2, 21 p. text, 8 maps, scale 1:24,000.

Madin, I.P., 2004, Preliminary digital geologic compilation map of the Greater Portland Urban Area, Oregon: Portland, Oreg., Oregon Dept. of Geology and Mineral Industries Open-File Report O-04-02, scale 1:24,000.

Orr, E.L. and Orr, W.N., 1999, *Geology of Oregon*. Kendall/Hunt Publishing Co., Iowa: 254 p.

FIGURES



GeoDesign Inc 9450 SW Commerce Circle - Suite 300 Wilsonville OR 97070 503.968.8787 www.geodesigninc.com	MILWAUKIE-7-01	**VICINITY MAP**	
	SEPTEMBER 2018	COHO POINT AT KELLOGG CREEK MILWAUKIE, OR	**FIGURE 1**

Printed By: aday | Print Date: 8/30/2018 9:46:39 AM
File Name: J:\M-R\Milwaukie\Milwaukie-7\Milwaukie-7-01\Figures\CAD\Milwaukie-7-01-VM01.dwg | Layout: FIGURE 1

LEGEND:

B-1 BORING

(83) DEPTH TO WEATHERED BASALT (FEET BGS)

N

0 30 60

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH
OBTAINED FROM GOOGLE EARTH PRO®,
AUGUST 30, 2018

GEODESIGN INC 9450 SW Commerce Circle - Suite 300 Wilsonville OR 97070 503.968.8787 www.geodesignInc.com	SEPTEMBER 2018	COHO POINT AT KELLOGG CREEK MILWAUKIE, OR	FIGURE 2
	MILWAUKIE-7-01	SITE PLAN	

Printed By: mmiller | Print Date: 9/24/2018 7:56:41 AM
File Name: J:\M-R\Milwaukie\Milwaukie-7\Milwaukie-7-01\Figures\CAD\Milwaukie-7-01-SP01.dwg | Layout: Page 2

APPENDIX

APPENDIX

FIELD EXPLORATIONS

GENERAL

Subsurface conditions at the site were explored by drilling three borings (B-1 through B-3). The borings were drilled by Western States Soil Conservation of Hubbard, Oregon, on August 15, 2018 using a truck-mounted drill rig and mud rotary drilling methods. The exploration logs are presented in this appendix.

Elevations shown on the logs were determined based on an existing conditions survey dated January 27, 2016 prepared by Statewide Land Survey, Inc.

SOIL SAMPLING

A member of our geotechnical staff observed the explorations. We collected representative samples of the various soils encountered in the explorations for geotechnical laboratory testing. Soil samples were collected by conducting SPTs in general conformance with ASTM D1586. The sampler was driven with a 140-pound hammer free-falling 30 inches. The number of blows required to drive the sampler 1 foot, or as otherwise indicated, into the soil is shown adjacent to the sample symbols on the exploration logs. Disturbed soil samples were collected from the split barrel for subsequent classification and index testing. Higher quality, relatively undisturbed samples were collected using a standard Shelby tube in general accordance with ASTM D1587, the Standard Practice for Thin-walled Tube Sampling of Soils. Sampling methods and intervals are shown on the exploration logs.

The average efficiency of the automatic SPT hammer used by Western States Soil Conservation was 75.1 percent. The calibration testing results are presented at the end of this appendix.

SOIL CLASSIFICATION

The soil samples were classified in the field in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soil characteristics change, although the change actually could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

We visually examined soil samples collected from the explorations to confirm field classifications. We also performed to following laboratory testing to evaluate the engineering properties of the soil.

MOISTURE CONTENT

We tested the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

ATTERBERG LIMITS

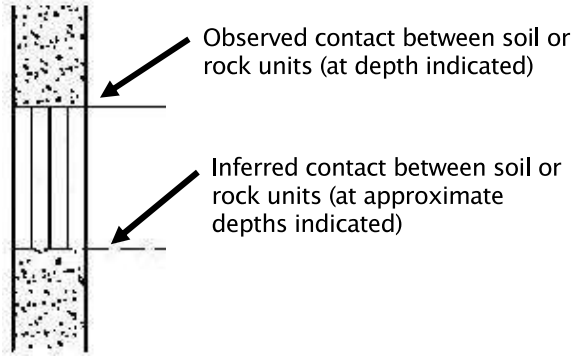
The plastic limit and liquid limit (Atterberg limits) of select soil samples were determined in accordance with ASTM D4318. The Atterberg limits and the plasticity index were completed to aid in the classification of the soil. The test results are presented in this appendix.

PARTICLE-SIZE TESTING

Particle-size testing was performed on select soil samples to determine the distribution of soil particle sizes. The testing consisted of percent fines determination (percent passing the U.S. Standard No. 200 sieve) analyses completed in general accordance with ASTM D1140. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample obtained in general accordance with ASTM D 1586 Standard Penetration Test with recovery
	Location of sample obtained using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D 1587 with recovery
	Location of sample obtained using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample obtained using Dames & Moore and 140-pound hammer or pushed with recovery
	Location of sample obtained using 3-inch-O.D. California split-spoon sampler and 140-pound hammer
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Nonplastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 - 11	0 - 4
Loose	4 – 10	11 - 26	4 - 10
Medium Dense	10 – 30	26 - 74	10 - 30
Dense	30 – 50	74 - 120	30 - 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 - 4	3 – 6	2 - 5	0.25 - 0.50
Medium Stiff	4 - 8	6 – 12	5 - 9	0.50 - 1.0
Stiff	8 - 15	12 – 25	9 - 19	1.0 - 2.0
Very Stiff	15 - 30	25 – 65	19 – 31	2.0 - 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

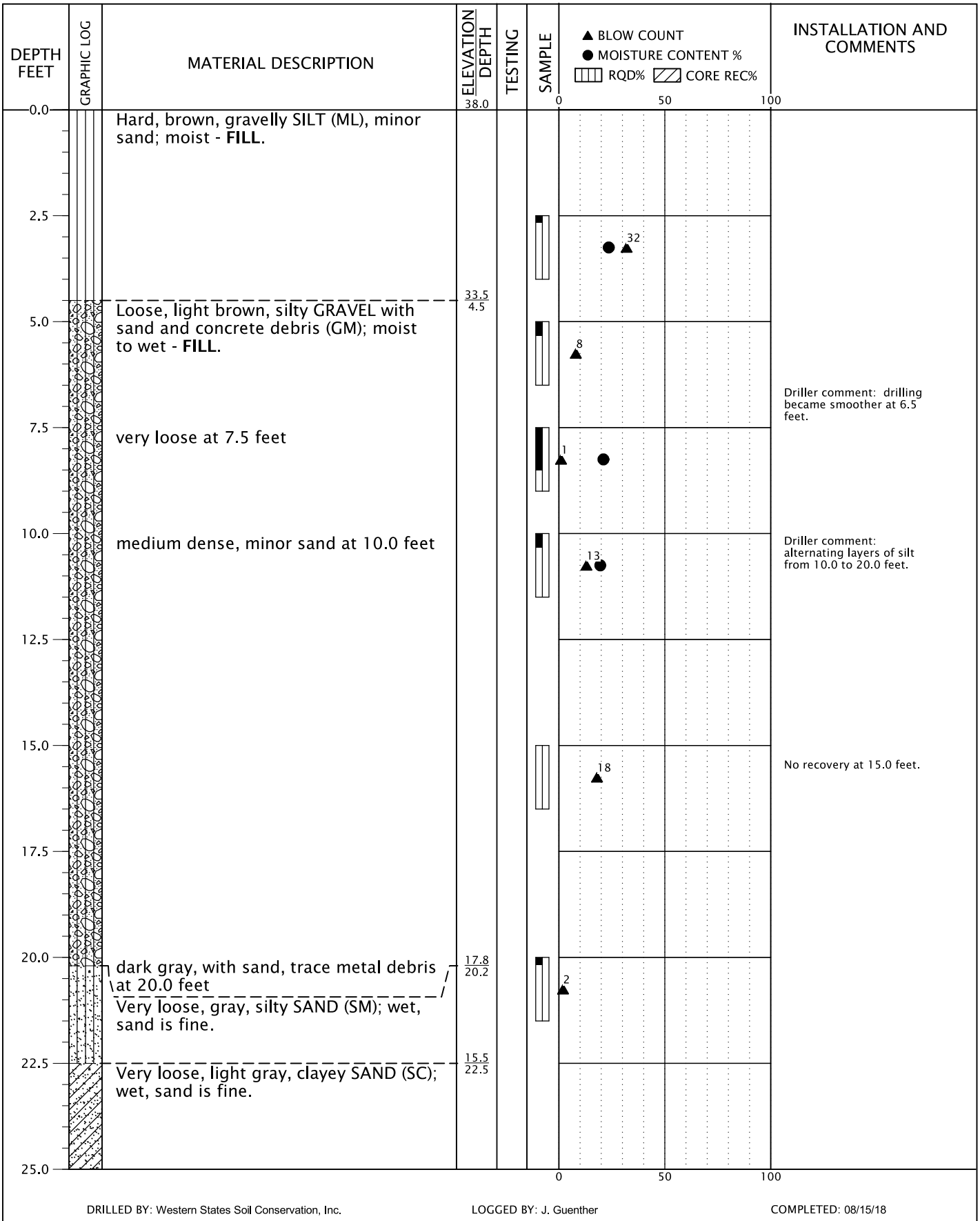
Secondary granular components or other materials such as organics, man-made debris, etc.

Percent	Silt and Clay In: Fine-Grained Soil	Silt and Clay In: Coarse-Grained Soil	Percent	Sand and Gravel In: Fine-Grained Soil	Sand and Gravel In: Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

SOIL CLASSIFICATION SYSTEM

TABLE A-2



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: J. Guenther

COMPLETED: 08/15/18

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 4 inches

BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

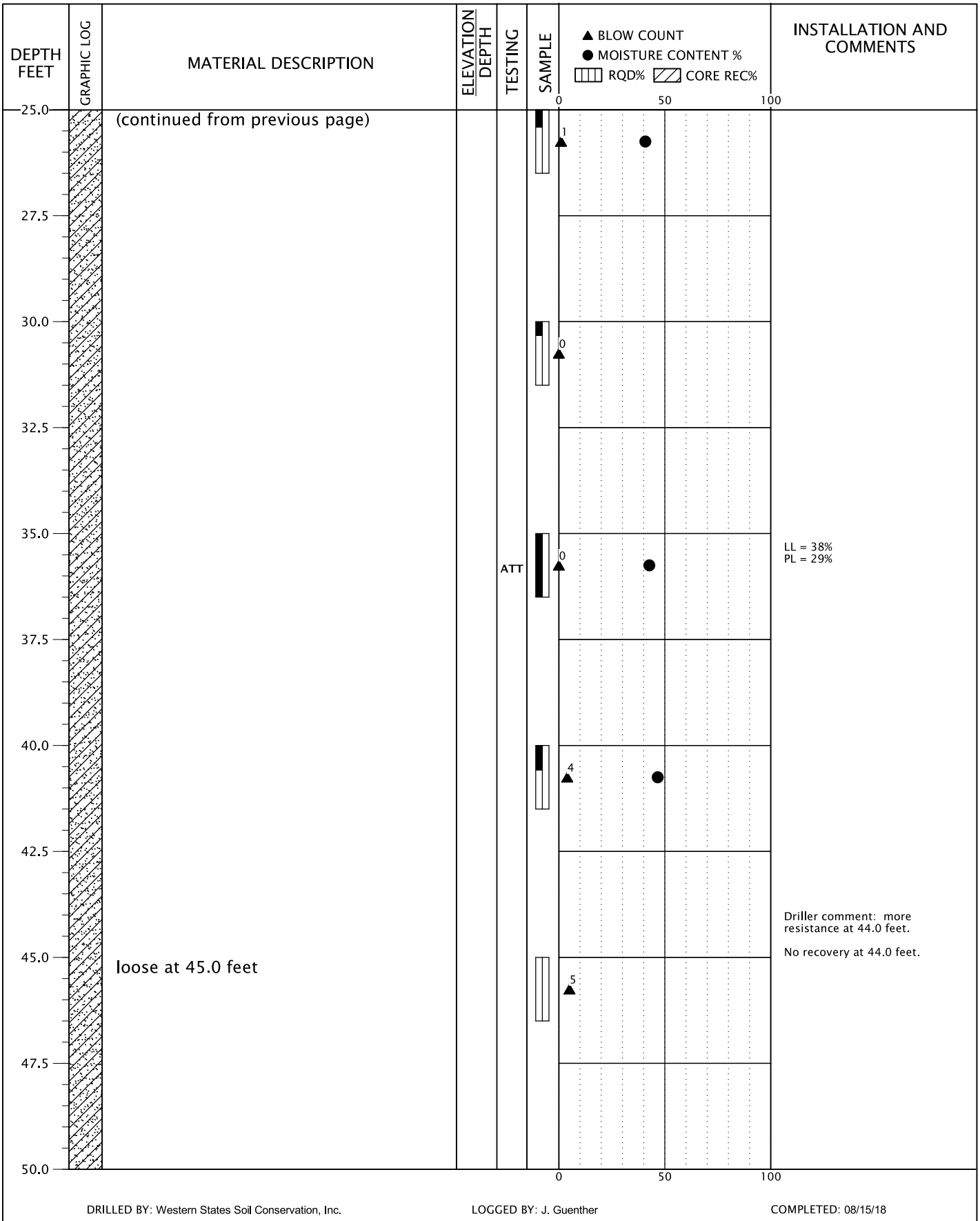
MILWAUKIE-7-01

BORING B-1

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-1



BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

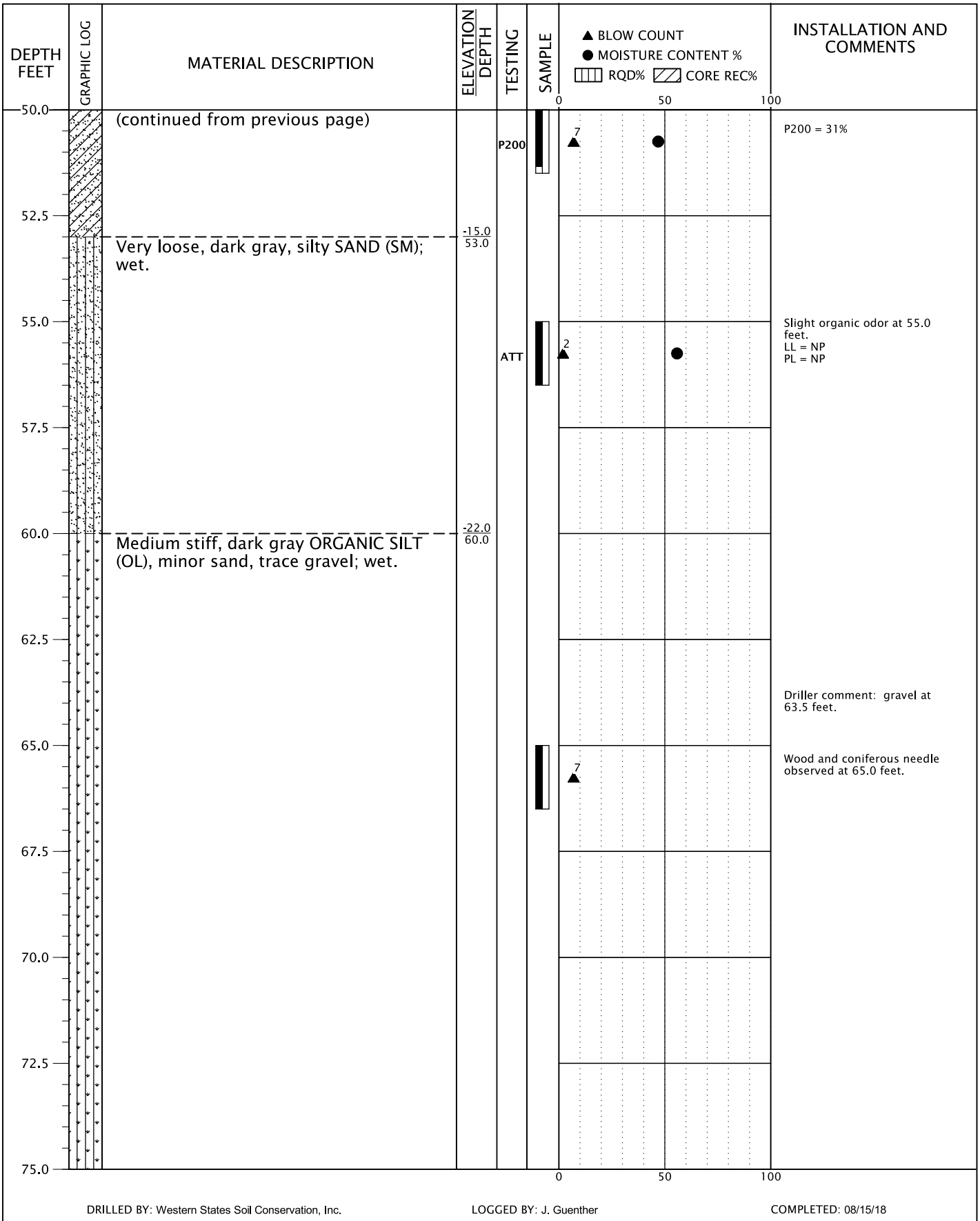
MILWAUKIE-7-01

BORING B-1
(continued)

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-1



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: J. Guenther COMPLETED: 08/15/18

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 inches

BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

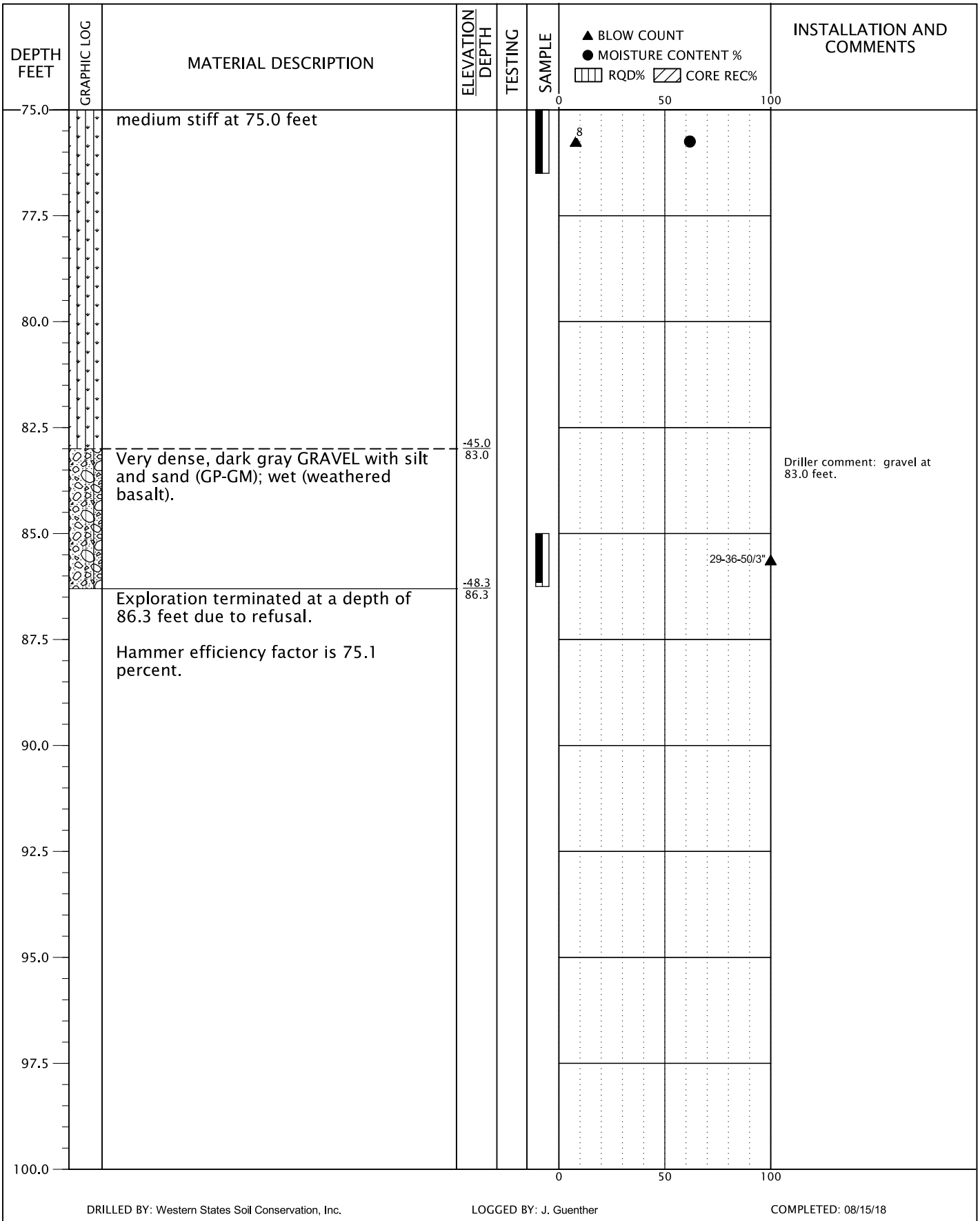
MILWAUKIE-7-01

BORING B-1
(continued)

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-1



BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

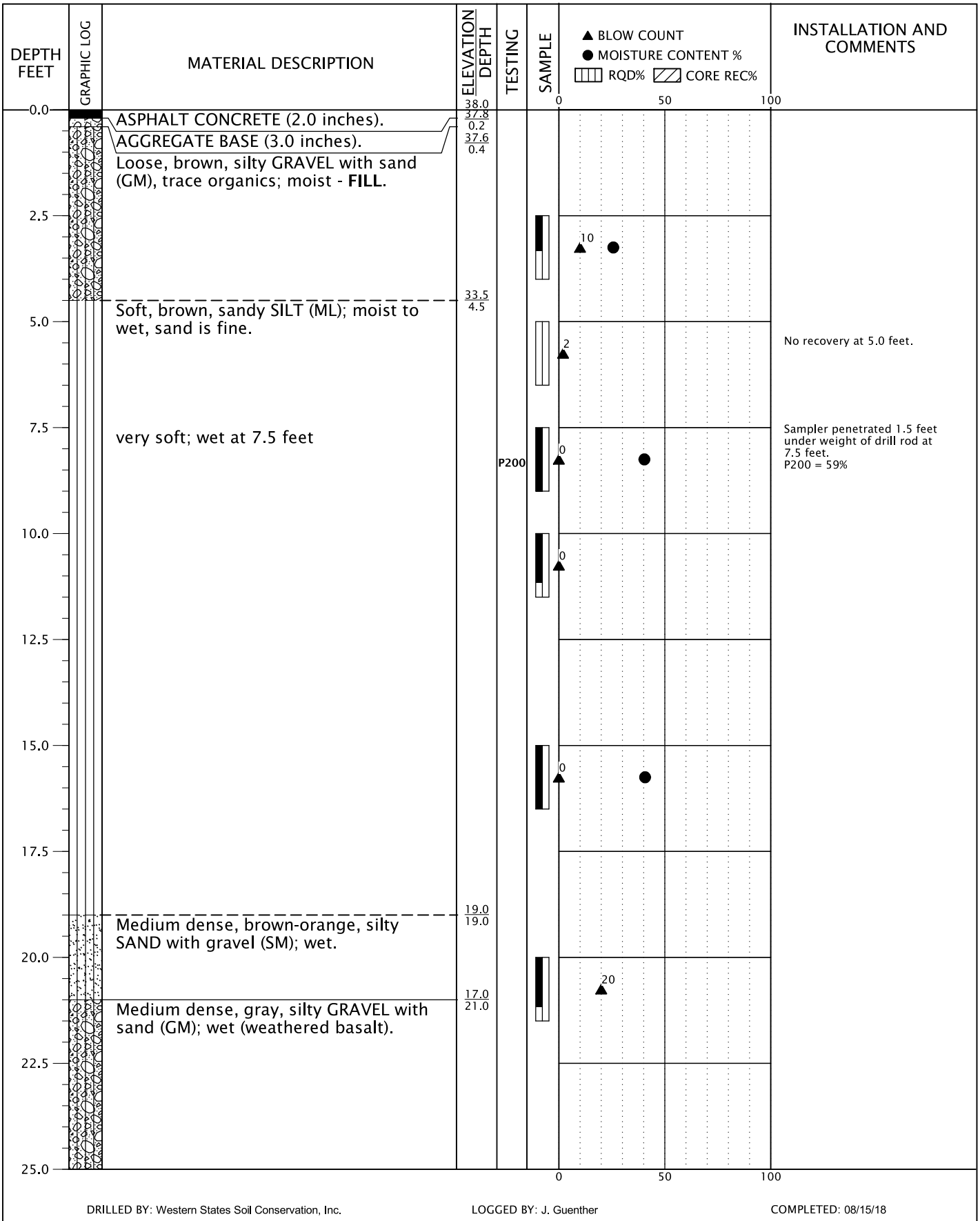
MILWAUKIE-7-01

BORING B-1
(continued)

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-1



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: J. Guenther

COMPLETED: 08/15/18

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 4 inches

BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

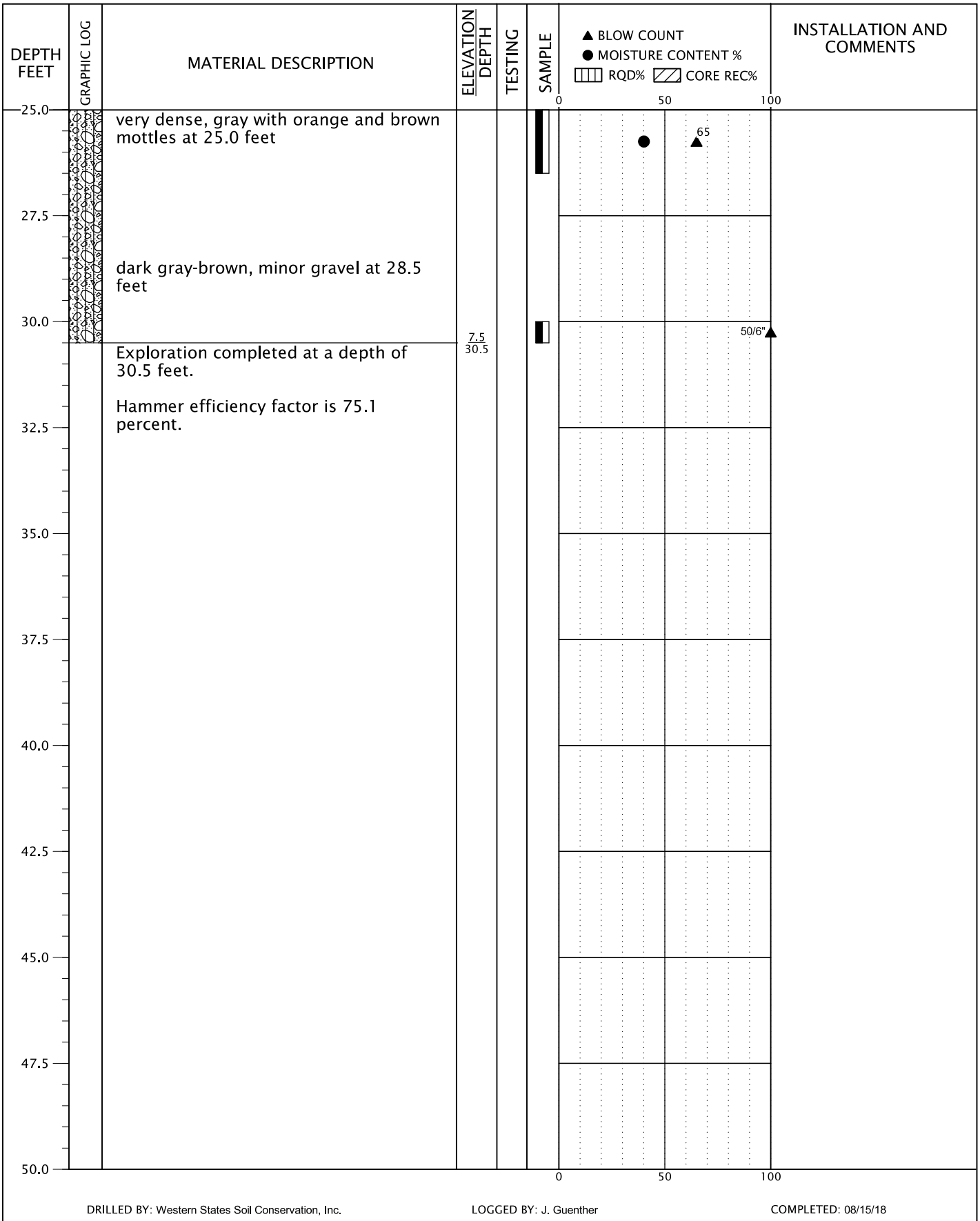
MILWAUKIE-7-01

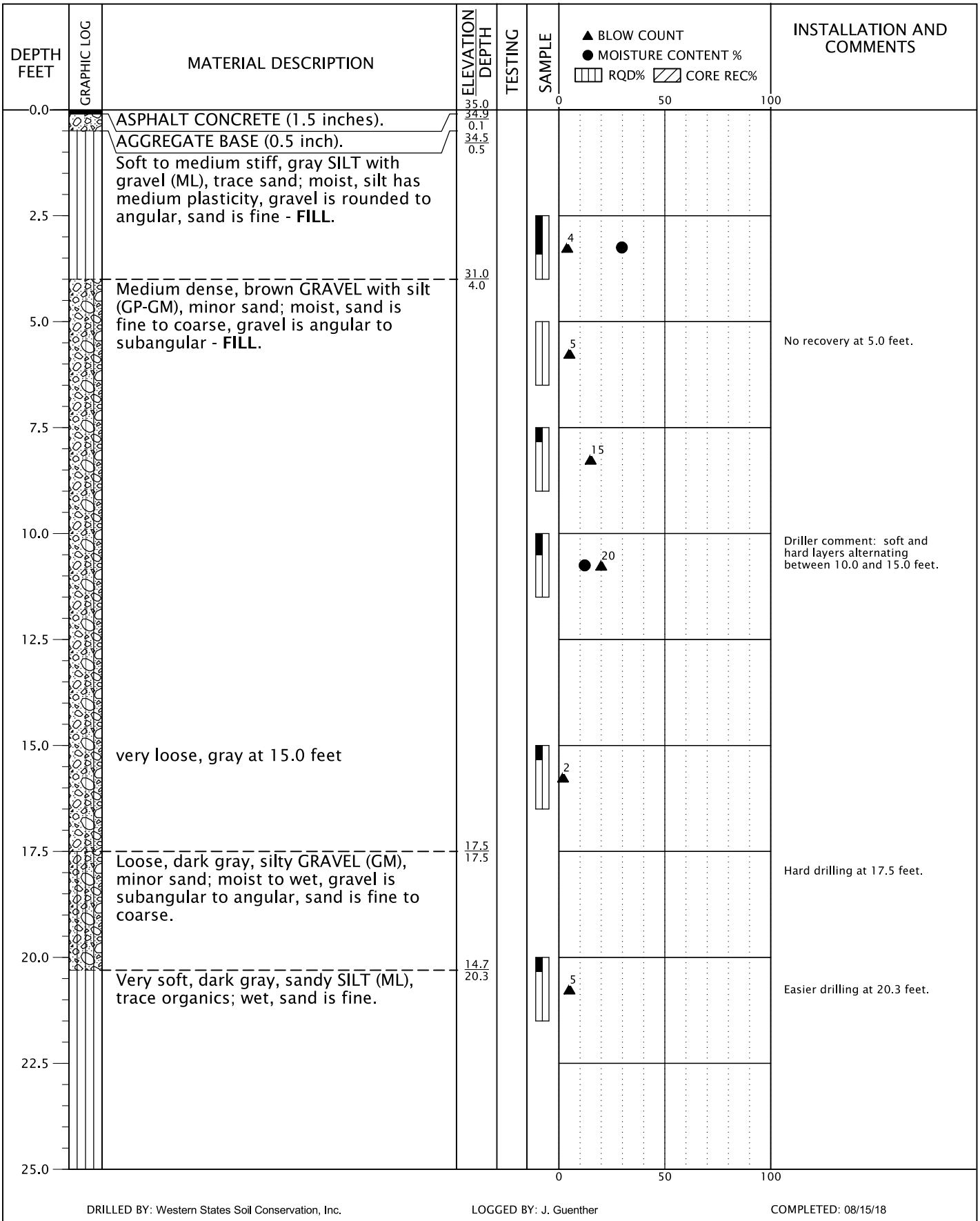
BORING B-2

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-2


DEPTH FEET
GRAPHIC LOG
MATERIAL DESCRIPTION
ELEVATION DEPTH
TESTING
SAMPLE
▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
INSTALLATION AND COMMENTS
0
50
100
25.0
very dense, gray with orange and brown mottles at 25.0 feet
65
27.5
dark gray-brown, minor gravel at 28.5 feet
30.0
50/6"
7.5
30.5
Exploration completed at a depth of 30.5 feet.
Hammer efficiency factor is 75.1 percent.
32.5
35.0
37.5
40.0
42.5
45.0
47.5
50.0
DRILLED BY: Western States Soil Conservation, Inc.
LOGGED BY: J. Guenther
COMPLETED: 08/15/18
BORING METHOD: mud rotary (see document text)
BORING BIT DIAMETER: 4 inches
GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com
MILWAUKIE-7-01
BORING B-2
(continued)
SEPTEMBER 2018
COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR
FIGURE A-2
BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: J. Guenther

COMPLETED: 08/15/18

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 4 inches

BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

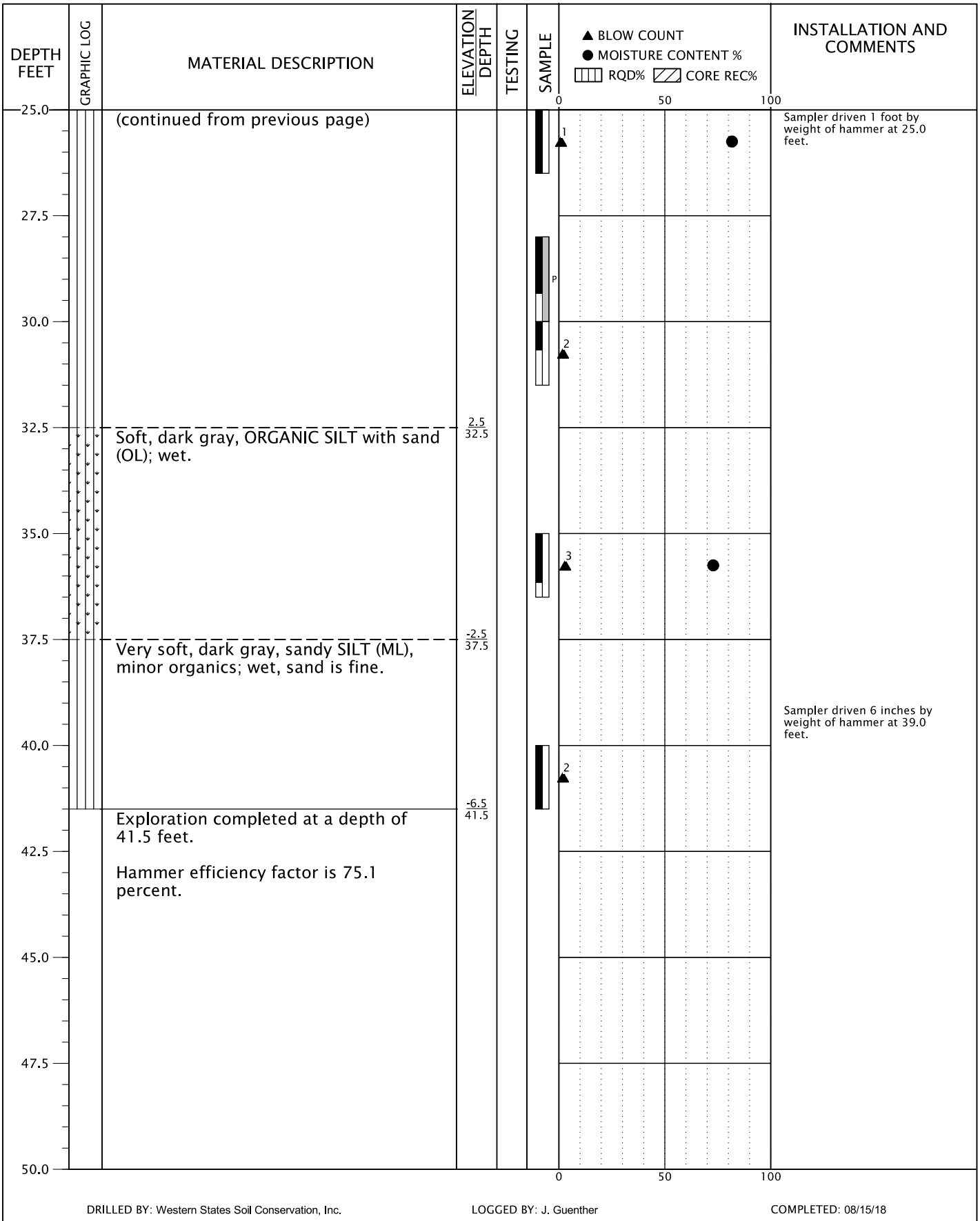
MILWAUKIE-7-01

BORING B-3

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-3



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: J. Guenther

COMPLETED: 08/15/18

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 4 inches

BORING LOG MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/22/18:KM:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

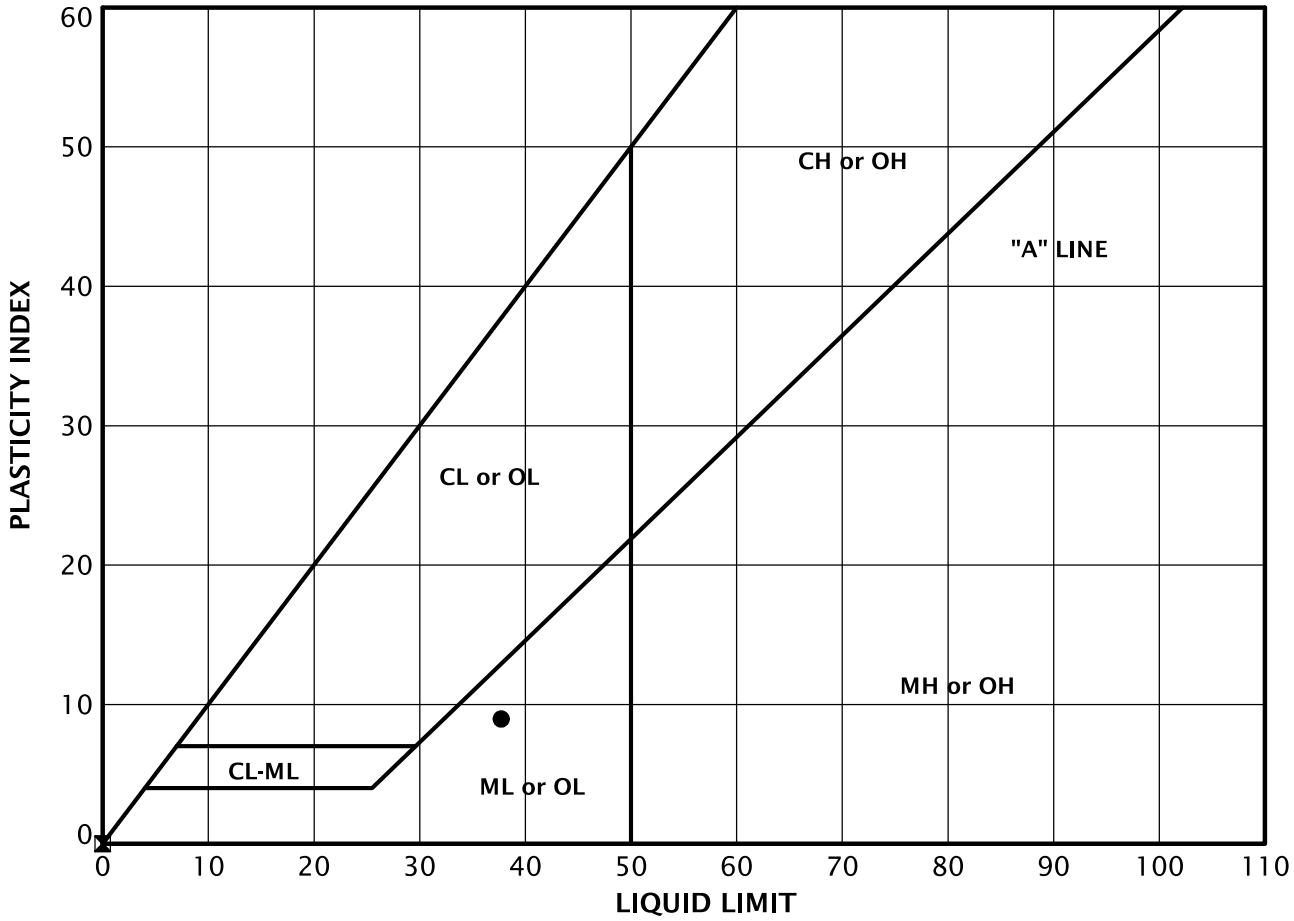
MILWAUKIE-7-01

BORING B-3
(continued)

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-3



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-1	35.0	43	38	29	9
⊠	B-1	55.0	56	NP	NP	NP

ATTERBERG_LIMITS 7 MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/10/18:KM

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

MILWAUKIE-7-01

ATTERBERG LIMITS TEST RESULTS

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

FIGURE A-4

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5		24							
B-1	7.5		21							
B-1	10.0		20							
B-1	25.0		41							
B-1	35.0		43					38	29	9
B-1	40.0		47							
B-1	50.0		47				31			
B-1	55.0		56					NP	NP	NP
B-1	75.0		62							
B-2	2.5		26							
B-2	7.5		40				59			
B-2	15.0		41							
B-2	25.0		40							
B-3	2.5		30							
B-3	10.0		12							
B-3	25.0		82							
B-3	35.0		73							

LAB SUMMARY MILWAUKIE-7-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 9/10/18:KM

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

MILWAUKIE-7-01

SUMMARY OF LABORATORY DATA

SEPTEMBER 2018

COHO POINT AT KELLOGG CREEK
MILWAUKIE, OR

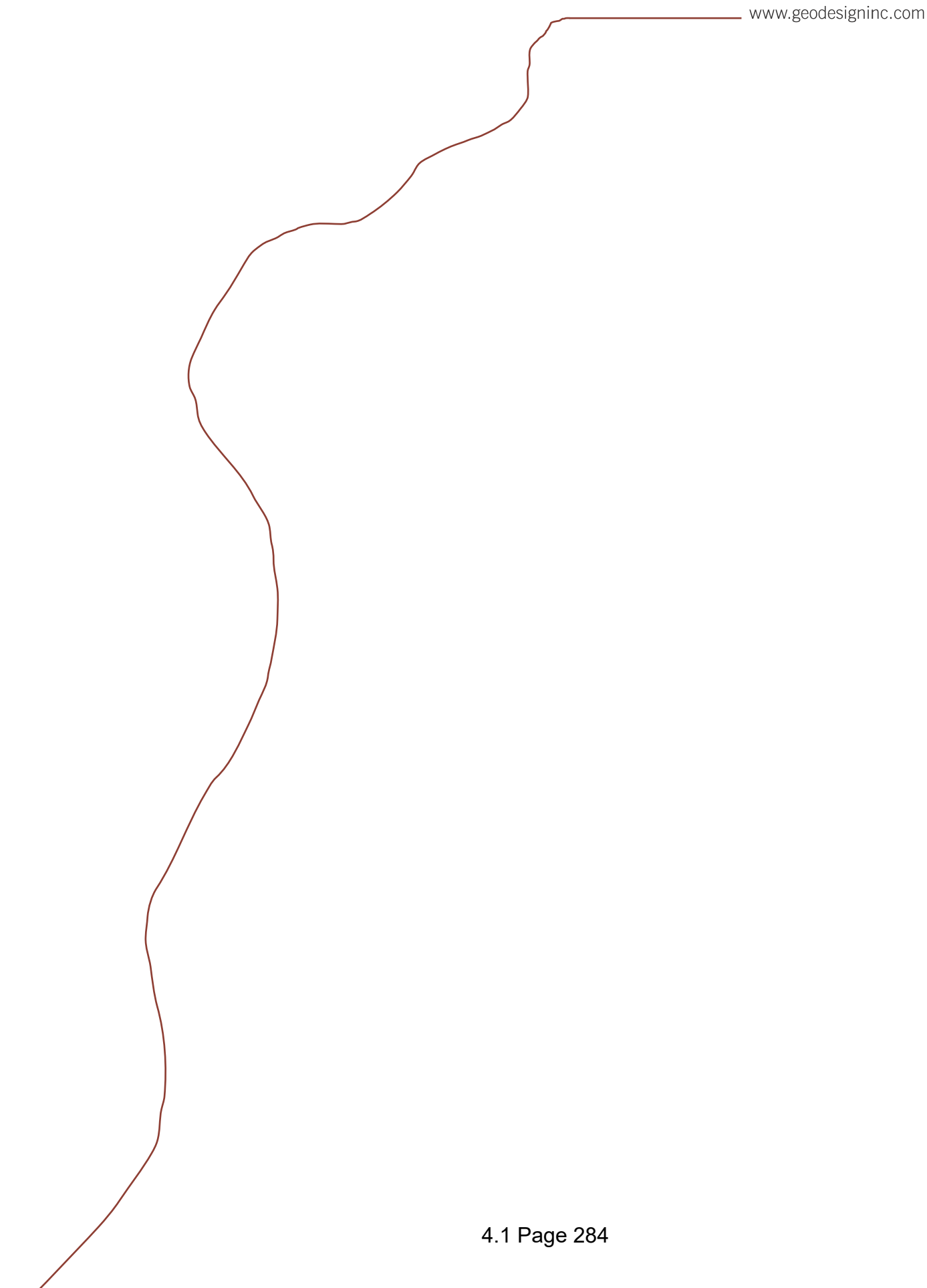
FIGURE A-5

Summary of SPT Test Results

Project: WSSC-8-02, Test Date: 12/29/2017

EMX: Maximum Energy — ETR: Energy Transfer Ratio - Rated

Instr. Length ft	Start Depth ft	Final Depth ft	N Value	N60 Value	Average EMX ft-lb	Average ETR %
15.00	0.00	0.00	**0**	**0**	263	75.1
				Overall Average Values:	263	75.1
				Standard Deviation:	9	2.7
				Overall Maximum Value:	281	80.2
				Overall Minimum Value:	224	63.9



DOWL

MEMORANDUM

TO: City of Milwaukie

FROM: Brian Meunier, PE, CFM

DATE: 08/12/2021

SUBJECT: Coho Point – Floodplain Analysis

This memo outlines the proposed earthwork within the floodplain on the Coho Point development in the City of Milwaukie, Oregon (City). The site is located on the north side of Kellogg Creek, approximately 300 feet upstream from Kellogg Creek's confluence with Willamette River at river mile 18.5.

The existing property is partially within the 100-yr floodplain as identified by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 41005C0009D (Effective 6/17/2008). The City noted in the Pre-Application Filing that the observed river stage of the 1996 flood (38.0 feet) should be used for analysis purposes rather than the FEMA 100-year Base Flood Elevation (36.3 feet) listed in the FIRM. The observed river stage from the 1996 flood has been used for the purpose of analyzing cut and fill within the floodplain for conservatism. References to 'floodplain' in the following paragraphs and attached documentation refer to the area below elevation 38.0 feet, unless specifically noted otherwise. All noted elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).

The Coho Point development proposes to fill the on-site areas within the floodplain to allow for construction of the building. The site is impractical to develop without filling these areas, as the floodplain extends across the majority of the site and would encroach on the proposed building footprint. The proposed site plan partially fills the site and compensates for the lost floodplain volume by excavating in available space within the right-of-way (ROW) approximately 200 feet upstream of the project site. The total floodplain fill volume for the project is 3,442 cubic yards (cy). The proposed compensatory excavation will provide 3,576 cy of storage. Cross sections of the cut and fill areas are provided in the attached exhibits. The cut area will be planted with mitigation vegetation per City standards.

Compensatory storage is proposed to be provided by constructing a gabion wall, which would also allow for the construction of the Coho Point mixed-use building, as shown on Figure 1 through Figure 3. The proposed building, plaza, walkway, and park areas will be a minimum of approximately 7 feet above the floodplain elevation. The cut area along Kellogg Creek will be graded at a 2% slope starting slightly above the Ordinary High Water mark up to the gabion wall. Figure 2 and Figure 3 provide cross-sections that show the relationship between the existing channel grades and the FEMA 10-, 50-, and 100-year elevations, as well as the 1996 flooding elevation. The proposed floodplain cut is anticipated to be activated during events slightly more severe than the 2-year event, which is loosely equated to the OHW mark. This configuration is closer to a more natural condition than the current floodplain, with the floodplain being more accessible to flood flows and providing storage during more frequent events. The proposed grading will also protect against potential fish entrapment in the floodplain area as flooding recedes. The slope will cause the water depths to be shallower at the edge so that as the water recedes, the fish are naturally 'nudged' closer to the channel, decreasing the risk of entrapment.

The Effective Flood Insurance Study (FIS) was used to evaluate the potential impacts of relocating a portion of the floodplain volume upstream. The FIS flood profiles (39P and 40P) show that Kellogg Creek is backwatered by Willamette River from the mouth of Kellogg Creek to a point approximately 5,600 feet upstream; this reach of Kellogg Creek contains both the cut and fill sites. No increase in the FEMA 100-year flood or 1996 flood-equivalent flooding elevations is expected to result from the cut and fill as the areas are both within the Willamette backwater and in areas that would be modeled as ineffective flow areas

in a traditional one-dimensional, steady-state flow model. No fill is proposed to take place within the regulatory floodway.

The proposed floodplain 'shelf' has the potential to temporarily or permanently accumulate sediment. It is not possible to completely prevent sediment accumulation in the project area as a result of being within the Willamette backwater. Suspended sediments are expected to settle out of the water column above the floodplain shelf when the Willamette stage is elevated above the shelf. The rising and falling limb of the Willamette hydrograph is long/slow and will not allow for an appreciable flow velocity over the floodplain shelf that would prevent sediment accumulation. The existing floodplain is subject to this same issue; however, the fact that it is activated in much less frequent events and at a higher elevation suggests that the risk of sediment accumulation is lower. A conservative estimate of the amount of sediment accumulation within the proposed cut area is 6 – 12 inches, which is representative of what might be observed along a stream with a heavy sediment load. This equates to between 120 and 240 cy of accumulation , assuming an even thickness of sediment accumulation. Should the accumulation reach these conservative levels, the net amount of floodplain storage provided is negligibly different from the existing floodplain volume.

In summary, this analysis confirms no adverse effects or impacts to surrounding properties are expected to result from the proposed project. The proposed floodplain cut/fill is expected to provide an overall net benefit to the system, while allowing for the development of the project site.

I, Brian Meunier, am a duly certified Professional Engineer and Certified Floodplain Manager with more than 10-years of experience working in and around rivers and streams of various sizes, hydrologic settings, and physiographic regions. My educational background and professional experience have focused on hydrology, hydraulics, geomorphology, and stream restoration, all of which are entirely relevant to the proposed project and the subject matter of this memorandum.

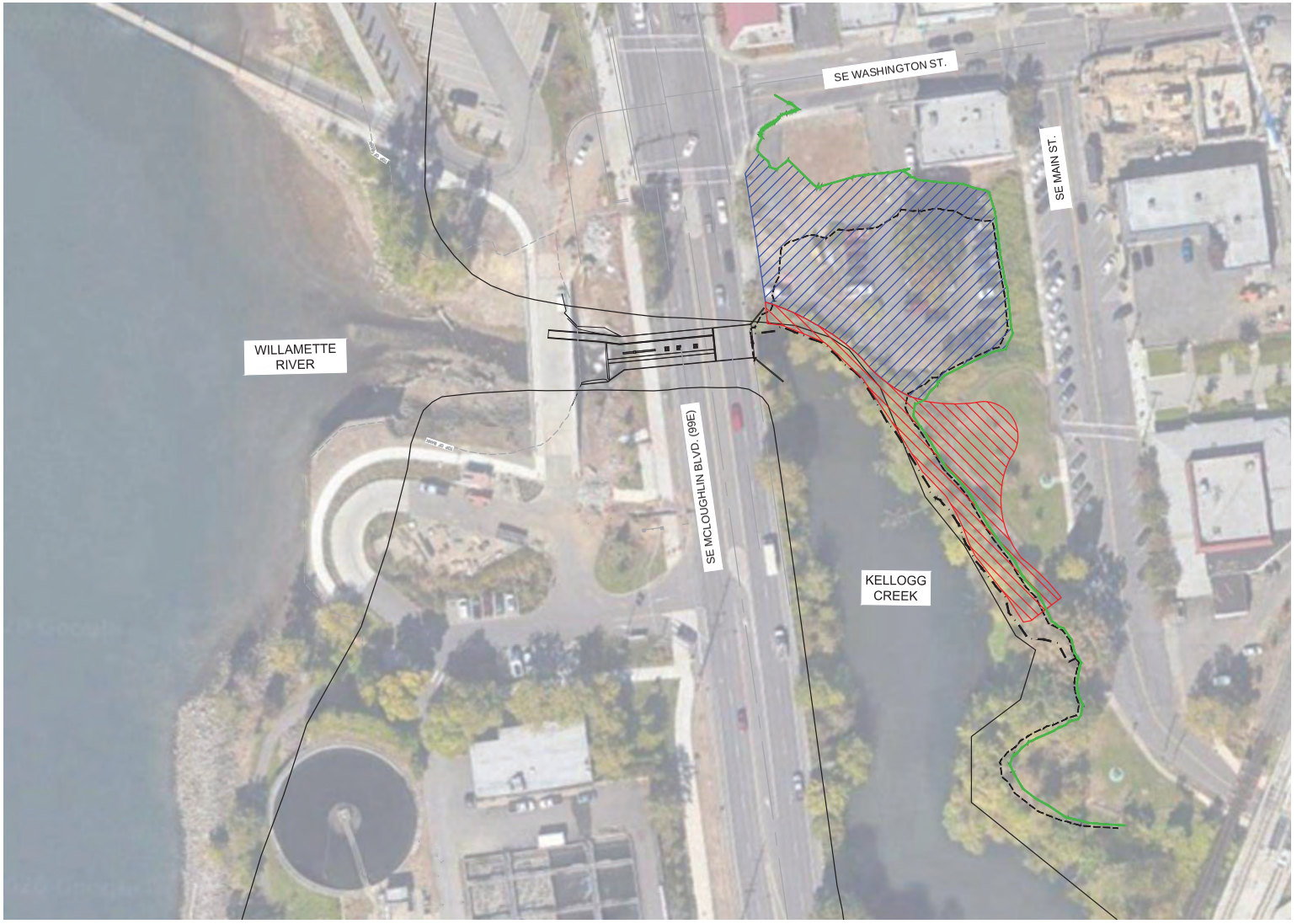
Please feel free to contact me with any questions.



Brian Meunier, PE, CFM

Attachments:

- Coho Point Exhibits
  - Figure 1: Existing Conditions
  - Figure 2: Proposed Conditions
  - Figure 3 – 5: Cut and Fill Area Cross Sections
- Clackamas County Flood Insurance Study Maps
  - Kellogg Creek (Maps 39P and 40P)
  - Willamette River (Map 163P)
- Clackamas County Flood Insurance Rate Maps
  - Panel 0009D
  - Panel 0017D



LEGEND

- PROPOSED FLOODPLAIN FILL: 3,442 CY
- PROPOSED FLOODPLAIN CUT: 3,576 CY
- 1996 FLOODPLAIN; ELEVATION: 38.0 FEET (SURVEYED BY AKS IN 2018)
- 100 YEAR FLOODPLAIN; ELEVATION: 36.3 FEET (SURVEYED BY AKS IN 2018)
- ORDINARY HIGH WATER LINE (SURVEYED BY AKS IN 2018)
- FEMA FLOODWAY BOUNDARY

N

80 0 80

SCALE IN FEET

DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8641

COHO POINT
EXISTING CONDITIONS
MILWAUKIE, OREGON

PROJECT	14464
DATE	08/12/2021

FIGURE 1

\\BI-FSBIL-P\Projects\22\14464-01\40\Study\drain\floodplain memo\exhibits\Coho_hydraulics memo>ex conditions.dwg PLOT DATE 2021-8-13 10:14 SAVED DATE 2021-8-13 10:05:55 USER nallette



LEGEND

- PROPOSED FLOODPLAIN FILL: 3,442 CY
- PROPOSED FLOODPLAIN CUT: 3,576 CY
- PROPOSED GABION WALL
- POST PROJECT FLOODPLAIN; ELEVATION: 38.0 FEET
- ORDINARY HIGH WATER LINE (SURVEYED BY AKS IN 2018)
- FEMA FLOODWAY BOUNDARY

N

80 0 80

SCALE IN FEET

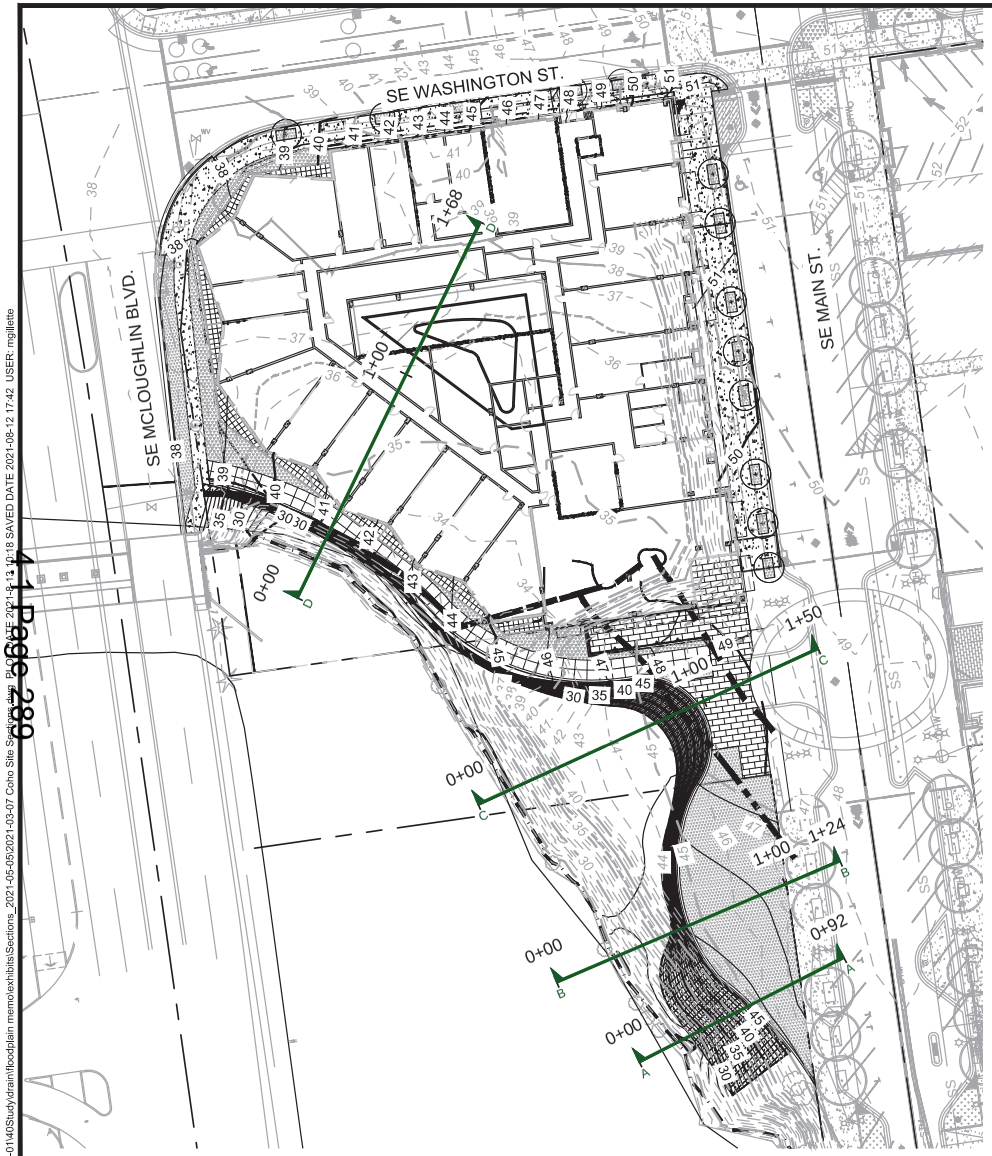
DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8641

COHO POINT
PROPOSED CONDITIONS
MILWAUKIE, OREGON

PROJECT	14464
DATE	08/12/2021

FIGURE 2

\\BL-FSIBIL-P\Projects\22\14464-01\40\Study\drain\floodplain memo\exhibits\Coho_hydraulics memo~proposed conditions.dwg PLOT DATE 2021-08-12 13:05 SAVED DATE 2021-08-12 13:05 USER mgillette



LEGEND

- EXISTING MAJOR CONTOUR (180)
- EXISTING MINOR CONTOUR (181)
- PROPOSED MAJOR CONTOUR (181)
- PROPOSED MINOR CONTOUR (180)
- EXISTING RIGHT-OF-WAY LINE
- VEGETATED CORRIDOR
- FIELD VERIFIED HCA LINE
- ORDINARY HIGH WATER LINE (24.0')
- CITY MAPPED HCA LINE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED PERVIOUS PLAZA
- PROPOSED PERVIOUS (GRATE) WALKWAY
- EXISTING FEMA 100-YR FLOODPLAIN (36.3')
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')
- FEMA FLOODWAY BOUNDARY

N

50 0 50

SCALE IN FEET

DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8641

COHO POINT
SITE SECTIONS
CITY OF MILWAUKIE, OREGON

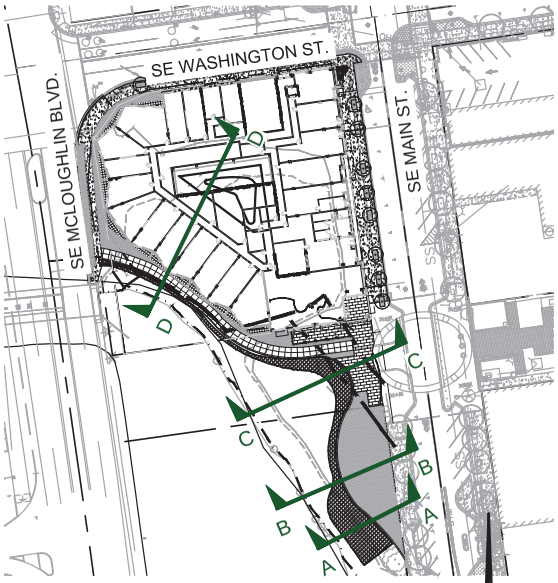
PROJECT	14464-01
DATE	08/12/2021

FIGURE 3

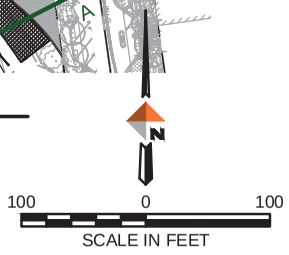
\\bl-fs\bl-projects\22\14464-01\40\Study\drain\floodplain memo\exhibits\Sections_2021-05-05\2021-03-07 Coho Site Sections.dwg PLOTTED: 2021-8-13 10:18 SAVED DATE 2021-08-12 17:42 USER: mgillette

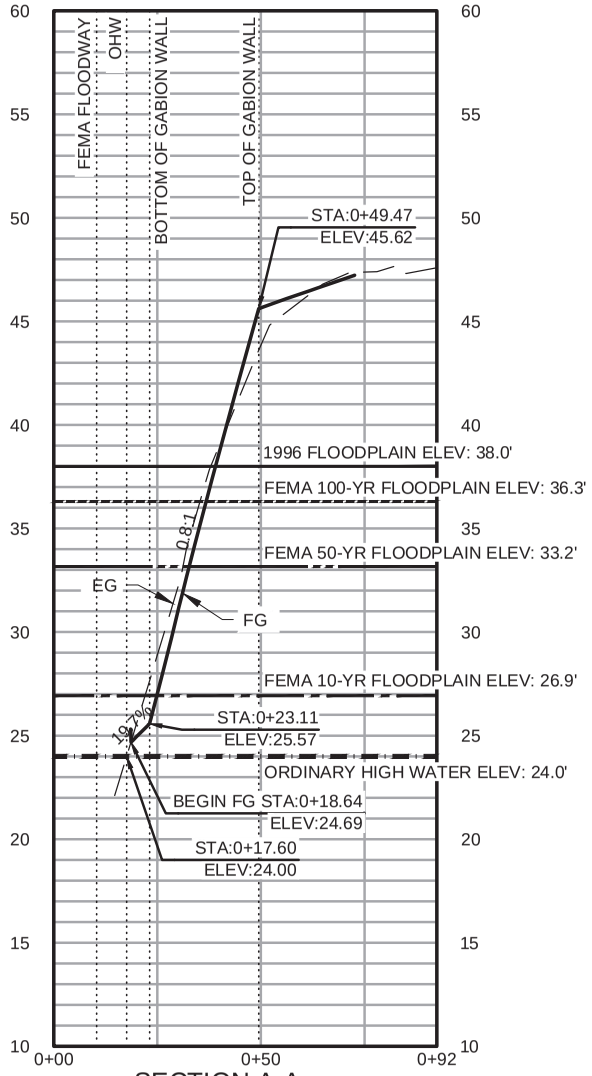
LEGEND

- PROPOSED FINISHED GRADE
- EXISTING GRADE
- ORDINARY HIGH WATER LINE (24.0')
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')
- EXISTING FEMA 100-YR FLOODPLAIN (36.3')
- EXISTING FEMA 50-YR FLOODPLAIN (33.2')
- EXISTING FEMA 10-YR FLOODPLAIN (26.9')

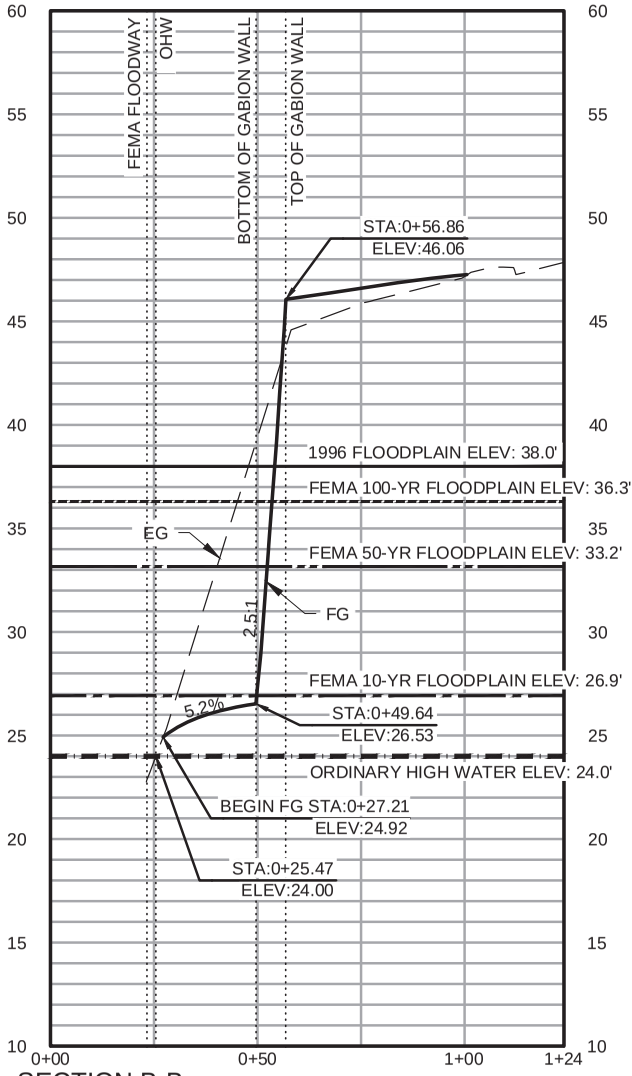


SITE MAP
SCALE: 1" = 100'





SECTION A-A
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 6'



SECTION B-B
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 6'

DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8641

COHO POINT
SITE SECTIONS - PROFILES A-A & B-B
CITY OF MILWAUKIE, OREGON

PROJECT	14464-01
DATE	08/12/2021

FIGURE 4

4.1 Page 200
\\bl-fs\bl-projects\22\14464-01\40\Study\drain\floodplain memo\exhibits\Sections_2021-05-05\2021-03-17 Coho Site Sections.dwg PLOTTED: 2021-08-13 10:18 SAVED DATE 2021-08-12 17:42 USER: mgillette

4.1 Page 201

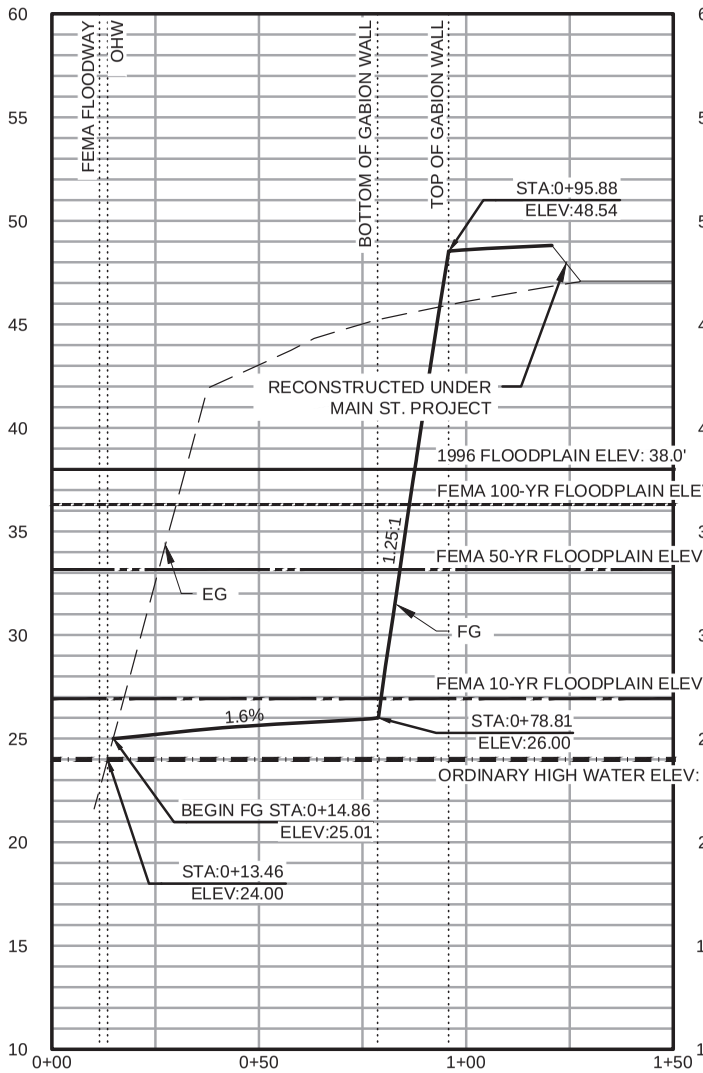
\\bl-fs\bl-projects\22\14464-01\40\Study\drain\floodplain memo\exhibits\Sections_2021-05-05\2021-03-17 Coho Site Sections.dwg PLOTTED: 2021-08-12 10:19 SAVED DATE 2021-08-12 17:42 USER: mgillette

LEGEND

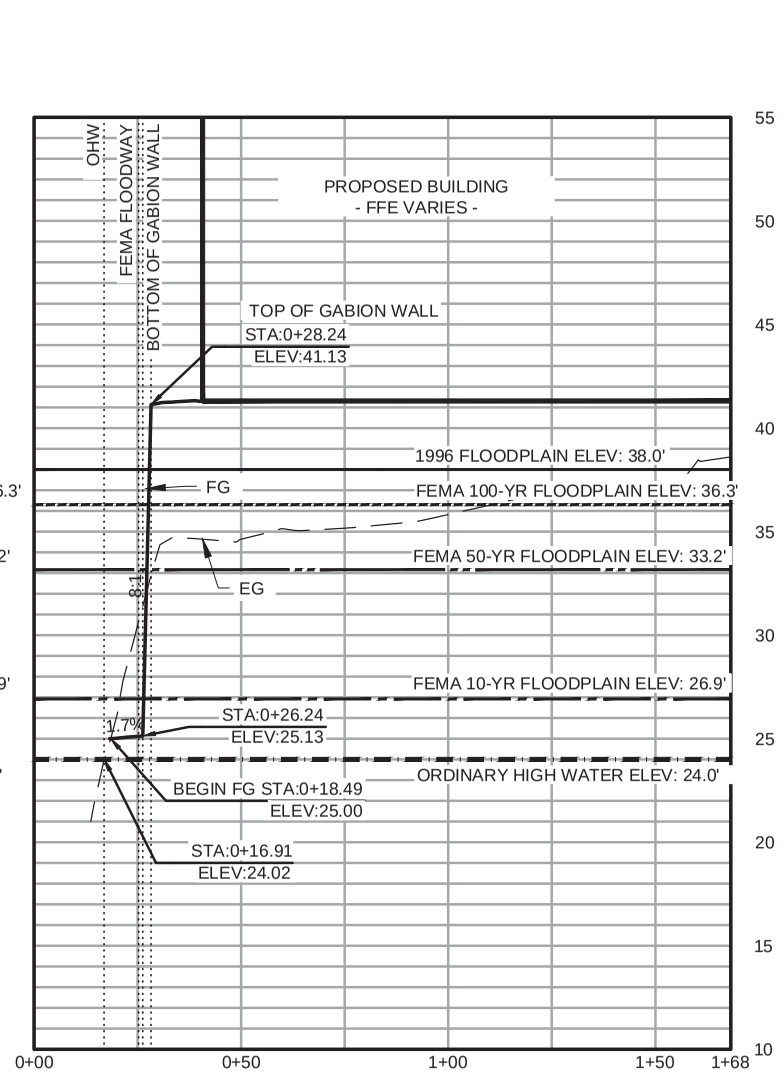
- PROPOSED FINISHED GRADE
- EXISTING GRADE
- ORDINARY HIGH WATER LINE (24.0')
- EXISTING 1996 FLOODPLAIN BOUNDARY (38.0')
- EXISTING FEMA 100-YR FLOODPLAIN (36.3')
- EXISTING FEMA 50-YR FLOODPLAIN (33.2')
- EXISTING FEMA 10-YR FLOODPLAIN (26.9')



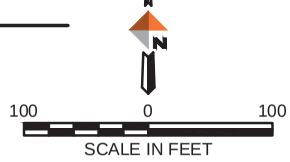
SITE MAP
SCALE: 1" = 100'



SECTION C-C
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 6'



SECTION D-D
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 6'

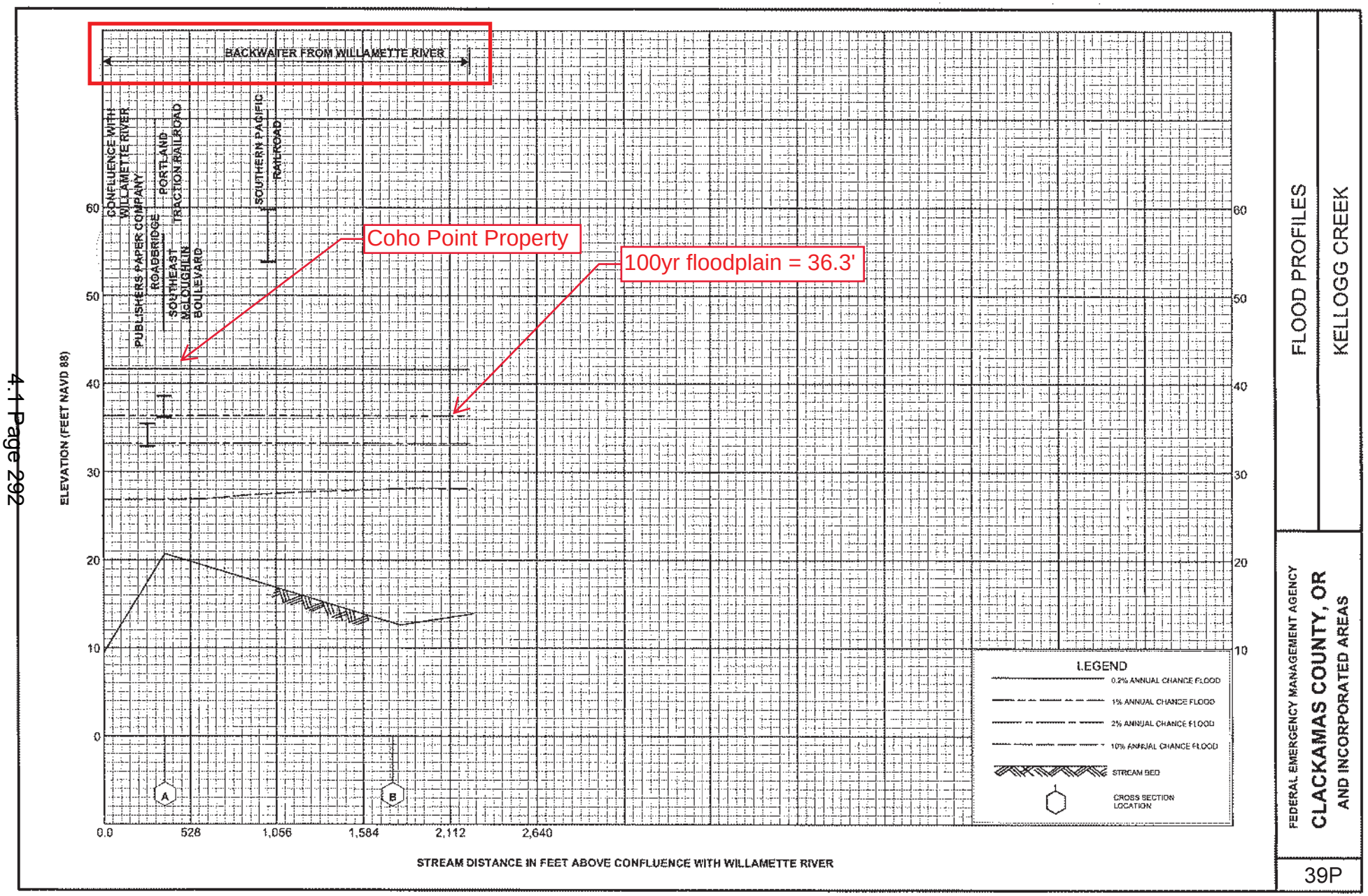


DOWL
WWW.DOWL.COM
720 SW Washington Street, #750
Portland, Oregon 97205
971-280-8641

COHO POINT
SITE SECTIONS - PROFILES C-C & D-D
CITY OF MILWAUKIE, OREGON

PROJECT	14464-01
DATE	08/12/2021

FIGURE 5



FLOOD PROFILES

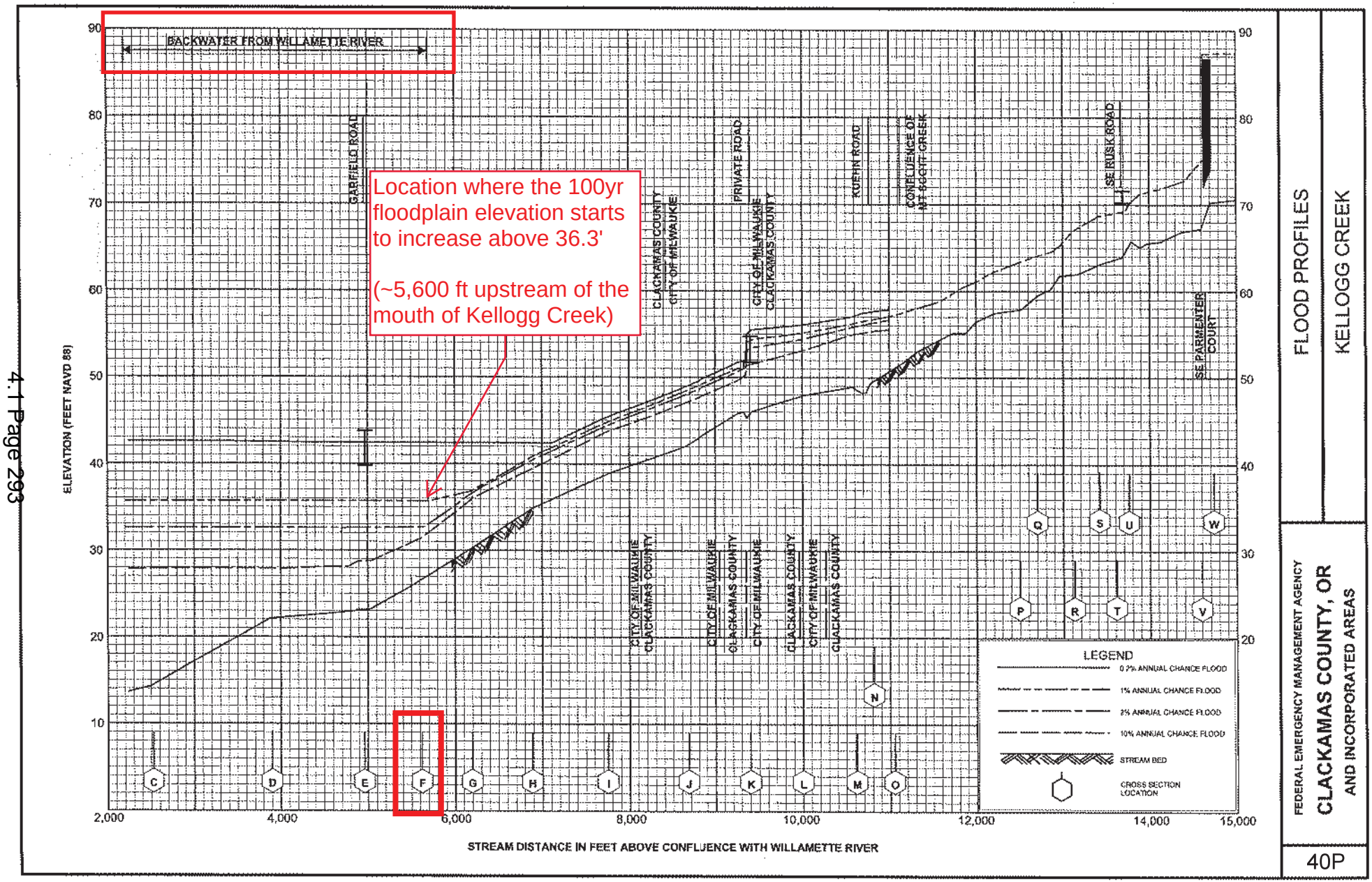
KELLOGG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLACKAMAS COUNTY, OR

AND INCORPORATED AREAS

39P


BACKWATER FROM WILLAMETTE RIVER
Location where the 100yr floodplain elevation starts to increase above 36.3'
(~5,600 ft upstream of the mouth of Kellogg Creek)
GARFIELD ROAD
PRIVATE ROAD
KUEHN ROAD
CONFLUENCE OF MT SCOTT CREEK
SE MUSIC ROAD
SE PARMENTER COURT
CLACKAMAS COUNTY
CITY OF MILWAUKIE
ELEVATION (FEET NAVD 88)
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WILLAMETTE RIVER
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
KELLOGG CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
CLACKAMAS COUNTY, OR
AND INCORPORATED AREAS
40P

FLOOD PROFILES

WILLAMETTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLACKAMAS COUNTY, OR

AND INCORPORATED AREAS

163P

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from multiple sources. High resolution color orthophotos produced by Merrick & Co., Parsons, Inc., and Dean Wade Stimson covered portions of the county. USGS Digital Quadrangles at a scale of 1:12000 or less covered much but covered the remainder of the county.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- (A)—(A) — Cross section line
- (23)—(23) — Transect line
- 97°07'30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000 mN — 1000-meter Universal Transverse Mercator grid ticks, zone 10
- 6000000 M — 5000-foot grid ticks: Oregon State Plane coordinate system, north zone (FIPSZONE 3601), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
June 17, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For communities' map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0009D

FIRM
FLOOD INSURANCE RATE MAP
CLACKAMAS COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 9 OF 1175
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLACKAMAS COUNTY	415588	0009	D
MILWAUKIE CITY OF	410019	0009	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41005C0009D
EFFECTIVE DATE
JUNE 17, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from multiple sources. High-resolution color orthophotos produced by Merrick & Co., Pictometry, Inc., and Clean Water Services covered portions of the county. USGS Digital Quadrangles at a scale of 1:12000 were used dated 6/2/94 covered the remainder of the county.

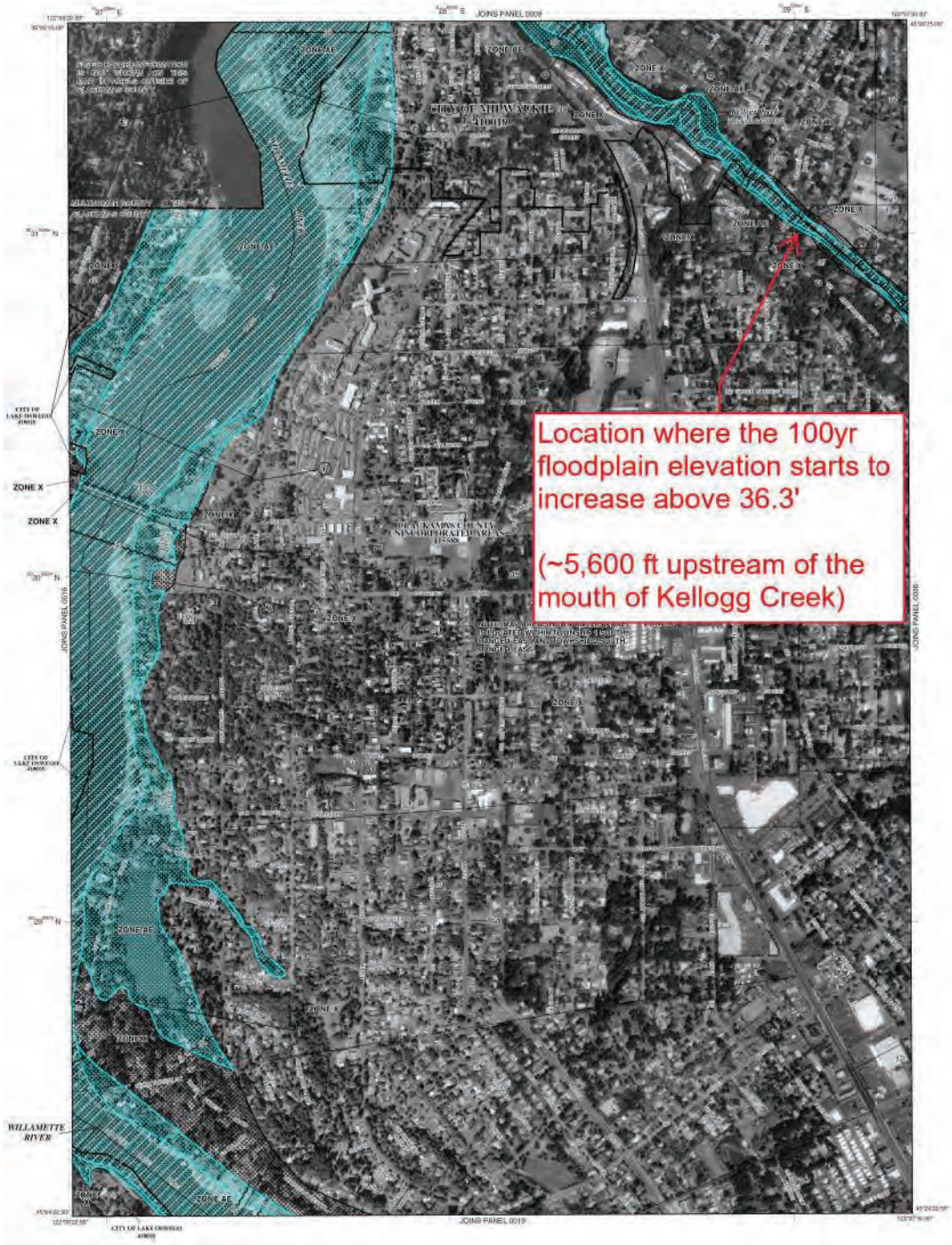
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- (A) — (A) — Cross section line
- (23) — (23) — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000 mN — 1000-meter Universal Transverse Mercator grid ticks, zone 10
- 6000000 M — 5000-foot grid ticks: Oregon State Plane coordinate system, north zone (FIPSZONE 3601), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
June 17, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0017D

FIRM
FLOOD INSURANCE RATE MAP
CLACKAMAS COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 17 OF 1175
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLACKAMAS COUNTY	415588	0017	D
LAKE OSWEGO, CITY OF	410028	0017	D
MILWAUKIE, CITY OF	410029	0017	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41005C0017D

EFFECTIVE DATE
JUNE 17, 2008

Federal Emergency Management Agency

Natural Resource Review
Coho Point Development
Milwaukie, Oregon

(Township 1S, Range 1E, Section 35AD, Tax Lots 1100, 1300, 1301, 1302, 1400, and Township 1S, Range 1E, Section 36CB, Tax Lot 2801, Clackamas County)

Prepared for

St John-5 LLC.

10260 SW Greenburg Road
Suite 1180
Portland, OR 97223

Prepared by

Michael See
Joe Thompson
John van Staveren
Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, Oregon 97070
(503) 570-0800
(503) 570-0855 FAX

PHS Project Number: 6517

September 21, 2021



TABLE OF CONTENTS

Page

1.0 INTRODUCTION....1

2.0 APPLICANT INFORMATION....1
2.1 Applicant....1
2.2 Applicant's Agent....1

3.0 SITE INFORMATION....1
3.1 Site Description....3

4.0 PROJECT DESCRIPTION....3

5.0 EXISTING WQR AND HCA ON THE PROJECT SITE....5
5.1 Water Quality Resource (WQR)....5
5.2 Habitat Conservation Area (HCA) Verification....5

6.0 COMPLIANCE WITH MILWAUKIE MUNICIPAL CODE....7
6.1 MMC 19.402.8 – Activities Requiring Type III Review....7
6.2 MMC 19.402.9 – Construction Management Plans....7
6.3 MMC 19.402.11 – Development Standards....9
6.4 MMC 19.402.12 – General Discretionary Review....14

ATTACHMENT A: Figures

Figure 1: Project Location Map
Figure 2: Tax Lot Map
Figure 2A: Aerial Photo
Figure 3: City-Mapped Habitat Conservation Areas, and Vegetated Corridors
Figure 4: Existing Conditions and HCA and WQR Boundaries
Figure 5: Site Plan with HCA and WQR Impacts
Figure 6: Alternative Site Plan
Figure 7: Construction Management Plan
Figure 8: Tree Removal Plan
Figure 9: Mitigation Plan with HCA and WQR Impacts
Figure 9A: Mitigation Planting Schedule

1.0 INTRODUCTION

The City of Milwaukie (the "City") has mapped Water Quality Resource (WQR) and Habitat Conservation Area (HCA) within the proposed Coho Point Development site. St. John-5 LLC (the "Applicant") seeks approval for the proposed development through a Type III General Discretionary Review. The following document demonstrates how the proposed project will be in compliance with the applicable development standards that are listed in the Natural Resources (NR) Zoning Code Section 19.402 of the City of Milwaukie Municipal Code (MMC). Pacific Habitat Services, Inc. (PHS) has prepared a Natural Resource Review in accordance with MMC Section 19.402 to support the land use application. The information necessary to process the application is provided in the following sections. Supporting information is included in Attachment A (Figures) and Attachment B (Wetland Delineation Report).

2.0 APPLICANT INFORMATION

2.1 Applicant

St John-5 LLC
10260 SW Greenburg Road
Suite 1180
Portland, OR 97223

2.2 Applicant's Agent

Pacific Habitat Services, Inc.
Attn: Michael See
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070
Phone: 503-570-0800
Email: ms@pacifichabitat.com

3.0 SITE INFORMATION

The following information is for the parcels which is the subject of this natural resource review.

Site Address:	**11103 SE Main St. Milwaukie, OR 97222**
Zoning:	Downtown Mixed Use DMU, and Open space OS
Legal Description:	Township 1S, Range 1E, Section 35AD, Tax Lots (TL) 1100, 1300, 1301, 1302, 1400, and Township 1S, Range 1E, Section 36CB, Tax Lot (TL) 2801, Clackamas County

3.1 Site Description

The site is located in downtown Milwaukie along the northern portion of Kellogg Lake, east of Highway 99E (Pacific Highway), west of SE Main Street, and south of SE Washington Street (Figures 1 and 2), and north of the light rail and Southern Pacific Railroad Bridges. Kellogg Creek is impounded in this area to form Kellogg Lake which flows northwest under 99E into the Willamette River. Dogwood Park is located along the eastern border of the project area. The site is zoned within downtown mixed-use area (DMU) and includes open space (OS) within Dogwood Park and Kellogg Lake. The project area generally slopes to the south and west with elevations ranging from approximately 50 feet North American Vertical Datum (NAVD) in the northern portion of the project area to 20 NAVD feet at the outflow of Kellogg Lake under McLoughlin Boulevard.

On October 20, 2020, PHS identified and delineated the ordinary high water of Kellogg Lake within the project area. Descriptions of the on-site resource is provided below; Figure 4 shows the existing site conditions. The existing site contains an asphalt parking lot and 3,500 SF building at the northeast corner of the property. Runoff from the existing site generally sheet flows to the southwest to a catch basin which discharges directly to Kellogg Creek. Pollution reduction and flow control are not present on the existing site.

Kellogg Lake occupies much of the undeveloped area within the project area. It is formed by an impoundment on Kellogg Creek immediately upstream of McLoughlin Boulevard. The slopes adjacent to the lake are relatively steep, near vertical at the location of the OHW line. Approximately 1.67 acres (72,707 square feet) of the Lake is immediately adjacent to the project site. The plant community of the riparian area along the lake includes a primarily deciduous overstory of big-leaf maple (*Acer macrophyllum*), Oregon white oak (*Quercus garryana*), Oregon ash (*Fraxinus latifolia*), red alder (*Alnus rubra*); and a shrub and herbaceous understory composed of species such as snowberry (*Symphoricarpos albus*), Pacific ninebark (*Physocarpus capitatus*), Scouler's willow (*Salix scouleriana*), English hawthorn (*Crataegus monogyna*), Himalayan blackberry, (*Rubus armeniacus*), Western swordfern (*Polystichum munitum*), and English ivy (*Hedera helix*).

4.0 PROJECT DESCRIPTION

The applicant, St. John-5 LLC, is proposing a mixed use commercial and residential development on a site located at 11103 SE Main St. Milwaukie, OR 97222. The site currently consists of six tax lots all owned by the City of Milwaukie. The total site size is 2.8 acres.

The proposed development will consist of a single, 5-story building that would provide a total of 195 residential units, and 5 commercial spaces. Specifically, the proposed building will consist of 84 studio apartments, 56 1 bedroom apartments, 48 2-bedroom apartments, 7 3-bedroom apartments. The apartments will range between 570 to 1,150 square feet.

The proposed development will construct access from Main Street, along the existing Adams Street right-of-way. The development will have 103 parking stalls located in the basement and first floor. No new public roads are proposed as part of the development. The upper floors will be multi-family residential units, with a central courtyard on the second story for storm water infiltration planters to treat the roof run-off. Commercial units will have frontage along SE Main St. and SE Washington Street.

Kellogg Lake is a primary protected water features and has associated water quality resource (WQR) and habitat conservation areas (HCA), as defined in the City's Natural Resources Code (MMC 19.402). As such, the proposed project is subject to discretionary review under MMC Subsections 19.402.8, 19.402.9, 19.402.11, 19.402.12, and 19.402.13I – J. This Natural Resource Review describes the existing WQR and HCA on the site and demonstrates project compliance with the applicable sections of the municipal code.

5.0 EXISTING WATER QUALITY RESOURCE AND HABITAT CONSERVATION AREA ON THE PROJECT SITE

As discussed above, Kellogg Lake is a primary protected water features and have associated WQR and HCA, as shown on the Milwaukie Interactive Zoning Map (http://milwaukie.maps.arcgis.com/apps/webappviewer/index.html?id=48bfb9fc517446f9af954d4d1c4413af). MMC 19.402.15, Boundary Verification and Map Administration, describes procedures for verifying the location of WQR and HCA on a property. Sections 5.1 and 5.2, below, describe the verification of WQR and HCA on the project site in accordance with the municipal code.

5.1 Water Quality Resource (WQR)

Table 19.402.15, Determination of WQR Location, in MMC Subsection 19.402.15 describes the location and extent of the WQR. As described in the table, primary protected water features have an associated vegetated corridor of 50 to 200 feet wide depending on the slopes adjacent to the resource. The slopes adjacent to the north side of Kellogg Lake are less than 25 percent, and therefore, the associated vegetated corridor in this area is 50 feet wide. The slopes along the eastern portion of Kellogg Lake are greater than 25 percent; therefore, in this area, the width of the vegetated corridor varies between 60 and 100 feet from the ordinary high water line. The extent of the vegetated corridor on the project site, based on the surveyed boundaries of waterway, is depicted on Figures 4 through 9. The total area of WQR on the site (not including the stream and wetland) is approximately 4,9937 sf (1.15 acres). Section 6.3 of this report describes the condition of the vegetated corridor.

5.2 Habitat Conservation Area (HCA) Verification

MMC 19.402.15.A requires verification of the boundaries of designated natural resources on or near a site to determine if the standards of MMC 19.402 apply. The Milwaukie Interactive Zoning Map (Figure 3) shows HCA extending onto the northern and eastern portions of the site. The City's mapped HCA is depicted on Figure 4. Because there is discrepancy between the City-mapped HCA, the Applicant proposes to verify HCA on the site using the detailed HCA verification procedures outlined at MMC 19.402.15.A.2.b. The requirements of Subsection 19.402.15.A.2.b are addressed below.

MMC 19.402.15.A.2.b, Detailed Verification of HCAs

An applicant who believes that an HCA shown on the NR Administrative Map should be corrected for a reason other than those described in Subsections 19.402.15.A.1.a or b may propose a detailed verification.

(1) Submittal Requirements

The applicant shall submit a report prepared and signed by either a knowledgeable and qualified natural resource professional; such as a wildlife biologist, botanist, or hydrologist; or a civil or environmental engineer registered in Oregon to design public sanitary or storm systems, stormwater facilities, or other similar facilities. The report shall include:

(a) A description of the qualifications and experience of all persons that contributed to the report and, for each person that contributed, a description of the elements of the analysis to which the person contributed.

The applicant is submitting this report, which was prepared and signed by John van Staveren, Michael See, And Joe Thompson. John van Staveren is a Professional Wetland Scientist, as well as the President and Senior Scientist at PHS and has over 29 years of experience working in the natural resources field. Joe Thompson is a Professional Wetland Scientist, who has more than 20 years of experience working in the environmental field. Michael See is a Wetland Scientist and Natural Resource Specialist with Pacific Habitat Services, Inc. and has over 10 years of experience working in the natural resources field. Pacific Habitat Services, Inc. is renowned for its expertise and experience involving environmental and natural resource analyses and projects throughout the Portland Metro Area and the Pacific Northwest. Utilizing on-site observations and ground-truthing, PHS staff members participated in the analysis and comparison of site information pertinent to the City of Milwaukie's Development Code requirements.

(b) The information described in Subsection 19.402.15.A.1.a.

The following information is required, as described in Subsection 19.402.15.A.1.a:

(1) A detailed property description and site plan of the property that includes all existing conditions plans listed on the City's Site Plan Requirements.

The project site is located at 11103 SE Main St. Milwaukie, OR 97222. The site currently consists of seven tax lots, all under the same ownership (City of Milwaukie). Those tax lots are Township 1S, Range 1E, Section 35AD, Tax Lots (TL) 1100, 1300, 1301, 1302, 1400, and Township 1S, Range 1E, Section 36CB, Tax Lot (TL) 2801, Clackamas County.

A plan showing existing site conditions is provided as Figure 4. This figure shows tax lot boundaries; the boundary of PHS's study area; existing site improvements such as buildings, roads, and parking areas; natural resources such as trees greater than 6 inches diameter at breast height (dbh), wetlands, and waterways; and existing topography depicted with 1-foot contours. Figure 4 shows the limits of the WQR, City-mapped HCA, and the floodplain boundary, as well as the other existing conditions features.

(2) A copy of the applicable NR Administrative Map section.

A copy of City mapping showing City-mapped HCA, vegetated corridor, and wetlands, as provided by the online Milwaukie Interactive Zoning Map, is provided as Figure 3.

The latest available aerial photograph of the property, with lot lines shown, at a scale of at least 1 map inch equal to 50 ft for lots of 20,000 or fewer square feet, and a scale of 1 map inch equal to 100 ft for larger lots.

A July 2018 aerial photograph of the project site from Google Earth is provided as Figure 2 and tax lots are depicted on Figure 2A.

(3) A documented demonstration of the misalignment between the NR Administrative Map and the property's tax lot boundary lines and/or the location of existing legally established development.

Not applicable. There is no apparent misalignment between the City's mapping and the tax lot boundaries or the location of existing legally established development.

(5) Any other factual information that the applicant wishes to provide to support boundary verification.

Not Applicable.

(c) The information described in Subsection 19.402.15.A.1.b, if the applicant believes such information is relevant to the verification of habitat location on the subject lot or parcel.

The information described in Subsection 19.402.15.A.1.b is not relevant to the verification of the HCA on the project site.

(d) Additional aerial photographs, if the applicant believes they provide better information regarding the property, including documentation of the date and process used to take the photos and an expert's interpretation of the additional information they provide.

Not applicable.

(e) A map showing the topography of the property shown by 2-ft vertical contours in areas of slopes less than 15%, and at 5-ft vertical contours of slopes 15% or greater.

The site topography shown by 1-foot contour intervals is depicted on all appropriate figures.

(f) Any additional information necessary to address each of the detailed verification criteria provided in Subsection 19.402.15.A.2.b(2); a description of where any HCAs are located on the property, based on the application of the detailed verification criteria; and factual documentation to support the analysis.

No additional information is provided.

(2) Approval Criteria

A boundary verification request submitted under Subsection 19.402.15.A.2.b shall be evaluated according to the following three-step process:

(a) Verify Boundaries of Inventoried Riparian Habitat

Locating habitat and determining the riparian habitat class of the designated natural resource is a four-step process:

(i) Locate the water feature that is the basis for identifying riparian habitat.

- ***Locate the top of bank of all streams, rivers, and open water within 200 ft of the property.***
- ***Locate all flood areas within 100 ft of the property.***
- ***Locate all wetlands within 150 ft of the property, based on the NR Administrative Map. Identified wetlands shall be further delineated consistent with methods currently accepted by DSL and the Corps.***

Kellogg Lake is the basis for identifying riparian habitat on the project site. PHS located the limits of ordinary high water (OHW) of Kellogg Lake during the October 20, 2020 field work, which roughly corresponds to the "bankful stage" or "top of bank", as defined on the City code. The surveyed limits of OHW are depicted on Figure 4 and all other appropriate figures.

(ii) Identify the vegetative cover status of all areas on the property that are within 200 ft of the top of bank of streams, rivers, and open water; are wetlands or are within 150 ft of wetlands; and are flood areas and within 100 ft of flood areas.

- ***Vegetative cover status shall be as identified on the latest Metro Vegetative Cover Map (available from the City and/or the Metro Data Resource Center).***
- ***The vegetative cover status of a property may be adjusted only if: (1) the property was legally developed prior to September 15, 2011, the effective date of Ordinance #2036 (see Subsection***

19.402.15.A.1.b); or (2) an error was made at the time the vegetative cover status was determined. To assert the latter type of error, applicants shall submit an analysis of the vegetative cover on their property, using the aerial photographs on which the latest Metro Vegetative Cover Map is based and the definitions of the different vegetative cover types identified in Table 19.402.15.A.2.b(2)(a)(iv).

The vegetative cover status, as identified on the latest Metro Vegetative Cover Map, is designated "Woody vegetation" which means areas that are part of a contiguous area 1 acre or larger of shrub or open or scattered forest canopy (less than 60% crown closure) located within 300 ft of a surface stream. Woody vegetation is the predominant vegetative cover within the project area and mitigation areas. PHS concurs with the vegetative cover status assigned by the Metro vegetative cover map.

(iii) Determine whether the degree that the land slopes upward from all streams, rivers, and open water within 200 ft of the property is greater than or less than 25%, using the methodology outlined in Table 19.402.15.

Using the methodology outlined in Table 19.402.15, PHS determined that the land slopes upward from the eastern portion Kellogg Lake within the project area is greater than 25%. The northwestern portion of Kellogg Lake was determined to have slopes less than 25%, as such the WQRA was determined to be 50' from the OHW of Kellogg Lake.

(iv) Identify the riparian habitat classes applicable to all areas on the property using Table 19.402.15.A.2.b(2)(a)(iv) and the data identified in Subsections 19.402.15.A.2.b(2)(a)(i) through (iii).

All Riparian habitat classes, as defined in Table 19.402.15.A.2.b(2)(a)(iv), including Kellogg Lake and associated vegetated corridors area considered Class I riparian habitats.

(b) Determine the Property's Urban Development Value

The urban development value of property designated as regionally significant habitat is depicted on the Metro Habitat Urban Development Value Map (available from the Metro Data Resource Center).

(i) A property's urban development value designation shall be adjusted upward if the Metro 2040 Design Type designation for the property lot or parcel has changed from one with a lower urban development value to one with a higher urban development value. 2040 Design Type designations are identified on the Metro 2040 Applied Concept Map (available from the Metro Data Resource Center).

(ii) Properties in areas designated on the 2040 Applied Concept Map as Central City, Regional Centers, Town Centers, and Regionally Significant Industrial Areas are considered to be of high urban development value; properties in areas designated as Main Streets, Station Communities, Other Industrial Areas, and Employment Centers are of medium urban development value; and properties in areas designated as Inner and Outer Neighborhoods and Corridors are of low urban development value.

(iii) As designated in Title 13 of the UGMFP, properties owned by a regionally significant educational or medical facility are designated as high urban development value.

The project site is within an area of high urban development value, as depicted on the Metro Habitat Urban Development Value Map (ftp://ftp.metro-region.org/dist/gm/fish+wildlife/maps/develop_value_1097A.pdf).

(c) Cross-Reference Habitat Class with Urban Development Value

City verification of the locations of HCAs shall be consistent with Table 19.402.15.A.2.b(2)(c).

Because the site is designated high urban development value, all Class I Riparian Habitats are considered HCA as described in Table 19.402.15.A.2.b(2)(c). The limits of the verified HCA on the site are depicted on Figure 4.

6.0 COMPLIANCE WITH MILWAUKIE MUNICIPAL CODE

6.1 MMC 19.402.8 – Activities Requiring Type III Review

As described above, the proposed project is the development of a mixed use residential and commercial building and associated infrastructure. As portrayed on Figure 5 The proposed project will result in impacts to HCA and WQR; therefore, the project is subject to Type III review, as described in MMC 19.402.8. There will be 0.39 acres of permanent impacts to the WQR and 0.24 acres of temporary impact. There will be 0.05 acres of permanent impacts to the HCA and 0.006 acres of temporary impact.

6.2 MMC 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 and the location of excavation areas for building foundations, utilities, stormwater facilities, etc.***
3. ***Location of site access and egress that construction equipment will use.***
4. ***Equipment and material stockpile areas.***
5. ***Erosion and sediment control measures.***

As stated above in Section 4, the project is the construction of a mixed-use development with 5 retail commercial spaces, 195 residential units, associated parking, roads, utilities, landscaping, and stormwater treatment facilities. Site preparation will include grubbing and grading. A demarcation of WQRs and HCAs and the location of excavation areas for building foundations, utilities, stormwater facilities, etc. are shown on Figure 7. The site access that construction equipment will use, as well as equipment and material stockpile/staging areas, are shown on the Construction Management Plan (Figure 7). As shown on Figure 7, erosion control fencing will be placed at the limits of disturbance. This fencing will act as a physical barrier and prevent the encroachment of machinery into portions of the WQR and HCA areas that are to remain undisturbed.

The following components of the erosion control plan will protect against erosion, prevent the transport of sediments off-site and into the remaining WQR and HCA areas, and ensure that impacts are minimized.

- Prior to the start of any earth-moving activities, construction fencing will be installed at the limits of the work area, which in this case will be along the outer edge of the proposed development. Sediment fence will be installed inside the construction fencing.
- All base erosion and sediment prevention control measures (including inlet protection, perimeter sediment control, gravel construction entrances, etc.) will be in place, functional, and approved in an initial inspection prior to the start of any construction activities.
- Construction entrances will be installed prior to construction and maintained for the duration of the project.

- Active inlets to stormwater systems will be protected with approved inlet protection measures. All inlet protection measures will be regularly inspected and maintained as necessary. These inlet protection measures will prevent runoff from reaching discharge points.
- Exposed cut and fill areas will be stabilized through the use of temporary seeding and mulching or other appropriate measures.
- Seed used for temporary or permanent seeding will be per specifications.
- Slopes receiving temporary or permanent seeding will have the surface roughened to improve seed bedding and reduce run-off velocities.
- Stockpiled soil or strippings will be placed in an approved, stable location and configuration. During "wet weather" periods, stockpiles will be covered with straw mulch. Sediment fence will be placed around the perimeter of all stockpiles.
- Appropriate dust control measures, including the application of a fine spray of water, straw mulching or other approved measures, will be used in areas subject to wind erosion. Any saturated materials hauled off site will be transported in watertight trucks to prevent the spillage of sediment or sediment-laden water.

The proposed project will have no detrimental impact on resources or functional values of WQR and HCA areas designated to be left undisturbed. The use of construction fencing and erosion and sediment control barriers at the limits of work, as well as other methods described in the Construction Management Plan will prevent direct physical impacts to nearby areas of WQR and HCA to remain undisturbed.

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 WRQ 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 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.***

Trees proposed to be removed are shown on the tree removal plan (Figure 8), and the accompanying. Tree protection will be as recommended by a qualified arborist or, at minimum, will include the following protective measures:

- All trees to be protected on the project site and adjacent to the site shall be clearly identified and protective fencing will be installed at the perimeter of the dripline (to avoid soil compaction, removal of vegetation, and/or tree branches) prior to any grubbing, clearing, grading, parking, preparation or storage of materials or machinery, or other construction activity on the site. The fencing will be secured and consist of a material that cannot be easily moved, removed, or broken during construction activities;
- No machinery repair, cleaning or fueling will be performed within 10 feet of the dripline of any of trees identified for protection;

- There will be no digging of trenches for placement of public or private utilities or other structure within the critical root zones of trees to be protected;

- If required by the City, a consulting arborist or other qualified biologist will be present during construction or grading activities that may affect the dripline of the trees to be protected.

6.3 MMC 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/orHCA.

In addition to erosion and sediment control measures, previously discussed in the Construction Management section, work areas shall be marked to reduce potential damage to the WQR and/or HCA.

2. Trees in WQRs or HCAs shall not be used as anchors for stabilizing construction equipment.

No trees within the WQR or HCA will be used as anchors for stabilizing construction equipment.

3. Native soils disturbed during the development shall be conserved on the property.

Native soils disturbed during development will be conserved on the property.

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.

The erosion and sediment control plan is shown on the Construction Management Plan (Figure 7) was discussed in the previous section, Construction Management Plan, and was prepared in compliance with requirements set forth in 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.

As discussed above in the Construction Management Plans section, Best Management Practices (BMPs) will be implemented during site preparation and construction in order to prevent drainage of hazardous materials or erosion, pollution, or sedimentation to any WQR adjacent to the project area.

6. Stormwater flows that result from proposed development within and to natural drainage courses shall not exceed predevelopment flows.

The primary purpose of the stormwater management plan is to effectively treat the stormwater runoff from the new development while maintaining pre-development hydrologic inputs. Stormwater from the proposed development will be managed using permeable pavers and a stormwater planter on the second-floor terrace. The planter facility will provide water quality treatment only and discharge to the storm pipe in SE Main St. Since the discharge point is a storm only pipe that flows directly to the Kellogg Lake, detention is not proposed. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

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.***

As discussed above in the Construction Management Plans section, prior to construction, construction fencing, sediment fencing, and other erosion and sediment control barriers will be installed at the limits of work, to prevent impacts to nearby areas of WQR and HCA to remain undisturbed.

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.***

As discussed above in the Construction Management Plans section, BMPs will be implemented and erosion and sediment control methods will be in place prior to construction in such a manner as to safeguard the resource portions of the site that have not been approved for development.

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.***

Where practicable, lights will be placed so that they do not shine directly into the WQR and/or HCA. The type, size, and intensity of lighting will be selected so that impacts to habitat functions are minimized.

10. ***All work on the property shall conform to a construction management plan prepared according to Subsection 19.402.9.***

All work on the property will conform to a construction management plan, as previously discussed.

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 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 19.402.D.2 for HCAs, as applicable.***

All temporary impacts will be restored and mitigation for impacts to WQR and HCA will be compensated through a combination of on-site and offsite mitigation following Subsection 19.402.11.C for WQRs and Subsection 19.402.D.2 for HCA.

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 appropriately suited for the specific conditions of the planting site; e.g., shade, soil type, moisture, topography, etc.

All proposed mitigation plants will consist of native species as identified on the Milwaukie Native Plant List. Plants will be chosen for: 1) their suitability to the soils and hydrology of the site, 2) their natural occurrence in the area, 3) their wildlife habitat enhancement value, and 4) their local availability. The four tables (Tables 3 through 6 and Figure 9A) show species to be planted.

3. Plant Size

Replacement 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. Shrubs shall be at least 1-gallon size and 12 in high.

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.

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.

Mitigation plant size, spacing and diversity will be in accordance with the requirements stated in items 3 – 5, above. Tables 3 through 6 below and Figure 9A include the taxa that will be planted within the mitigation areas.

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.

Mitigation will be a combination of on-site and off-site. The mitigation areas (16,463 square feet / 0.37 acres) proposed for planting are shown in Figure 9. The mitigation plantings will improve the native plant community, vegetation structure and diversity – all of which will improve the overall quality of wildlife habitat on the site. Areas C and D will occur off-site at the adjacent Dogwood Park. The applicant is requesting a variance to the on-site mitigation requirement. The vegetation within Areas C and D are degraded and mitigation will improve their function.

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.

Invasive nonnative or noxious vegetation, and nuisance plants will be removed from the mitigation area prior to planting.

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.

Following the installation of the required tree and shrub plantings, remaining bare/open soil areas will be planted or seeded to 100% surface coverage with a native grass seed mix or other ground cover species during the next planting season following the site disturbance.

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.

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 two years following planting.

In order to meet the minimum of 80% tree and shrub survival of the mitigation plantings on the second anniversary of the date that the mitigation planting is completed, the applicant will follow the "Required" and "Recommended" planting and maintenance practices, as described above in Items a and b.

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 heath 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.

An annual monitoring site visit will be conducted, and a report will be prepared and submitted to the City for two years after planting. The report will allow an analysis of the survival rate of the mitigation plantings and what corrective measures, if any, are needed to ensure the minimum 80% required survival rate for woody plantings at the end of the second monitoring season.

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.

Where practicable, lights will be placed so that they do not shine directly into the WQR and/or HCA. The type, size, and intensity of lighting will be selected so that impacts to habitat functions are minimized.

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.

Plant communities within the vegetated corridor consist of wooded vegetation cover. PHS identified two separate plant communities within the on-site vegetated corridor based on the predominance of woody species in the community. Along the East bank of Kellogg Lake, the plant community is

primarily scrub-shrub with few scattered trees this area is considered to be Class B (marginal condition) in accordance with MCC. Further south, tree canopy cover increases south of the proposed development. Since this area is exceeds 50% canopy cover it was determined to be in Class A (good condition). Despite the classifications of the plant communities, it is the opinion of PHS that these areas lend themselves to compensatory mitigation in order to improve the diversity and structure of the plant community within the proposed mitigation areas. Justification for this opinion is based on the abundance of non-native species within the area, and a paucity of native tree species. PHS took two sample points to characterize the plant communities.

The WQRA east of Kellogg Lake contains a moderately dense canopy predominantly composed of red alder (*Alnus rubra*), Oregon white oak (*Quercus garryana*), black cottonwood *(Populus balsamifera*), and big-leaf maple (*Acer macrophyllum*). Common species in the understory include English hawthorn (*Crataegus monogyna*), snowberry (*Symphoricarpos alba*), Pacific willow (*Salix lasiandra*), Scouler's willow (*Salix scouleriana*), Pacific ninebark (*Physocarpus capitatus*), red-osier dogwood (*Cornus alba*), clustered rose (*Rosa pisocarpa*), twinberry honeysuckle (*Lonicera involucrata*), Himalayan blackberry (*Rubus armenicacus*). The groundcover contains a diverse mixture of native and non-native species, including Pacific dewberry (*Rubus ursinus*), Fuller's teasel (*Dipsacus sylvestris*), Watson's willow-herb (*Epilobium watsonii*), nipplewort (*Lapsana communis*), common velvetgrass (*Holcus lanatus*), colonial bentgrass (*Agrostis capillaris*), fringecup (*Tellima grandiflora*), brome (*Bromus sp*.), and Western swordfern (*Polystichum munitum*). Tables 1 and 2 summarize the species composition at two sample points within the plant community.

Table 1. Plant Community North of Kellogg Lake Characterized by Sample Point 1

Botanical Name	Common Name	♦Cover (%)
Shrubs and Saplings		**140**
Crataegus monogyna	English hawthorn	40
*Rubus armeniacus****	Himalayan blackberry	90
Prunus avium	Sweet Cherry	10
Woody Vine		**20**
Clematis spp.	Clematis	20
Herbaceous		10
Lathyris sativus	White pea	10
Agrostis capillaris	Colonial bentgrass	20
Bromus spp.	brome	50
Geranium lucidum	Shining geranium	10

Invasive species or noxious weed (Oregon Dept. of Agriculture (ODA))
****Nuisance Plant List (Milwaukie Plant List/Portland Plant List)*** ♦***Absolute Percent Cover***

The plant community at sample point 1 had a tree canopy less than 50 percent. This area was mowed or cleared within the last 10 years. And consists primarily of non-native woody shrubs. The combined tree, shrub and herbaceous layers exceeds 80 percent cover. As such the area meets the definition of "Marginal" as defined in Table 19.402.11.C of the municipal code, and the existing condition of the WQR.

Table 2. Plant Community Within Dogwood Park, Characterized by Sample Point 2

Botanical Name	Common Name	♦Cover (%)
Trees		**80**
Acer platanoides	Norway Maple	30
Crategus monogyna	English Hawthorn	50
Shrubs and Saplings		**37**
Crategus monogyna	English Hawthorn	2
Ilex aquifolium	English Holly	30
*Rubus armeniacus****	Himalayan blackberry	5
Groundcover		**20**
*Hedera helix****	English Ivy	20

Invasive species or noxious weed (Oregon Dept. of Agriculture (ODA))
****Nuisance Plant List (Milwaukie Plant List/Portland Plant List)***
♦Absolute Percent Cover

The plant community in the southeast portion of the WQRA has a tree canopy greater than 50 percent, as characterized by Sample Point 2. As such, the existing condition of the WQR southeast portion of the project area meets the definition of a Class A ("Good") WQR, as defined in Table 19.402.11.C.; however, the coverage of invasive and non-native species, and the lack of groundcover indicates this area could be greatly enhanced through vegetation enhancement and mitigation.

6.4 MMC 19.402.12 - General Discretionary Review

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. The evaluation and analysis shall include the following:

1. Identification of the ecological functions of riparian habitat found on the property, as described in Subsection 19.402.1.C.2.

Subsection 19.402.1.C.2 of the MMC identifies seven functions and values that contribute to water quality and to fish and wildlife habitat in urban streamside areas. Descriptions of the functions and values provided by the riparian habitat on the project site are provided below.

Vegetated corridors to separate protected water features from development –The vegetation within the WQRA provides a buffer that separates Kellogg Lake from the existing development to the east. The dense shrubs, scattered trees, and herbaceous vegetation along the east side of the lake provide wildlife habitat and water quality benefits to the stream.

Microclimate and shade – Trees within the WQR provide some shade to the lake and help to regulate the microclimate within the riparian corridor; however, the orientation and width of the lake minimizes the cooling effects from trees along the banks.

Streamflow moderation and water storage – The floodplain on the east side of Kellogg Lake is vegetated with a mixture of trees, shrubs, and herbaceous vegetation. During high flow events, vegetation within the floodplain helps to slow floodwaters. The existing dam at McLoughlin Boulevard has much greater influence over water storage than the existing floodplain.

Water filtration, infiltration, and natural purification – Vegetation within the riparian corridor along and within Kellogg Lake slows runoff from adjacent areas and filters sediments and other pollutants from the runoff before it reaches the stream. By slowing the runoff, the vegetation also increases the potential for water to infiltrate into the soil before reaching the stream. Aquatic and wetland vegetation along the margins of Kellogg Lake allow for sediment and other pollutants to settle out of the water to be assimilated within the lake substrates.

Bank stabilization and sediment and pollution control – the banks within the project area are generally well-vegetated with shrubs, trees and herbaceous vegetation. This vegetation helps to stabilize the banks, and no evidence of active bank erosion within the project site was observed.

Large wood recruitment and retention and natural channel dynamics – Within the project area, trees occur along the eastern bank of Kellogg Lake. These trees have the potential to become large woody material. When trees fall into the lake, they have minimal potential to affect the natural channel dynamics due to the lentic nature of the Lake; the dam under McLoughlin Boulevard would likely prohibit large wood from migrating outside of the project site.

Organic material resources –Vegetation within the riparian corridor provides organic material that serves as the basis for the aquatic food web. Under the existing conditions, the riparian corridor within the project site is vegetated with a mixture of trees, shrubs, and herbaceous species, which contribute organic materials to the stream.

2. ***An inventory of vegetation, sufficient to categorize the existing condition of the WQR per Table 19.402.11.C, including the percentage of ground and canopy coverage materials within the WQR.***

An inventory of vegetation, sufficient to categorize the existing condition of the WQR per Table 19.402.11.C, including the percentage of ground and canopy coverage materials within the WQR, was provided earlier in this document in Subsection 19.402.11.C “Mitigation Requirements for Disturbance within WQRs” of the Development Standards.

3. ***An assessment of the water quality impacts related to the development, including sediments, temperature and nutrients, sediment control, and temperature control, or any other condition with the potential to cause the protected water feature to be listed on DEQ’s 303(d) list.***

The proposed project will result in impacts to WQR and HCA associated with Kellogg Lake. A mixed-use development will be constructed in the northern portion of the site. Stormwater from the proposed development will be managed using permeable pavers and a stormwater planter on the second-floor terrace. The planter facility will provide water quality treatment only and discharge to the storm pipe in SE Main St. Since the discharge point is a storm only pipe that flows directly to the Kellogg Lake, detention is not proposed. The downstream conveyance system was reviewed, and it was confirmed the 25-yr storm event can be conveyed without surcharge.

The proposed project is not anticipated to have any adverse impacts to water quality. The existing site contains an asphalt parking lot and 3,500 SF building at the northeast corner of the property. Runoff from the existing site generally sheet flows to the southwest to a catch basin which discharges directly to Kellogg Lake. Pollution reduction and flow control are not present on the existing site. The use of erosion and sediment controls during construction will prevent sediment-related impacts to water quality. The proposed project is not anticipated to result in additional nutrient inputs to the stream.

4. ***An alternatives analysis, providing an explanation of the rationale behind choosing the alternative selected, listing measures that will be taken to avoid and/or minimize adverse impacts to designated natural resources, and demonstrating that:***

    a. ***No practicable alternatives to the requested development exist that will not disturb the WQR or HCA.***

Because of the location, size, and orientation of the resources within the site, and the existing constraints within the project area and limited access points from SE Kellogg Creek Drive, impacts to the WQR and HCA are unavoidable.

The applicant considered several alternative site plans utilizing different building heights and footprints. Alternative A would result in no impacts to the HCA or WQR, however, due to the unusual site characteristics and physical conditions on and near the Coho Point site, a variance is necessary to allow for reasonable economic use of the site that is comparable with other properties in the downtown area:

1. The Downtown Mixed Use (DMU) zone encourages mixed-use development with greater densities than other zones. Development that extends to the property line is encouraged. This cannot be done without impacts to WQR and HCA.

2. There are minimal remaining areas of undeveloped and buildable land in the downtown area (per MMC 19.304). In order to meet the above desires of the DMU zone, the entire Coho Point site must be utilized entirely for the building and development should extend to the property line, and to do so, impacts to the HCA and WQR areas are necessary. This done not leave room for all on-site mitigation.

3. The City's HNA identifies a need for a variety of housing types to meet growing demands for more urban housing that is more accessible to services and public transportation options; as identified in the HNA, 93% of Milwaukie residents commute out of Milwaukie for their employment, and the vast majority of housing approved since 2000 is single family detached (70%+) that is not as accessible to a variety of transportation options. The proposed development meets this need by providing a mixed-use development that will cater to a growing desire for "urban" housing, that is close to various public transportation options (bus and MAX) and that provides greater access to the Metro area. Failing to utilize this underdeveloped site to the maximum extent allowed per the DMU zone requirements would not be consistent with the DMU zone and the City's HNA goals (encourage denser, mixed-use developments that is close to public transportation and maximizes available undeveloped or underdeveloped lots and provides a variety of unit sizes).

4. Building outside the HCA line, or altering the building to allow for mitigation to occur on site, would result in a building that is 21% smaller, and provide less density that is not comparable to recently approved projects (Axletree Apartments on 21st and Washington, for example) or the goals of the DMU zone and HNA.

5. Beyond the compression of the building, which creates issues with the lightwell, the project is also required to have an 8-foot-wide ADA path connection from SE Main St to SE McLoughlin Blvd. The path would have to sit on the southern side of the building which would place the path within the HCA zone and create additional permanent disturbances. As the path must meet ADA requirements and there is 10 feet of fall between the two sidewalks, a large area to the south of the path (approximately 20 feet at the widest point) would also be temporarily impacted for grading purposes to catch at a 33% slope.

6. Finally, the project is required to have no net rise within the floodplain (1996 flood). This scenario needs a wall to be constructed along the edge of the building or path with elevation changes of 10 feet to 15 feet to meet the no net rise requirements. This wall would increase the permanent and temporary impact of the HCA beyond the grading and sidewalk alone.

With the six points described above, which includes the compression of the building, the large impacts to the HCA due to an ADA path, and the need for a wall to ensure no net rise floodplain requirements, no alternative is a viable solution.

b. Development in the WQR and/or HCA has been limited to the area necessary to allow for the proposed use.

Development within the WQR and HCA has been limited to the area necessary to allow for the proposed use. The development has been designed taking into consideration the City's building, design, and development requirements, while avoiding and minimizing resource impacts to the greatest extent practicable, and still allowing the project to be financially feasible. As such, development in the WQR and HCA has been limited to areas that are of lowest quality.

c. If disturbed, the WQR can be restored to an equal or better condition in accordance with Table 19.402.11.C; and the HCA can be restored consistent with the mitigation requirements of Subsection 19.402.11.D.2.

Restoration and mitigation for impacts to the WQR and HCA will be done in accordance with Table 19.402.11.C and Subsection 19.402.11.D.2, respectively. Details of the restoration and mitigation are described in more detail below in Subsection 19.402.12.A.6.b.

d. Road crossings will be minimized as much as possible.

No road crossings associated with this project are proposed.

5. ***Evidence that the applicant has done the following, for applications proposing routine repair and maintenance, alteration, and/or total replacement of existing structures located within the WQR:***
    a. ***Demonstrated that no practicable alternative design or method of development exists that would have a lesser impact on the WQR than the one proposed. If no such practicable alternative design or method of development exists, the project shall be conditioned to limit its disturbance and impact on the WQR to the minimum extent necessary to achieve the proposed repair/maintenance, alteration, and/or replacement.***
    b. ***Provided mitigation to ensure that impacts to the functions and values of the WQR will be mitigated or restored to the extent practicable.***

Not applicable. The proposed project does not include routine repair and maintenance, alteration, and/or total replacement of existing structures within the WQR.

6. ***A mitigation plan for the designated natural resource that contains the following information:***
    a. ***A description of adverse impacts that will be caused as a result of development.***

The proposed project will result in impacts to WQR, and HCA associated with Kellogg Lake. A mixed-use development will be constructed in the northern portion of the site. These impacts will reduce the amount of WQR and HCA habit available for wildlife usage. It is anticipated that revegetation efforts will enhance plant diversity within the WQR and HCA mitigation area and provide for better quality habitat over the existing marginal quality plant community which is currently present.

    b. ***An explanation of measures that will be taken to avoid, minimize, and/or mitigate adverse impacts to the designated natural resource; in accordance with, but not limited to, Table 19.402.11.C for WQRs and Subsection 19.402.11.D.2 for HCAs.***

As discussed above, impacts to the WQR and HCA are unavoidable. Adverse effects to the resources have been minimized to the extent practicable.

Mitigation for the unavoidable impacts will be provided through the inventory of man-made debris and noxious materials that might be present within the WQR and the removal of any such material present; the implementation of a stormwater plan that will meet City requirements for runoff rates and water quality; the removal of non-native, invasive plants from the riparian corridor along the east side of Kellogg Lake; and the installation of tree and shrub plantings within the remaining WQR and HCA areas. Compliance with the mitigation requirements outlined in Table 19.402.11.C and Subsection 19.402.11.D.2 to compensate for proposed impacts to the WQR and HCA are described below.

The existing condition of WQR proposed for impact along the east side of Kellogg Lake, is Class B ("Moderate"). Mitigation requirements for disturbance in a Class B WQR, as listed in Table 19.402.11.C, are listed below, as are the components of the project design that have been incorporated to ensure compliance with the mitigation requirements.

- ***Submit a plan for mitigating water quality impacts related to the development, including: sediments, temperature, nutrients, or any other condition that may have caused the protected water feature to be listed on DEQ's 303(d) list.***

DOWL prepared a Preliminary Drainage Report (dated January 2021) demonstrating that the proposed stormwater management facilities treat runoff to meet the City of Milwaukie's water quality requirements. The Preliminary Drainage Report was submitted to the City as part of the land-use application package.

- ***Inventory and remove debris and noxious materials.***

At the time of site construction, the Applicant will identify man-made debris and noxious materials that may be present within the WQR. Any such debris or materials will be removed from the WQR. This will occur within mitigation area, as shown on Figure 9.

Mitigation requirements for disturbance in a Class C WQR, as listed in Table 19.402.11.C, are listed below, as are the components of the project design that have been incorporated to ensure compliance with the mitigation requirements.

- ***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.***

All disturbances within the WQR and HCA will be permanent. Trees and shrubs will be planted within the mitigation areas on the south side of the Project area and east of Kellogg Lake to establish and enhance a native plant community within the WQR and HCA areas.

The number of trees and shrubs to be planted was determined in accordance with MMC Subsection 19.402.11.D.2. The code requires that an applicant shall meet the requirement of Mitigation Option 1 or 2, whichever results in more tree plantings. Nine trees over 2.5" caliper will be removed from the HCA, as shown on Figure 8. As prescribed by Table 19.402.11.D.2.a, 146 trees and 240 shrubs would be required to mitigate for the trees to be removed under Mitigation Option 1.

Under Mitigation Option 2, 205 trees (20,474 sf impact area x 5 trees per 500 sf of impact area = 205 trees) and 898 shrubs (20,474 sf impact area x 25 shrubs per 500 sf of impact area = 10,24 shrubs) would be planted to mitigate for the 20,474 sf of impacts to the WQR and HCA. A list of trees and shrubs proposed for planting is provided in Tables 3 through 6 below, and on Figure 9A. PHS has included a total of 256 trees and 995 shrubs. This exceedance is to compensate for some anticipated mortality. The survivorship requirement in MCC shall be based on 205 trees, and 898 shrubs.

These mitigation plantings meet the requirements of MMC Subsection 19.402.11.D, as follows:

- All areas temporarily disturbed will be restored and permanent impacts will be mitigated by the tree and shrub plantings, as described above.
- All species proposed for planting are native species, as identified on the Milwaukie Native Plant List.
- Trees to be planted will average at least a ½-in caliper (measured at 6 inches above the ground level for field-grown trees or above the soil line for container-grown trees). Shrubs shall be at least 1-gallon size and 12 inches high.
- Trees will be planted between 8 and 12 feet on center. Shrubs will be planted between 4 and 5 feet on center or clustered in single-species groups of no more than 4 plants, with each cluster planted between 8 and 10 feet on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing measurements.
- More than two species of shrubs are proposed, and not more than 50 percent of the trees to be planted are of the same genus.

- All mitigation will occur both on site and on contiguous property located off-site of the proposed project area.
- Invasive non-native or noxious vegetation will 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.
- Bare or open soil areas remaining after the required tree and shrub plantings will be seeded to 100% surface coverage with grasses or other groundcover species identified as native on the Milwaukie Native Plant List. Revegetation will occur during the next planting season following the site disturbance.

Table 3. Area A (3,686 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Fraxinus latifolia	Oregon ash	20	Container or field grown	½ in caliper
Populus balsamifera	Black cottonwood	20	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	62	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	62	1 gal.	12 in
Sambucus racemosa	Red elderberry	62	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Table 4. Enhancement Area B (3,489) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Acer macrophyllum	Bigleaf maple	12	Container or field grown	½ in caliper
Quercus garyana	Oregon Oak	12	Container or field grown	½ in caliper
Pseudotsuga menzieszii	Douglas Fir	12	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	35	1 gal.	12 in
Lonicera involucrata	Twinberry Honeysuckle	35	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	35	1 gal.	12 in
Sambucus racemosa	Red elderberry	35	1 gal.	12 in
Symphoricarpos alba	Snowberry	35	1 gal.	12 in

Species	Common Name	Quantity	Stock Type	Plant Size
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Table 5. Area C (10,057 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Alnus rubra	Red alder	35	Container or field grown	½ in caliper
Fraxinus latifolia	Oregon ash	35	Container or field grown	½ in caliper
Populus balsamifera	Black cottonwood	35	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	110	1 gal.	12 in
Lonicera involucrate	Twinberry Honeysuckle	110	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	110	1 gal.	12 in
Sambucus racemosa	Red elderberry	110	1 gal.	12 in
Symphoricarpos alba	Snowberry	110	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Table 6. Area D (6,509 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Acer macrophyllum	Bigleaf maple	25	Container or field grown	½ in caliper
Quercus garyana	Oregon Oak	25	Container or field grown	½ in caliper
Pseudotsuga menzieszii	Douglas Fir	25	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	65	1 gal.	12 in
Lonicera involucrata	Twinberry Honeysuckle	65	1 gal.	12 in

Physocarpus capitatus	Pacific ninebark	65	1 gal.	12 in
Sambucus racemosa	Red elderberry	65	1 gal.	12 in
Symphoricarpos alba	Snowberry	65	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

The types of plants to be installed were chosen from the Milwaukie Native Plant List and by the suitability to site conditions and the types of native species that were observed on the site. Two planting zones were established within the mitigation areas: Mesic, and Wet. Based on on-site observations, areas closer to the water surface exhibit a plant community that tolerates wetter conditions. Enhancement areas A and C have the "Wet" planting schedule, while B and D are mesic. The schedule includes more trees and shrubs than required by code to compensate for potential mortality. The tree and shrub plantings will improve vegetation structure and diversity, and thereby, enhance wildlife habitat compared to the extensive coverage of existing non-native species which are currently present.

- ***Plant and/or seed all bare areas to provide 100% surface coverage.***

All disturbed soil surfaces will be seeded with a native seed mix, as listed in Tables 3 through 6 and shown in Figure 9A. Areas temporarily disturbed due to the removal of invasive plant species will be seeded with this seed mix.

- ***Inventory and remove debris and noxious materials.***

At the time of site construction, the Applicant will identify man-made debris and noxious materials that may be present within the WQR. Any such debris or materials will be removed from the WQR. This will occur within the mitigation area, as shown on Figure 9.

c. Sufficient description to demonstrate how the following standards will be achieved:

(1) Where existing vegetation has been removed, the site shall be revegetated as soon as practicable.

Within the mitigation area, soils disturbed as a result of the removal of non-native invasive plants will be seeded with the native seed mix described in Tables 3 through 6 and shown in Figure 9A, as soon as practicable following the removal of the invasive plants. Woody material will be planted in the mitigation area in the fall/winter immediately following construction to maximize the survival of the plantings.

(2) 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.

Lights will be placed so that they do not shine directly into the WQR and/or HCA. The type, size, and intensity of lighting will be selected so that impacts to habitat functions are minimized.

(3) Areas of standing trees, shrubs, and natural vegetation will remain connected or contiguous; particularly along natural drainage courses, except where mitigation is approved; so as to provide a transition between the proposed development and the designated natural resource and to provide opportunity for food, water, and cover for animals located within the WQR.

With the exception of the removal of invasive plants from the proposed mitigation area, existing trees, shrubs, and natural vegetation within the WQR will remain undisturbed during the proposed construction.

d. A map showing where the specific mitigation activities will occur. Off-site mitigation related to WQRs shall not be used to meet the mitigation requirements of Section 19.402.

Figure 9 depicts the location of proposed mitigation activities. Mitigation is proposed to occur both on-site and off-site.

e. An implementation schedule; including a timeline for construction, mitigation, mitigation maintenance, monitoring, and reporting; as well as a contingency plan. All in-stream work in fish-bearing streams shall be done in accordance with the allowable windows for in-water work as designated by ODFW.

Construction of the proposed project is anticipated to begin in the June/July of 2021. Activities associated with the WQR/HCA mitigation are anticipated to begin in summer 2021. Removal of any existing man-made debris and noxious materials from the WQR will occur in summer 2021, as will the removal of invasive plants from the mitigation area (Figure 9). Plantings will be installed in the mitigation area in late fall/winter of 2021/2022.

Monitoring of the mitigation area will be conducted in the summer of 2022. An annual monitoring report documenting the survival of the mitigation plantings will be submitted to the City of Milwaukie by December 31 of each monitoring year. A slight overage of plant material is proposed to help compensate for mortality. Plants that die shall be replaced in kind as needed to ensure the minimum 80% of the required quantity of 205 trees and 898 shrubs survive.

No in-stream work is proposed to occur as part of this project.

B. Approval Criteria

1. Unless specified elsewhere in Section 19.402, applications subject to the discretionary review process shall demonstrate how the proposed activity complies with the following criteria:

a. Avoid

The proposed activity avoids the intrusion of development into the WQR and/or HCA to the extent practicable. The proposed activity shall have less detrimental impact to the designated natural resource than other practicable alternatives, including significantly different practicable alternatives that propose less development within the resource area.

The proposed project avoids development within the WQR and HCA to the extent practicable, given site constraints. As discussed earlier in this document, the alternative site designs (Figure 6) have would eliminate impacts to the WQR, HCA, however building outside the HCA line, or altering the building to allow for mitigation to occur on site, would result in a building that is at least 21% smaller, and provide less density that is not comparable to recently approved projects (Axletree Apartments on 21st and Washington for example) or the goals of the DMU zone and HNA. The proposed site design is the optimal alternative for site development that would meet the City's minimum density requirements while also avoiding and minimizing impacts to natural resources on the site to the extent practicable.

b. Minimize

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

(1) The proposed activity shall minimize detrimental impacts to ecological functions and loss of habitat, consistent with uses allowed by right under the base zone, to the extent practicable.

Implementation of the proposed mitigation will ensure the proposed project minimizes adverse effects to the ecological functions of the WQR and loss of habitat, as follows:

- The minimization of areal impacts as well as the proposed plantings to restore native plant communities on the east side of Kellogg lake will ensure that the WQR continues to provide vegetated corridors that separate protected water features from development.
- As the proposed tree and shrub plantings East of Kellogg Lake mature, they will increasingly provide microclimate regulation and shade and provide better microclimate regulation and shade as compared to the existing plant communities.
- The diverse plant community within the WQR, HCA and floodplain storage area will continue to provide water filtration, infiltration, and natural purification functions. The proposed project will not adversely affect these functions.
- The proposed mitigation plantings and the resulting diverse plant community within the WQR, HCA and floodplain storage area will continue to provide bank stabilization and sediment and pollution control functions. The proposed project will not adversely affect these functions.
- Trees will remain within the vegetated corridor following construction, and therefore, the WQR will continue to provide the potential for large wood recruitment and retention functions. No impacts are proposed for the lake, and therefore, there will be no adverse impact on channel dynamics.
- Because the WQR will continue to be vegetated with a diverse plant community, the proposed project will not adversely affect the resource's ability to provide organic inputs to the stream and riparian area.

(2) To the extent practicable within the designated natural resource, the proposed activity shall be designed, located, and constructed to:

(a) Minimize grading, removal of native vegetation, and disturbance and removal of native soils; by using the approaches described in Subsection 19.402.11.A, reducing building footprints, and using minimal excavation foundation systems (e.g., pier, post, or piling foundation).

In accordance with MMC Subsection 19.402.11.A, the following measures will be implemented to minimize impacts to the WQR on the site:

- Work areas will be marked to reduce potential damage to the WQR.
- Trees in the WQR will not be used as anchors for stabilizing construction equipment.
- Native soils disturbed during development shall be conserved on the property.
- The Applicant has prepared a preliminary grading and erosion control plan. Prior to the start of any construction activities, the applicant will apply for a grading and erosion control permit, consistent with the standards required by the City's Public Works Department.

- The Applicant will implement best management practices on site to prevent the drainage of hazardous materials, erosion, pollution or sedimentation within the resources and the vegetative corridors.
- The Applicant has prepared a preliminary stormwater detention and water quality plan for the project which has been designed to prevent flows within and to natural drainage courses which might exceed pre-developed conditions.
- Prior to construction, the WQR and HCA that are to remain undeveloped will be flagged, fenced, or otherwise marked and shall remain undisturbed. Such markings will be maintained until construction is complete.
- 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.
- Lights will be placed so that they do not shine directly into the WQR and/or HCA.
- The Applicant has prepared a construction management plan which will conform 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) Minimize adverse hydrological impacts on water resources.

The implementation of the proposed stormwater management plan, which detains post-development runoff at or below pre-development release rates will ensure that hydrologic impacts to the water resources are minimized.

(c) Minimize impacts on wildlife corridors and fish passage.

No work is proposed in water, which will ensure the project avoids impacts to fish passage along Kellogg Lake. Restoration with a diverse native plant community within the riparian corridor will ensure that impacts to wildlife habitat are minimized, and temporary.

(d) Allow for use of other techniques to further minimize the impacts of development in the resource area; such as using native plants throughout the site (not just in the resource area), locating other required landscaping adjacent to the resource area, reducing light spill-off into the resource area from development, preserving and maintaining existing trees and tree canopy coverage, and/or planting trees where appropriate to maximize future tree canopy coverage.

Impacts to the on-site resources have been minimized to the extent practicable.

c. Mitigate

If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the designated natural resource, then the proposed activity shall mitigate for adverse impacts to the resource area. All proposed mitigation plans shall meet the following standards:

(1) The mitigation plan shall demonstrate that it compensates for detrimental impacts to the ecological functions of resource areas, after taking into consideration the applicant's efforts to minimize such detrimental impacts.

As described above, implementation of the proposed mitigation will ensure the proposed project minimizes adverse effects to the ecological functions of the WQR and loss of habitat, as follows:

- The minimization of areal impacts as well as the proposed plantings to restore a native plant community on the east side of Kellogg Lake will ensure that the WQR continues to provide a vegetated corridor that separates protected water features from development.
- As the proposed tree and shrub plantings east of Kellogg Lake mature, they will increasingly provide microclimate regulation and shade for the lake and provide better microclimate regulation and shade as compared to the existing plant community.
- The diverse plant community within the WQR will continue to provide water filtration, infiltration, and natural purification functions. The proposed project will not adversely affect these functions.
- The proposed restoration plantings and the resulting diverse plant community within the WQR will continue to provide bank stabilization and sediment and pollution control functions. The proposed project will not adversely affect these functions.
- Trees will remain within the vegetated corridor following construction, and therefore, the WQR will continue to provide the potential for large wood recruitment and retention functions.
- Because the WQR will continue to be vegetated with a diverse plant community, the proposed project will not adversely affect the resource's ability to provide organic inputs to the stream and riparian area.

(2) Mitigation shall occur on the site of the disturbance, to the extent practicable. Off-site mitigation for disturbance of WQRs shall not be approved. Off-site mitigation for disturbance of HCAs shall be approved if the applicant has demonstrated that it is not practicable to complete the mitigation on-site and if the applicant has documented that they can carry out and ensure the success of the off-site mitigation as outlined in Subsection 19.402.11.B.5.

In addition, if the off-site mitigation area is not within the same subwatershed (6th Field Hydrologic Unit Code) as the related disturbed HCA, the applicant shall demonstrate that it is not practicable to complete the mitigation within the same subwatershed and that, considering the purpose of the mitigation, the mitigation will provide more ecological functional value if implemented outside of the subwatershed.

A portion of the mitigation will occur off-site at Dogwood Park immediately to the south.

(3) All revegetation plantings shall use native plants listed on the Milwaukie Native Plant List.

Only native species will be installed in the revegetation plantings. A list of species to be planted is provided on Figure 9.

(4) All in-stream work in fish-bearing streams shall be done in accordance with the allowable windows for in-water work as designated by ODFW.

No in-stream work is proposed to occur with this project.

(5) A mitigation maintenance plan shall be included and shall be sufficient to ensure the success of the planting. Compliance with the plan shall be a condition of development approval.

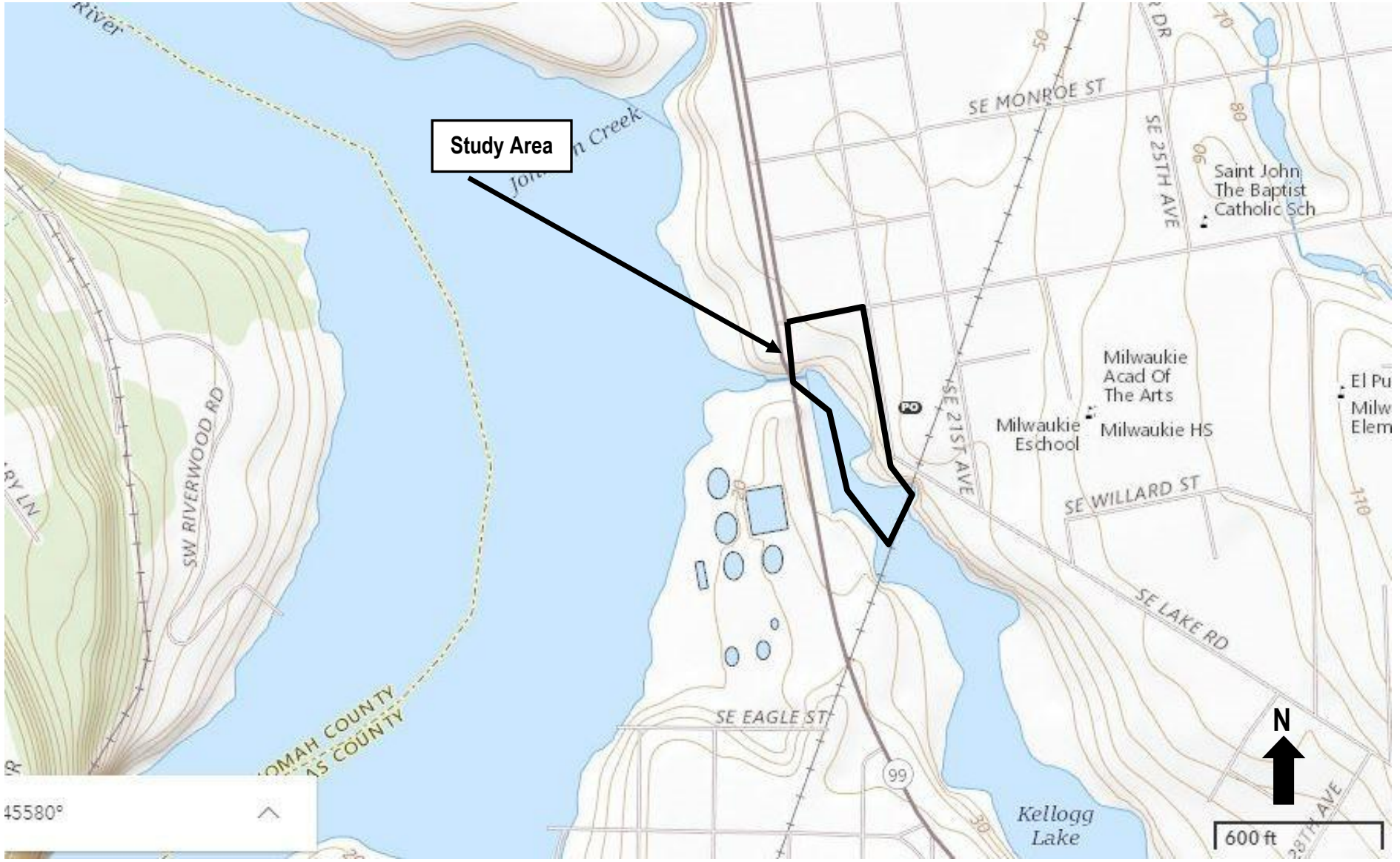
The Applicant will undertake the following mitigation maintenance measures to ensure a minimum of 80 percent of the trees and shrubs planted remain alive two years after the mitigation planting is completed.

- New plantings will be mulched to a minimum of 3-inch depth and 18-inch diameter to retain moisture and discourage weed growth.
- Non-native or noxious vegetation will be removed or controlled throughout the maintenance period.
- Plant sleeves or fencing will be used to protect trees and shrubs against wildlife browsing and the resulting damage to plants.
- New plantings will be watered at a rate of 1 inch per week between June 15 and October 15 for the first two years following planting.

Attachment A

Figures



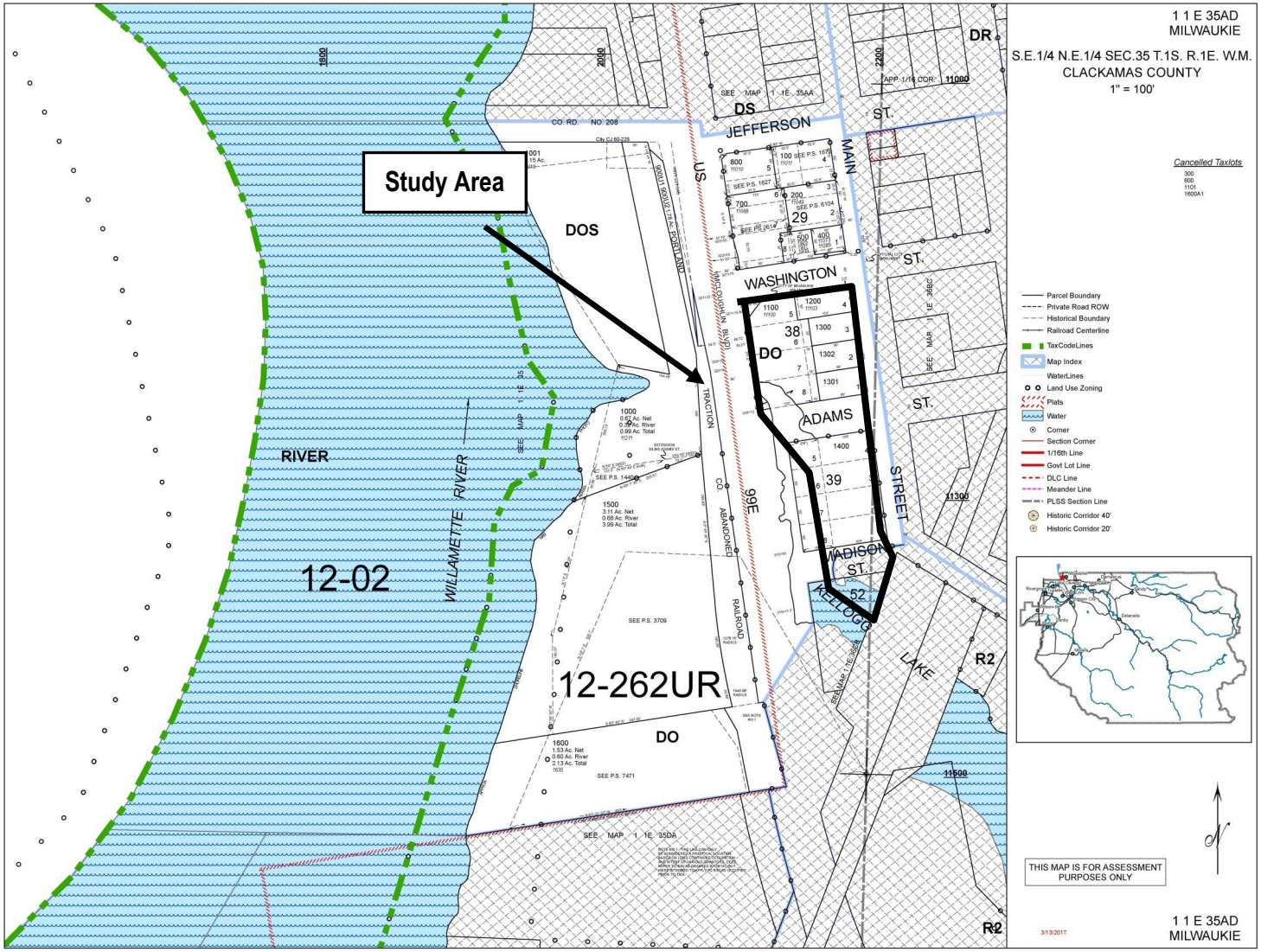


Project#6517
11/30/2020

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

General Location and Topography
Coho Point - Milwaukie, Oregon
United States Geological Survey (USGS) Gladstone, Oregon 7.5 quadrangle, 2020
(viewer.nationalmap.gov/basic)

FIGURE
1



Project#6517
11/30/2020

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Tax Lot Map
Coho Point - Milwaukie, Oregon
The Oregon Map (ormap.net)

FIGURE
2



Project#6517
11/30/2020

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Aerial Photo
Coho Point - Milwaukie, Oregon
GoogleEarth, 2019

FIGURE
2A

City of Milwaukie Zoning

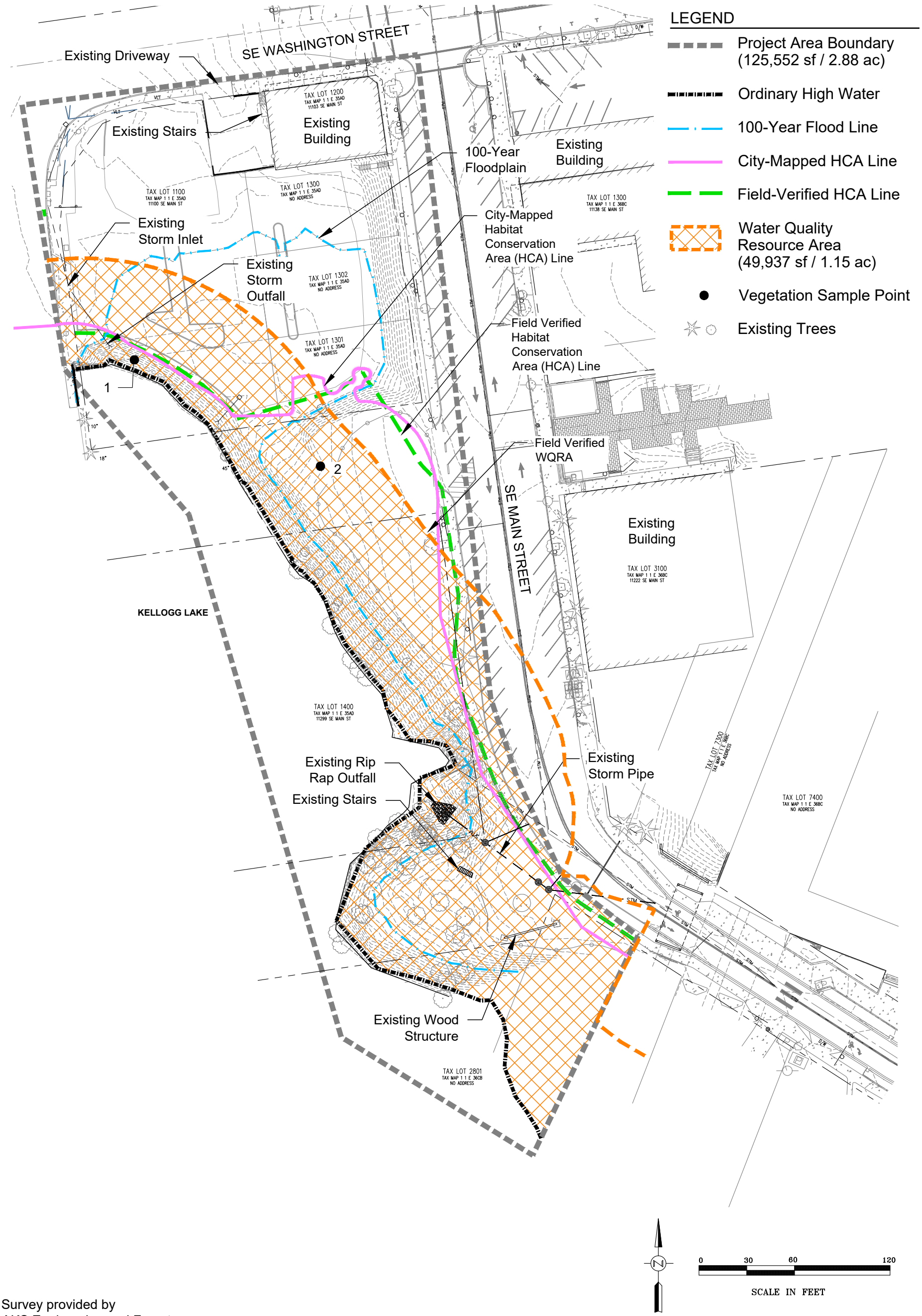


Project#6517
12/1/2020

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Vegetated Corridor and Habitat Conservation Area Map
Coho Point - Milwaukie, Oregon
Milwaukie.maps.arcgis.com

FIGURE
3



Survey provided by
AKS Engineering and Forestry

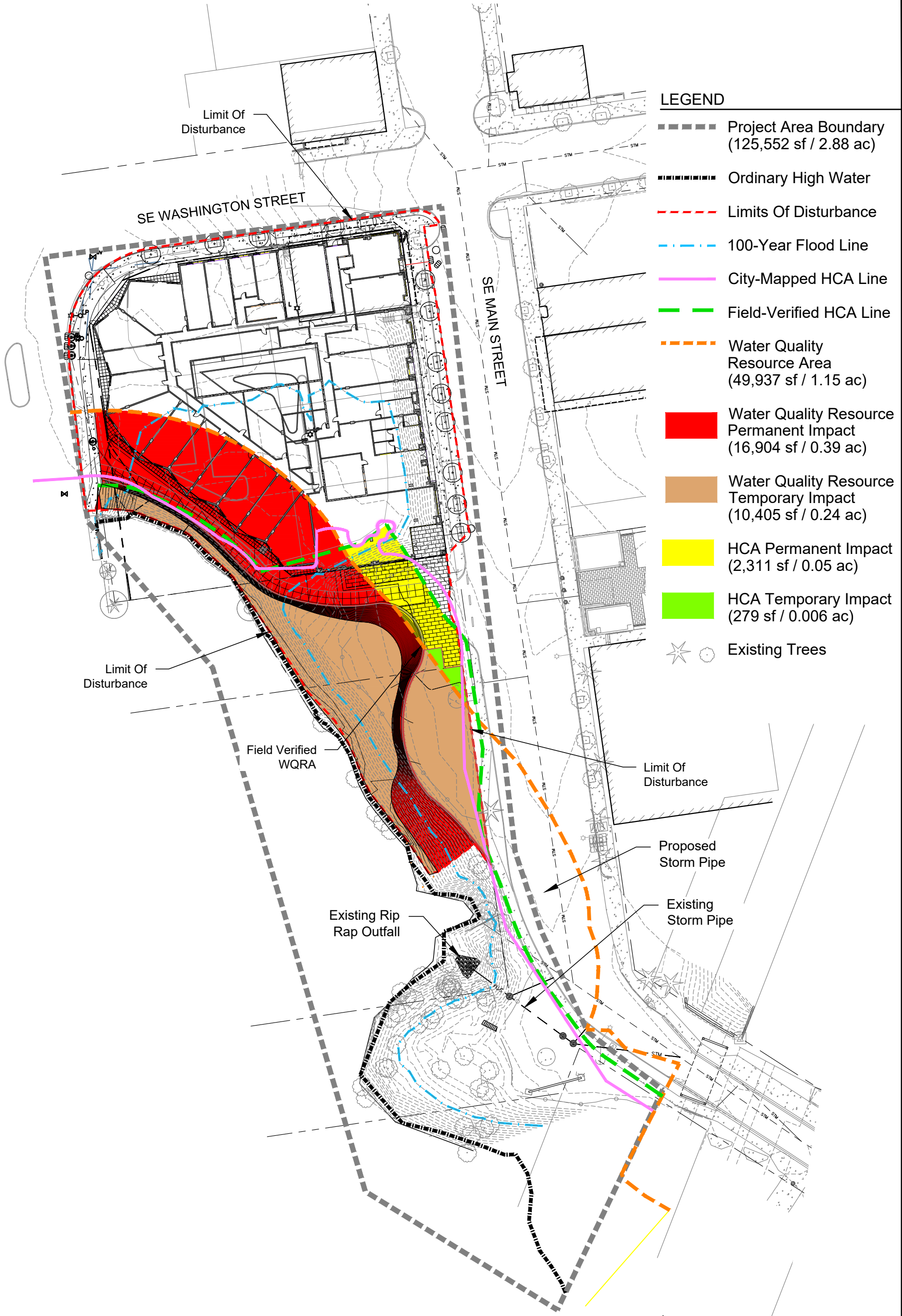
PHS
Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

Existing Conditions
Coho Point - Milwaukie, Oregon

FIGURE
4

9-21-2021

X:\Project Directories\6500\6517 Coho Point\AutoCAD\Plot Dwg\HCA Figures\Fig4 HCAExistCond.dwg, 9/21/2021 11:10:06 AM



Site Plan Provided by DOWL

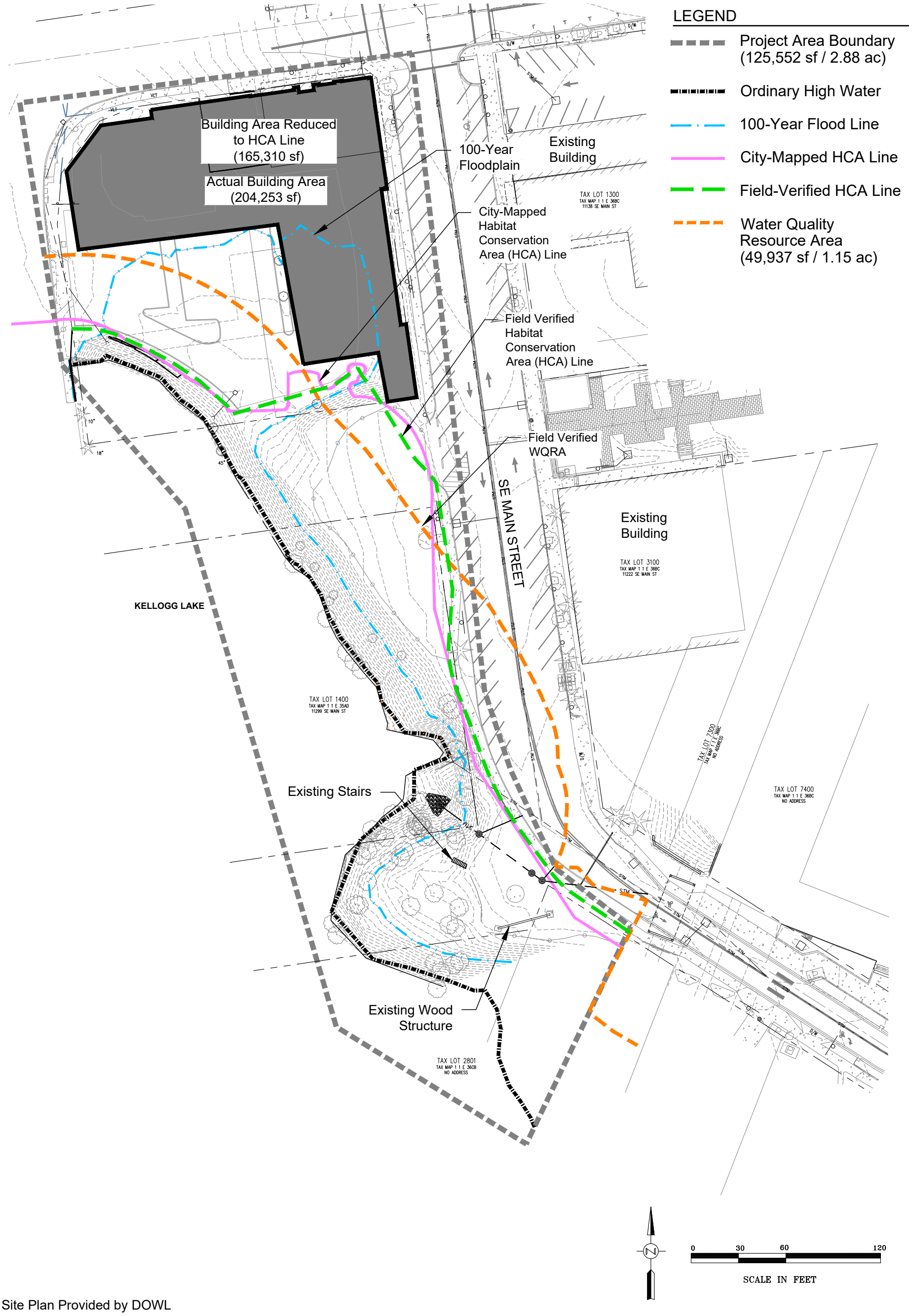
Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

Site Plan
Coho Point - Milwaukie, Oregon

FIGURE 5

3-16-2021

X:\Project Directories\6500\6517 Coho Point\AutoCAD\Plot Dwg\HCA Figures\Fig5 HCASitePlan.dwg, 3/16/2021 11:01:30 AM



Site Plan Provided by DOWL

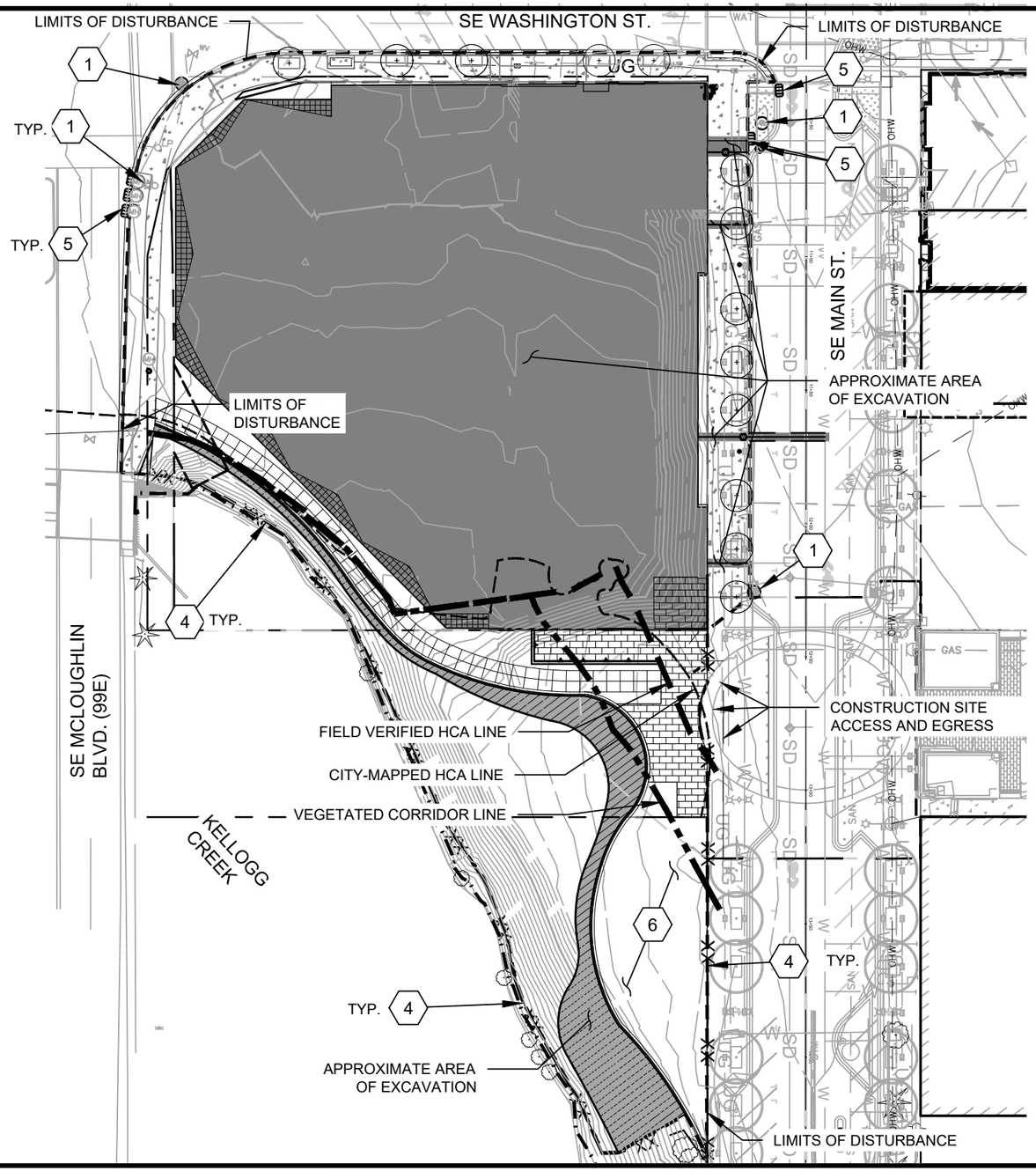
Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

Alternative Site Plan
Coho Point - Milwaukie, Oregon

FIGURE 6

1-22-2021

C:\Users\Lisa\Desktop\WorkFromHome\6517 Coho Point\AutoCAD\Plot Dwg\HCA Figures\Fig6 HCAAltSite.dwg, 1/22/2021 4:27:35 PM, AutoCAD PDF (High Quality Print).pc3



LEGEND

- EXISTING MAJOR CONTOUR — 180
- EXISTING MINOR CONTOUR — 181
- PROPOSED MAJOR CONTOUR — 181
- PROPOSED MINOR CONTOUR — 180
- EXISTING RIGHT-OF-WAY LINE
- VEGETATED CORRIDOR
- FIELD VERIFIED HCA LINE
- ORDINARY HIGH WATER LINE (24.0')
- CITY MAPPED HCA LINE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED PERVIOUS PLAZA
- PROPOSED PERVIOUS (GRATE) WALKWAY
- EXISTING FLOODPLAIN (38.0')
- PROPOSED FLOODPLAIN (38.0')
- INLET PROTECTION
- BIOBAG
- SEDIMENT FENCE — XX
- PROPOSED BUILDING & UTILITY EXCAVATION AREA
- PROPOSED GABION WALL EXCAVATION AREA

EROSION CONTROL NOTES

1. PROPOSED INLET PROTECTION.
4. PROPOSED SEDIMENT FENCE.
5. PROPOSED BIOBAG.
6. PROPOSED STOCKPILE AREA

0 25 50 100
SCALE IN FEET

DESCRIPTION OF WORK

THE PROPOSED PROJECT IS A MULTI-USE BUILDING ALONG SE MCLOUGHLIN BLVD (99E), SE MAIN ST, AND SE WASHINGTON ST. SITE WORK TO INCLUDE A GABION WALL ALONG THE EDGE OF KELLOGG CREEK TO BALANCE THE FLOODPLAIN, AS WELL AS NEW SIDEWALK AND NEW STREET TREES ALONG THE SURROUNDING RIGHTS-OF-WAY. WORK TO ALSO INCLUDE CONCRETE PAVER PLAZA, WALKWAY BETWEEN SE MAIN ST AND SE MCLOUGHLIN BLVD, AND INSTALLATION OF NEW UTILITY LINES INCLUDING SANITARY, STORM, AND FIRE AND DOMESTIC WATER.

Base provided by DOWL.

Construction Management Site Plan

Project Name - Location

FIGURE 7

1-19-2021

Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

X:\Project Directories\6500\6517 Coho Point\AutoCAD\Plot Dwg\Fig7 HCAConstMan.dwg, 1/19/2021 4:13:44 PM



Survey provided by ??
Survey and Sample point accuracy is sub-centimeter.

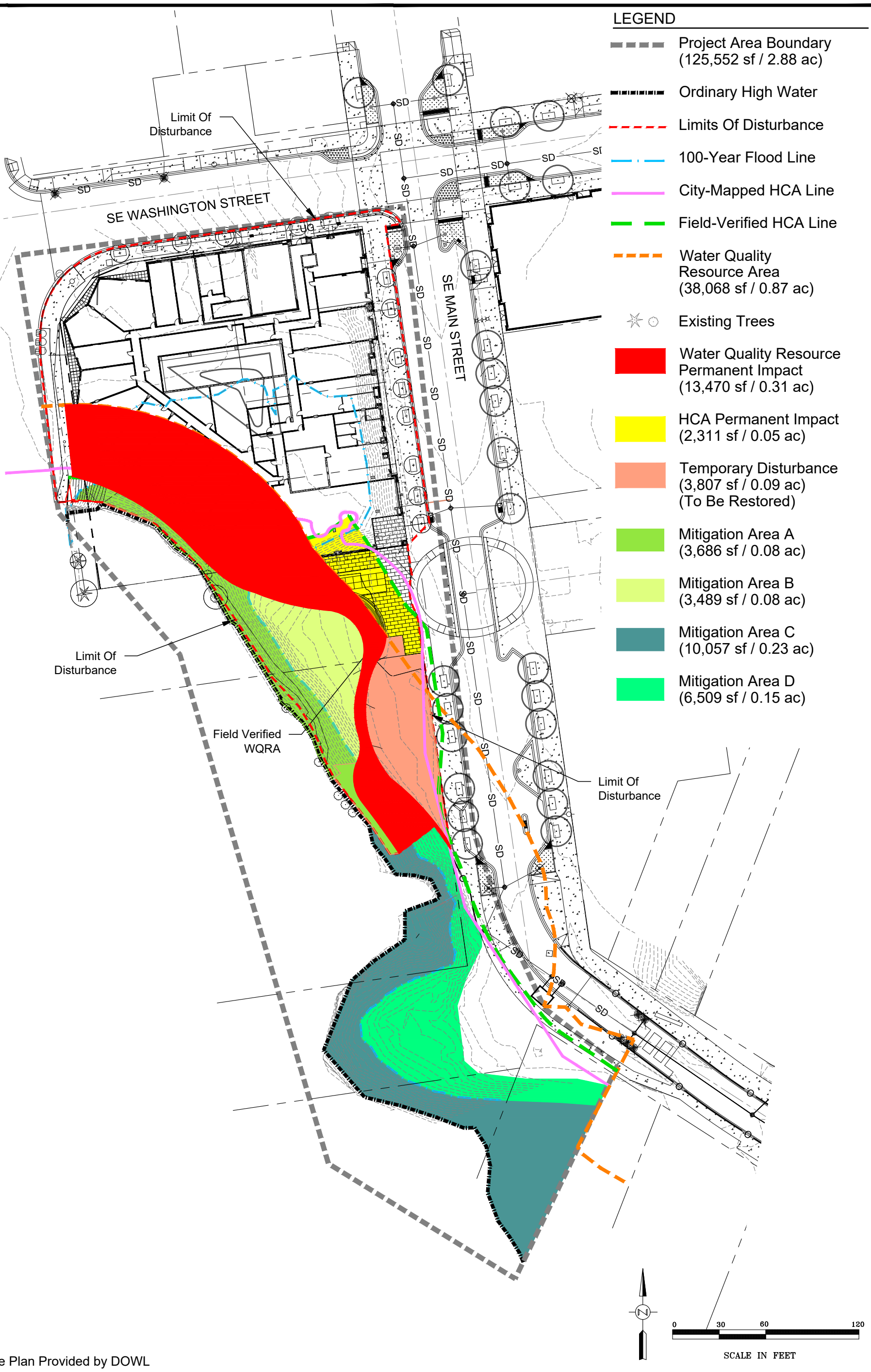
PHS
Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

Tree Removal Site Plan
Coho Point - Milwaukie, Oregon

FIGURE 8

1-19-2021

X:\Project Directories\6500\6517 Coho Point\AutoCAD\Plot Dwg\Fig8 HCATreeRemov.dwg, 1/19/2021 4:57:38 PM



Site Plan Provided by DOWL

PHS
Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

Mitigation Site Plan
Coho Point - Milwaukie, Oregon

FIGURE
9

9-21-2021

X:\Project Directories\6500\6517 Coho Point\AutoCAD\Plot Dwg\HCA Figures\Fig9 HCAMitPlan.dwg, 9/21/2021 11:03:22 AM

Enhancement Area A (3,686 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Fraxinus latifolia	Oregon ash	20	Container or field grown	½ in caliper
Populus balsamifera	Black cottonwood	20	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	62	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	62	1 gal.	12 in
Sambucus racemosa	Red elderberry	62	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Additional Enhancement Area B (3,489 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Acer macrophyllum	Bigleaf maple	12	Container or field grown	½ in caliper
Quercus garyana	Oregon Oak	12	Container or field grown	½ in caliper
Pseudotsuga menzieszii	Douglas Fir	12	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	35	1 gal.	12 in
Lonicera involucrata	Twinberry Honeysuckle	35	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	35	1 gal.	12 in
Sambucus racemosa	Red elderberry	35	1 gal.	12 in
Symphoricarpos alba	Snowberry	35	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Enhancement Area C (10,057 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Alnus rubra	Red alder	35	Container or field grown	½ in caliper
Fraxinus latifolia	Oregon ash	35	Container or field grown	½ in caliper
Populus balsamifera	Black cottonwood	35	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	110	1 gal.	12 in
Lonicera involucrate	Twinberry Honeysuckle	110	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	110	1 gal.	12 in
Sambucus racemosa	Red elderberry	110	1 gal.	12 in
Symphoricarpos alba	Snowberry	110	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

Enhancement Area D (6,509 sf) Planting List

Species	Common Name	Quantity	Stock Type	Plant Size
Trees				
Acer macrophyllum	Bigleaf maple	25	Container or field grown	½ in caliper
Quercus garyana	Oregon Oak	25	Container or field grown	½ in caliper
Pseudotsuga menzieszii	Douglas Fir	25	Container or field-grown	½ in caliper
Shrubs				
Cornus alba	Red-osier dogwood	65	1 gal.	12 in
Lonicera involucrata	Twinberry Honeysuckle	65	1 gal.	12 in
Physocarpus capitatus	Pacific ninebark	65	1 gal.	12 in
Sambucus racemosa	Red elderberry	65	1 gal.	12 in
Symphoricarpos alba	Snowberry	65	1 gal.	12 in
Herbaceous seed mix				
Agrostis exarata	Spike bentgrass	2.0 lbs/ac	Seed	n/a
Bromus carinatus	California brome	2.0 lbs/ac	Seed	n/a
Deschampsia cespitosa	Tufted hairgrass	3.0 lbs/ac	Seed	n/a
Elymus glaucus	Blue wildrye	3.0 lbs/ac	Seed	n/a
Hordeum brachyantherum	Meadow barley	2.0 lbs/ac	Seed	n/a

PHS
Pacific Habitat Services,Inc.
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070
Phone: (503) 570-0800 Fax (503) 570-0855

Mitigation Plant Schedules (Areas A-D)
Coho Point - Milwaukie, Oregon

FIGURE 9A

1-22-2021

X:\Project Directories\6500\6517 Coho Point\AutoCAD\Plot Dwg\HCA Figures\Fig9A HCAMitPlantSchedules.dwg, 9/21/2021 11:02:53 AM

lancaster mobley



RENEWS:

Coho Point Mixed-Use Building

Transportation Impact Study

Milwaukie, Oregon

Date:
April 9, 2021

Prepared for:
Farid Bolouri
Black Rock LLC

Prepared by:
Jessica Hijar
Daniel Stumpf, PE
William Farley, PE

Table of Contents

Executive Summary 4

Project Description 5

- Introduction 5
- Location Description 5
  - Vicinity Streets 5
  - Study Intersections 7
  - Site Access Configuration 8
  - Proposed Parking 8
- Transit 9

Site Trips 12

- Trip Generation 12
  - Pass-by Trips 12
  - Multi-Modal Split Reduction 12
  - Analysis Results 12
- Trip Distribution 13

Traffic Volumes 17

- Existing Conditions 17
- Background Conditions 17
- Buildout Conditions 18

Safety Analysis 25

- Crash History Review 25
  - SE Harrison Street at OR-99E 27
  - SE Washington Street at OR-99E 27
  - SE Washington Street at SE 21st Avenue 27
  - Analysis Conclusions 27
- Sight Distance Evaluation 27
- Warrant Analysis 28
- Safe Pedestrian Routes to Vicinity School 28
  - Milwaukie High School & Milwaukie Academy of the Arts 28
  - Milwaukie El Puente Elementary 29
  - Rowe Middle School 29

Operational Analysis 31

- Intersection Capacity Analysis 31
- Performance Standards 31
- Delay & Capacity Analysis 31
- Queuing Analysis 34

Conclusions 35

Appendices

Appendix A
Site Plan

Appendix B
Trip Generation Calculations

Appendix C
Traffic Counts

Appendix D
In-Process Trips

Appendix E
Crash History Data

Appendix F
Sight Distance Exhibit

Appendix G
Preliminary Signal Warrant Analysis

Appendix H
Capacity Reports
Queuing Reports

List of Figures

Figure 1: Vicinity Map 11
Figure 2: Site Trip Assignment – Full Movement 14
Figure 3: Site Trip Assignment – Restricted Left-turn Egress 15
Figure 4: Site Trip Assignment – Right-in/Right-out 16
Figure 5: Year 2020 Existing Traffic Volumes 20
Figure 6: Year 2022 Background Conditions 21
Figure 7: Year 2022 Buildout Conditions – Full Movement 22
Figure 8: Year 2022 Buildout Conditions – Restricted Left-turn Egress 23
Figure 9: Year 2022 Buildout Conditions – Right-in/Right-out 24
Figure 10: Pedestrian Routes to Schools 30

List of Tables

Table 1: Vicinity Roadway Descriptions 6
Table 2: Downtown Street Cross Sections (Standard Drawing 506A) 7
Table 3: Study Intersection Descriptions 8
Table 4: Transit Line Descriptions 9
Table 5: Trip Generation Summary 13
Table 6: Crash Type Summary 26
Table 7: Crash Severity and Rate Summary 26
Table 8: Capacity Analysis Summary 32
Table 9: Site Access Queuing Analysis Summary 34

Executive Summary

1. The proposed Coho Point Mixed-Use Building will include the construction of a six-story building, consisting of 195 apartment units and up to 6,733 square feet of retail space, on five lots located at 11103 SE Main Street in Milwaukie, Oregon.
2. The trip generation calculations show that the proposed development is projected to generate 58 trips during the morning peak hour, 86 trips during the evening peak hour, and 1,046 average weekday trips.
3. No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. In addition, none of the study intersections exhibit crash rates near or above the 1.00 CMEV threshold nor do any of the study intersections along OR-99E have a crash rate exceeding ODOT's 90th percentile rate.
4. Adequate sight distances are currently available at the site access intersection to ensure safe and efficient operation along SE Washington Street.
5. Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at the intersection of SE Washington Street at SE Main Street under any of the analysis scenarios.
6. All study intersections are currently operating acceptably per City of Milwaukie and ODOT standards and are projected to continue operating acceptably through the 2022 buildout year of the site.
7. The projected 95th percentile queues which may result from site entering trips are not projected to extend back to the adjacent study intersections along SE Washington Street.

Project Description

Introduction

The proposed Coho Point Mixed-Use Building will include the construction of a six-story building, consisting of 195 apartment units and up to 6,733 square feet of retail space, on five lots located at 11103 SE Main Street in Milwaukie, Oregon. Based on correspondence with City of Milwaukie and Oregon Department of Transportation (ODOT) staff, the report conducts safety and capacity/level of service analyses at the following intersections.

1. SE Harrison Street at SE McLoughlin Boulevard (OR-99E);
2. SE Monroe Street at OR-99E;
3. SE Washington Street at OR-99E;
4. SE Washington Street at SE Main Street; and
5. SE Washington Street at SE 21st Avenue.

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

Location Description

The project site is located south of SE Washington Street, east of OR-99E, and west of SE Main Street in Milwaukie, Oregon. The subject site is located within downtown Milwaukie, with a mix of commercial and residential uses to the north and east, a public dog park to the south, Milwaukie Bay Park to the west (across the highway). Two notable land uses of significance within the site vicinity include a high school and elementary school to the east.

The project site includes five tax lots (lots 1100, 1200, 1300, 1301, and 1302) which encompass an approximate total of 0.94 acres. The northeastern lot (1200) is currently developed with a commercial office building while the remaining lots are utilized for off-street vehicle parking. Existing access to the site is currently provided along SE Washington Street and OR-99E; however, upon redevelopment of the site access to OR-99E will be closed while the current access onto SE Washington Street will be maintained.

Vicinity Streets

The proposed development is expected to impact seven roadways near the site. Table 1 provides a description of each of the vicinity roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Speed (MPH)	On-Street Parking	Curbs & Sidewalks	Bicycle Lanes
SE Harrison Street	City of Milwaukie	Arterial	25	Partially Permitted	Both Sides	Partial Both Sides
SE 17th Avenue	ODOT/City of Milwaukie	Arterial	35	Not Permitted	Partial Both Sides	Both Sides
SE Monroe Street	City of Milwaukie	Collector	25	Partially Permitted	Both Sides	None
SE Washington Street	City of Milwaukie	Collector	25	Partially Permitted	Both Sides	None
OR-99E	ODOT	Arterial/ District Hwy	30	Not Permitted	Partial Both Sides	Partial Both Sides
SE Main Street	City of Milwaukie	Collector/ Local Street	20/35	Partially Permitted	Partial Both Sides	Sharrow Streets
SE 21st Avenue	City of Milwaukie	Arterial	20	Partially Permitted	Both Sides	Sharrow Streets

Table Notes: Functional classification based on City of Milwaukie TSP and ODOT OHP.

Jurisdiction based on Milwaukie Road Jurisdiction Map and ODOT OHP.

In accordance with comments received by the City of Milwaukie's transportation consultant, a review of the cross-sections of adjacent roadways to the site was conducted. The adjacent roadways of SE Washington Street and SE Main Street are both classified as Collectors. According to the City's Transportation System Plan (TSP), collector cross-sections may contain the following:

- Pedestrian Zone with a minimum 5-foot width (if next to a Green Zone) or minimum 6-foot width if next to a Street Zone;
- Green Zone with a minimum 5-foot width; and
- Street Zone consisting of a Parking Zone (6-8 feet), Bicycle Zone (5-6 feet), and Motor Vehicle Zone (9-12 feet per travel lane).

Specific to Collectors, the Green Zone, Parking Zone and Bicycle Zone are optional if right-of-way width is limited. Additionally, a center turn lane is only required when warranted. However, variations to the cross-sections may be allowed under specific circumstances.

Additionally, the roadways are located the City's downtown plan area, where standard drawing number 506A would be applicable. Per this standard detail, dimensions pertaining to each roadway are presented in Table 2.

Table 2: Downtown Street Cross Sections (Standard Drawing 506A)

Street Name	Right-of-Way	Curb-to-Curb	Sidewalk	Landscape	Parking	Bike Lane	Travel Lane	Median or Turn Lane
SE Washington Street	60 ft	36 ft - 40 ft	10 ft - 12 ft	0 ft to 5 ft	0 ft to 7 ft	0 ft	11 ft	0 ft to 11 ft lane
SE Main Street	60 ft - 80 ft	22 ft - 54 ft	12 ft - 16 ft	0 ft to 7 ft	0 ft to 7 ft	0 ft	11 ft - 14 ft	None

SE Washington Street along site frontage generally has four vehicular travel lanes (two travel lanes in the eastbound direction and two travel lanes in the westbound direction), all of which are approximately 10 feet in width. Near the intersection with SE Main Street, the westbound direction of travel is reduced to a single travel lane with a width of approximately 12 feet, in order to accommodate a curb extension at the intersection. Just west of the curb extension is a 60 foot "No Parking Loading Zone". No Green Zone or Bicycle Zone are provided, and sidewalks are at least 6 feet wide.

SE Main Street along site frontage has no Green Zone or Bicycle Zone but has temporary asphalt sidewalks of at least 6 feet wide. On-street parking is available along both sides of the roadway: angled parking is available along the east side of the road with a width of approximately 11 feet while parallel parking is available along the west side of the road with a width of approximately 9 feet. The roadway has one vehicular travel lane in the northbound direction and one lane in the southbound direction of travel, each of which are 11 feet wide.

It should be noted that both roadways have recently undergone reconstruction/redesign. Based on a review of these adjacent roadways in conjunction with the reconstruction/redesign projects, both are consistent with the applicable roadway cross-section standards identified in the TSP.

Study Intersections

A majority of site trips generated by the proposed development are expected to impact five nearby intersections of significance. A summarized description of the study intersections, under their existing lane configurations, is provided in Table 3.

Table 3: Study Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	SE Harrison Street at OR-99E	Four-Legged	Traffic Signal	Protected NB/SB Left-turns, Split EB/WB Approaches, Overlap EB Right-turn
2	SE Monroe Street at OR-99E	Three-Legged	Traffic Signal	Permitted NB/SB & WB Approaches, Restricted SB Left-turn
3	SE Washington Street at OR-99E	Four-Legged	Traffic Signal	FYA SB Left-turn, Permitted EB/WB Approaches, Restricted SB Right-turn, NB Left-turn
4	SE Washington Street at SE Main Street	Four-Legged	Stop-Controlled	All-Way Stop-Controlled
5	SE Washington Street at SE 21st Avenue	Four-Legged	Traffic Signal	Permitted NB/SB & EB/WB Approaches

Table Notes: Flashing-Yellow-Arrow denoted as FYA.

Site Access Configuration

According to the City of Milwaukie Municipal Code Section *12.16.040 Access Requirements and Standards*, spacing for accessways along Collector and Arterial roadways shall be a minimum of 300 feet and 600 feet, respectively, measured between the nearest edge of driveway aprons between accessways or the nearest edge of the driveway apron to the nearest face of curb of the intersecting street (or nearest edge of pavement if no curb is available).

Based on an assessment of the adjacent roadways to the site, there are no locations along OR-99E, SE Washington Street, or SE Main Street where access spacing standards can be met (i.e. spacing with driveways and intersecting roadways along either sides of the adjacent streets). Accordingly, the proposed public access along SE Washington Street is planned near its current existing location, offset slightly to the east further away from OR-99E. However, in the event that City staff require turning-movements be restricted at the site access intersection, the following three access scenarios were analyzed: full-movement, restricted left-turn site egress, and right-in/right-out only. Note that the current public access driveway was planned and constructed as part of the City's South Downtown Improvements project.

Proposed Parking

As part of the proposed development, below grade vehicle parking as well as bicycle parking will be available for residents. In total 101 below grade parking stalls and 232 bicycle parking spaces will be provided. For customers of the retail uses, existing at grade parking may be utilized.

Transit

The project site is located near 11 TriMet transit lines, all of which have stops located within a quarter-mile walking/biking distance of the site. Complete sidewalks and adequate crossing measures are available between the site and the nearest stops which serve each transit line. A summarized description of each transit line is shown in Table 4.

Table 4: Transit Line Descriptions

Transit Line (TriMet)	Service Area	Service Time			Typical Headways (Minutes)	Nearest Stops
		Day	To	From		
MAX Orange LRL	Milwaukie, Portland State University, Portland City Center	Wk	4:00 AM	12:30 PM	15 to 30	Northwest of SE Lake Road at SE 21st Avenue
		Sat	5:00 AM	1:30 AM	15 to 30	
		Sun	5:00 AM	1:30 AM	15 to 30	
Bus Line #29 - Lake/Webster Rd	Milwaukie, Clackamas Town Center	Wk	5:35 AM	7:55 PM	75 to 90	SE Washington Street at SE 21st Avenue
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #30 - Estacada	Clackamas Town Center, Estacada, Milwaukie, Portland City Center	Wk	4:30 AM	9:20 PM	30 to 60	SE Jackson Street between Main Street and 21st Avenue
		Sat	8:20 AM	7:20 PM	60	
		Sun	-	-	-	
Bus Line #32 - Oatfield	Milwaukie, Gladstone, Oregon City, CCC	Wk	4:45 AM	9:55 PM	15 to 60	SE Washington Street at SE 21st Avenue
		Sat	9:40 AM	5:30 PM	60	
		Sun	-	-	-	
Bus Line #33 - McLoughlin/ King Rd	Clackamas Town Center, Milwaukie, Gladstone, Oregon City, CCC	**Wk**	**4:15 AM**	**1:55 AM**	**15 to 60**	SE Jefferson Street at SE Main Street
		Sat	**5:30 AM**	**1:50 AM**	**15 to 60**	
		Sun	**5:30 AM**	**1:50 AM**	**15 to 60**	
Bus Line #34 - Linwood/ River Road	Clackamas Town Center, Milwaukie, Gladstone, Oregon City TC	Wk	5:55 AM	8:05 PM	30 to 40	SE Jefferson Street at SE Main Street
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #70 - 12th/NE 33rd Ave	Columbia River Correctional Facility, Lloyd Center, Milwaukie	Wk	5:00 AM	11:10 PM	10 to 45	SE Jackson Street between Main Street and 21st Avenue
		Sat	8:40 AM	11:05 PM	20 to 30	
		Sun	8:45 AM	7:50 PM	20 to 35	

Table Notes: Light Rail Line denoted as LRL.

BOLDED *text indicates frequent service.*

Table 4: Transit Line Descriptions (Continued)

Transit Line (TriMet)	Service Area	Service Time			Typical Headways (Minutes)	Nearest Stops
		Day	To	From		
Bus Line #75 - Cesar Chavez/ Lombard	St. Johns Neighborhood, N Lombard TC, Hollywood TC, Milwaukie	**Wk**	**4:45 AM**	**1:30 AM**	**15 to 30**	SE Jackson Street between Main Street and 21st Avenue
		Sat	**5:30 AM**	**1:40 AM**	**15 to 40**	
		Sun	**5:30 AM**	**1:40 AM**	**15 to 40**	
Bus Line #99 - Macadam/ McLoughlin	Portland City Center, Milwaukie, Oregon City TC, CCC	Wk	5:15 AM	7:20 PM	15 to 30	SE Jackson Street between Main Street and 21st Avenue
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #152 - Milwaukie	Milwaukie, Clackamas Town Center	Wk	6:30 AM	6:35 PM	30 to 40	SE Jackson Street between Main Street and 21st Avenue
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #291 - Orange Night Bus	Milwaukie, Portland State University, Portland City Center	Wk	11:45 PM	1:20 AM	60	SE Jackson Street between Main Street and 21st Avenue
		Sat	12:45 PM	1:20 AM	-	
		Sun	12:45 PM	1:20 AM	-	

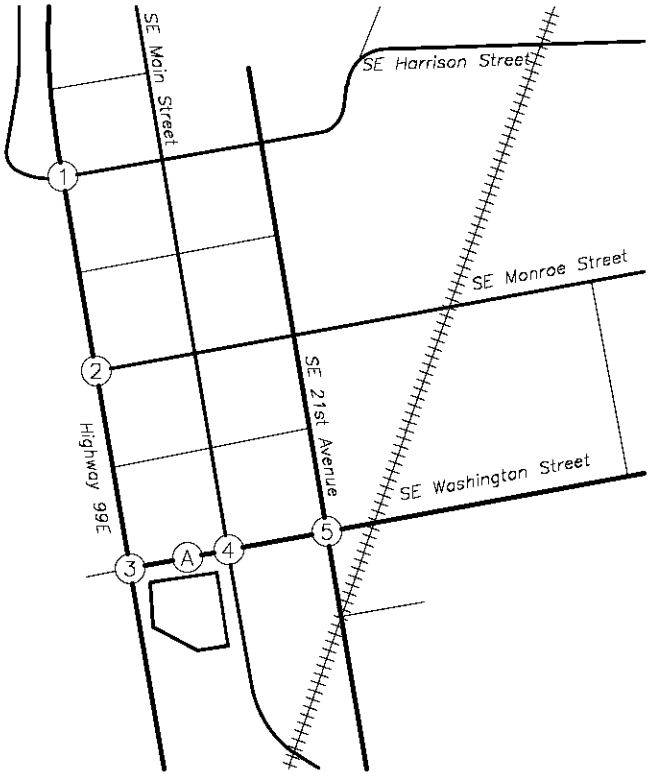
Table Notes: Light Rail Line denoted as LRL.

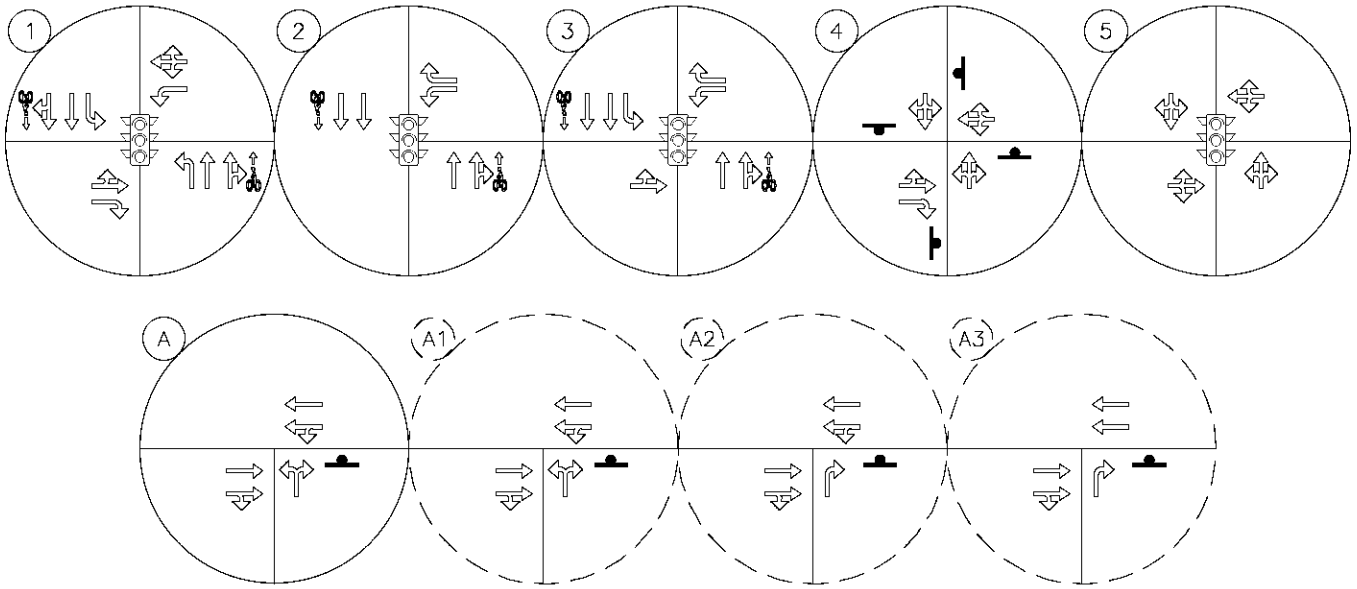
BOLDED *text indicates frequent service.*

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations is shown in Figure 1.

LEGEND

- STUDY INTERSECTION (EXISTING)
- STUDY INTERSECTION (PROPOSED)
- STOP SIGN
- TRAFFIC SIGNAL
- BIKE LANE
- PROJECT SITE
- ARTERIAL ROADWAY
- COLLECTOR ROADWAY
- LOCAL ROADWAY
- RAILROAD TRACKS





no scale

lancaster mobley

VICINITY MAP

Figure 1

Coho Point

4/9/2021

Site Trips

Trip Generation

The proposed Coho Point Mixed-Use Building will include the construction of a six-story building, consisting of 195 apartment units and up to 6,733 square feet of retail space, replacing an existing office building of approximately 7,706 square feet. To estimate the number of trips generated by the existing and proposed uses, trip rates from the *Trip Generation Manual*[1] were used. Data from land use code 221, *Multifamily Housing (Mid-Rise)*, and code 820, *Shopping Center*, was used to estimate the proposed development's trip generation based on the number of dwelling units and square footage of gross building floor area, respectively. To estimate the existing office building's trip generation, data from land use code 710, *General Office Building*, was used based on the square-footage of gross building floor area.

Pass-by Trips

The retail portion of the proposed development is expected to attract pass-by and diverted trips to the site. Pass-by trips are trips that leave the adjacent roadway to patronize a land use and then continue in their original direction of travel. Similar to pass-by trips, diverted trips are trips that divert from the nearby roadway not adjacent to the site to patronize a land use before continuing to their original destination. Pass-by trips do not add additional vehicles to the surrounding transportation system; however, they do add additional turning movements at site access intersections. Diverted trips may add turning movements at both site access and other nearby intersections.

Pass-by and diverted trip rates were determined using data provided within the *Trip Generation Handbook*[2]. Data from land use code 820 was used to determine an evening peak hour pass-by rate for the retail portion of the proposed mixed-use building. It is assumed that the morning peak hour and weekday rates would approximately match the evening peak hour rate. For the purposes of this analysis, pass-by trips were drawn from SE Washington Street while diverted trips were treated as primary trips.

Multi-Modal Split Reduction

The proposed mixed-use building is located within a multi-modal area of downtown Milwaukie, which provides well-connected pedestrian/bicycle facilities with multiple transit services nearby. Due to the variety of alternative modes of travel to and from the site, and to maintain consistency with the *Project Galaxy Transportation Impact Analysis* (TIA), dated May 5th, 2017, a ten percent transit reduction to the site trips generated by the residential portion of the proposed use was taken.

Analysis Results

The trip generation calculations show that the proposed development is projected to generate 58 trips during the morning peak hour, 86 trips during the evening peak hour, and 1,046 average weekday trips. The trip generation estimates are summarized in Table 5. Detailed trip generation calculations are included in the technical appendix to this report.

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.
[2] Institute of Transportation Engineers (ITE), *Trip Generation Handbook*, 3rd Edition, 2014.

Table 5: Trip Generation Summary

	ITE Code	Size/Rate	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Exisiting Conditions									
Office Building	710	7,706 SF	8	1	9	1	8	9	76
Proposed Conditions									
Apartments	221	195 units	18	52	70	52	34	86	1,060
Transit Reduction		*10%*	*2*	*5*	*7*	*5*	*4*	*9*	*106*
Net Total			16	47	63	47	30	77	954
Retail Space	820	6,733 SF	4	2	6	12	14	26	254
Pass-by Trips		*34%*	*1*	*1*	*2*	*4*	*4*	*8*	*86*
Net Total	820	34% (34%)	3	1	4	8	10	18	168
Net New Trips			**11**	**47**	**58**	**54**	**32**	**86**	**1,046**

Trip Distribution

The directional distribution of site trips to/from the project site was estimated based on the locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study intersections.

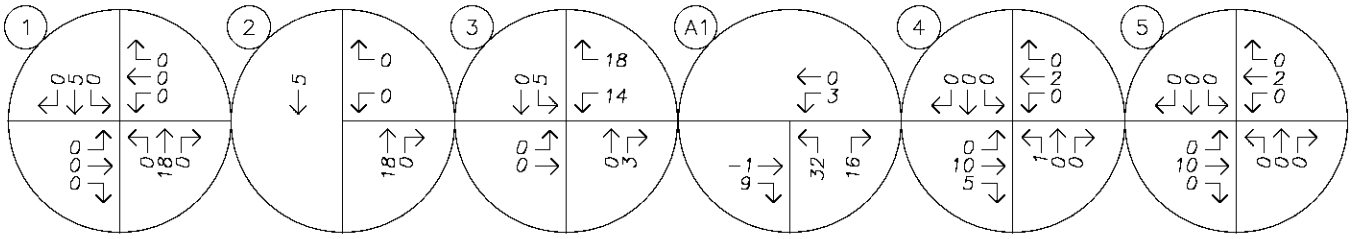
The following trip distribution was estimated and used for analysis:

- Approximately 40 percent of site trips will travel to/from the north along OR-99E;
- Approximately 30 percent of site trips will travel to/from the south along OR-99E;
- Approximately 20 percent of site trips will travel to/from the east along SE Washington Street; and
- Approximately 10 percent of site trips will travel to/from the south along SE Lake Street.

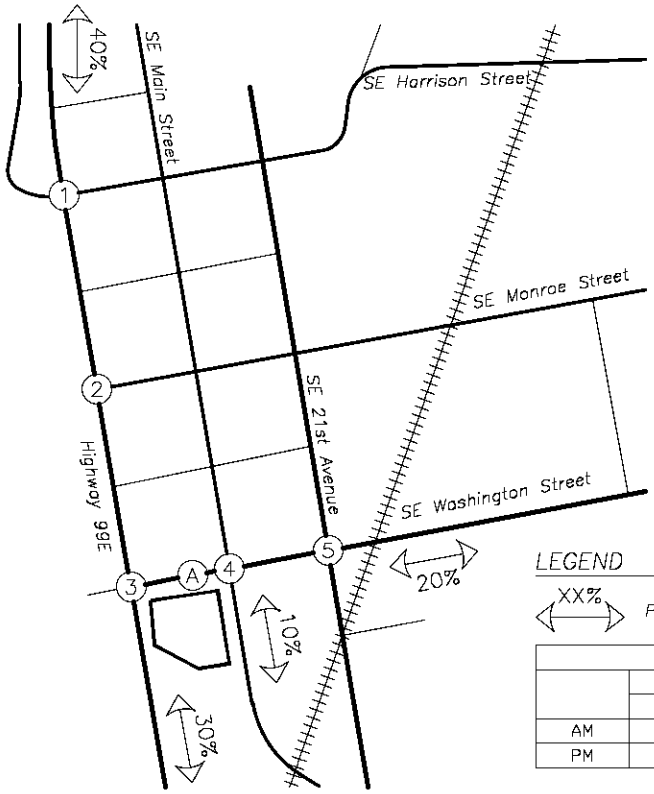
The trip distribution and assignment for the site trips generated by the proposed development during the morning and evening peak hours are shown in the following figures for each of the three access configuration scenarios, as described in the *Site Access Configuration* section:

- Figure 2: Full-Movement Access;
- Figure 3: Restricted Left-turn Egress Access; and
- Figure 4: Right-in/Right-out Access.

Note that Figures 2 through 4 depict the combined trip generation associated with both pass-by trips and primary trips.

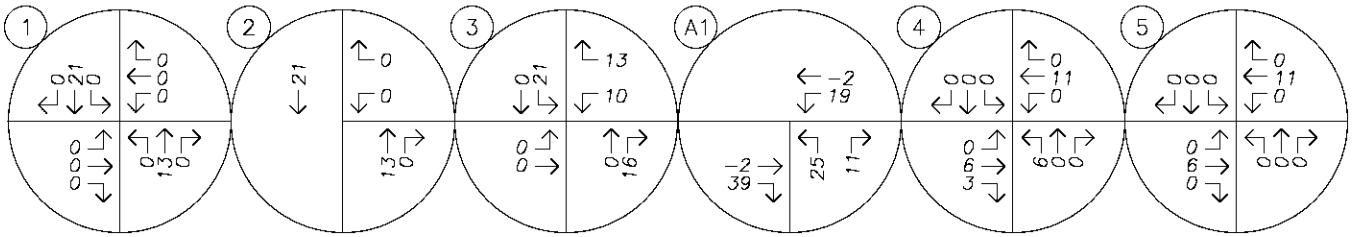


AM PEAK HOUR



NET TRIP GENERATION				
	PRIMARY		PASS-BY	TOTAL
	IN	OUT		
AM	11	47	2	60
PM	54	32	8	94

PM PEAK HOUR



no scale

SITE TRIP DISTRIBUTION & ASSIGNMENT

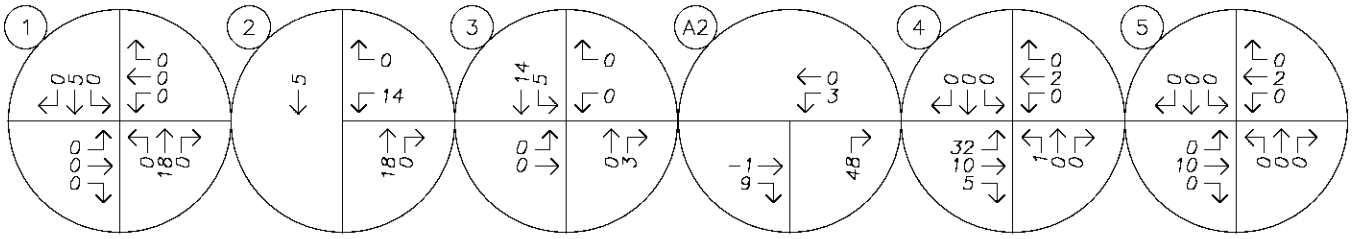
Net Site Trips plus Pass-by Trips - Full Movement

AM & PM Peak Hours

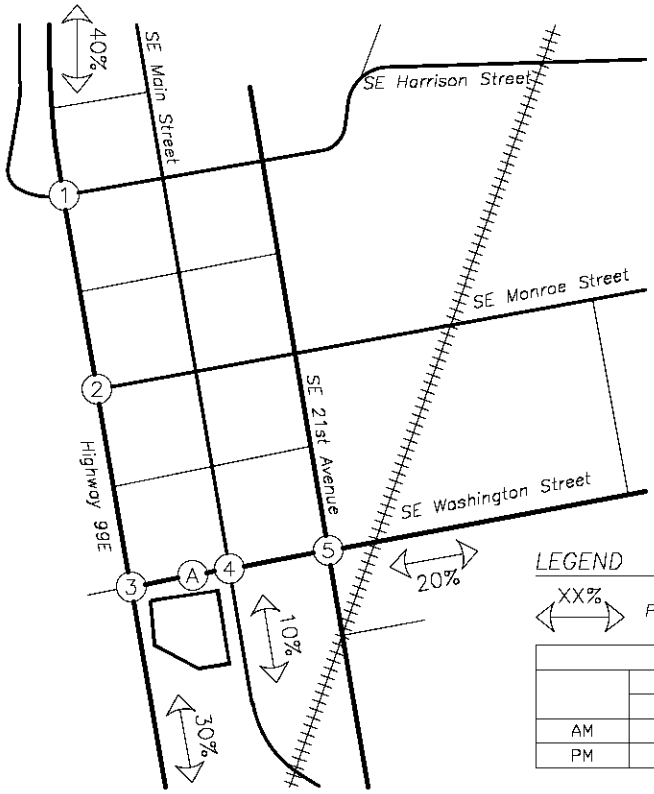
Figure 2

Coho Point

4/9/2021



AM PEAK HOUR

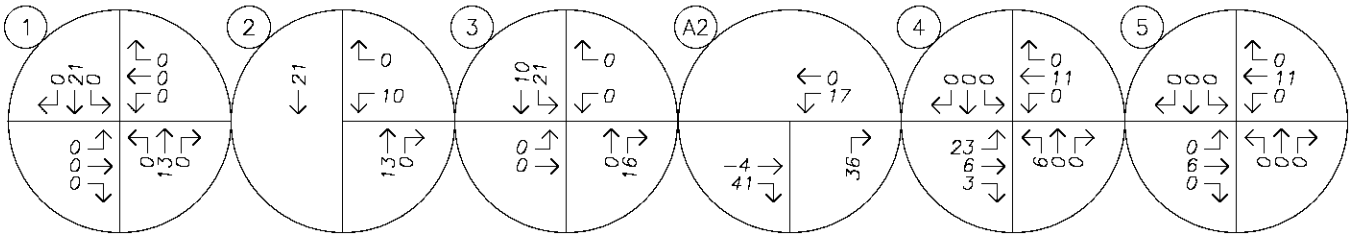


LEGEND

XX% PERCENT OF PROJECT TRIPS

NET TRIP GENERATION				
	PRIMARY		PASS-BY	TOTAL
	IN	OUT		
AM	11	47	2	60
PM	54	32	8	94

PM PEAK HOUR



no scale

SITE TRIP DISTRIBUTION & ASSIGNMENT

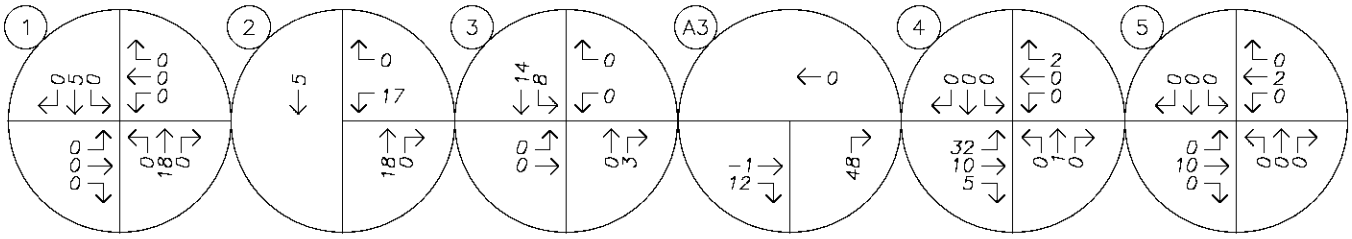
Net Site Trips plus Pass-by Trips - Restricted Left-turn Egress

AM & PM Peak Hours

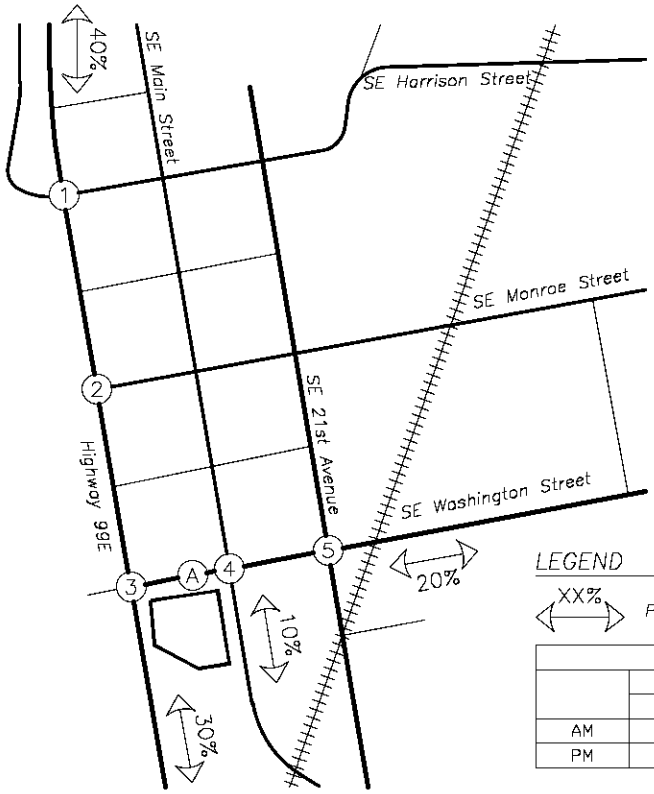
Figure 3

Coho Point

4/9/2021



AM PEAK HOUR

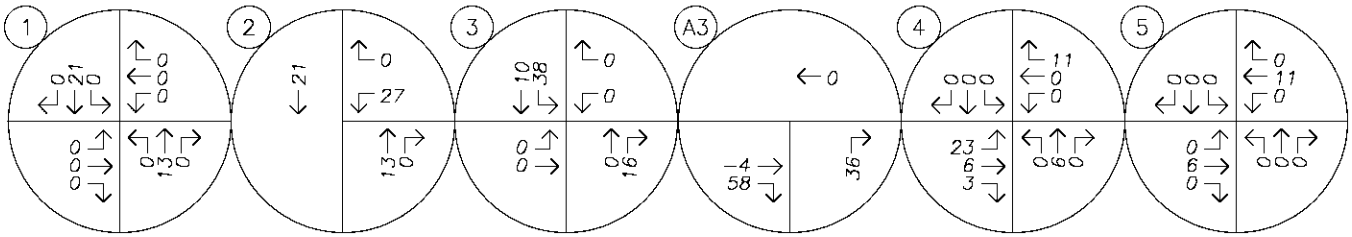


LEGEND

XX% PERCENT OF PROJECT TRIPS

NET TRIP GENERATION				
	PRIMARY		PASS-BY	TOTAL
	IN	OUT		
AM	11	47	2	60
PM	54	32	8	94

PM PEAK HOUR



no scale

SITE TRIP DISTRIBUTION & ASSIGNMENT

Net Site Trips plus Pass-by Trips - Right-in/Right-out

AM & PM Peak Hours

Figure 4

Coho Point

4/9/2021

Traffic Volumes

Existing Conditions

Traffic counts were conducted at the study intersections on Thursday, March 5th, 2019, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Data was used from each intersection's respective morning and evening peak hours.

It should be noted that the traffic counts at the study intersections were collected prior to COVID-19 significantly impacting traffic conditions and general operations through the Portland Metropolitan Area. To reflect existing year 2020 conditions without the impact of COVID-19, the collected 2019 traffic counts were grown by applying a compounded growth rate of two percent per year over a one-year period to the non-ODOT study intersections. For the ODOT study intersections, a linear growth rate of approximately 0.70 percent per year was calculated for the traffic volumes along OR-99E using data from ODOT's 2038 Future Volume Tables. This growth rate was applied to the to through traffic volumes along OR-99E over a one-year period.

At the time of data collection, SE Main Street between SE Adams Street and SE 21st Avenue was closed due to roadway construction work. Based on correspondence with the City's transportation consultant, a percentage of traffic traveling along SE 21st Avenue, south of SE Washington Street, was rerouted to SE Main Street at follows:

- Approximately 30 percent of traffic traveling to/from the north of the SE Washington Street at SE 21st Avenue intersection was rerouted to SE Main Street.
- Approximately 25 percent of traffic turning to/from the west of the SE Washington Street at SE 21st Avenue intersection was rerouted to SE Main Street.
- Approximately 5 percent of traffic turning to/from the east of the SE Washington Street at SE 21st Avenue intersection was rerouted to SE Main Street.

To determine traffic volumes at the existing site access intersection along SE Washington Street, volumes were balanced with the adjacent intersections of SE Washington Street at OR-99E and SE Washington Street at SE Main Street. To determine turning volumes to and from the site access, the trip generation for the existing office building and the estimated distribution, as described in the *Site Trips* section of this report, were utilized.

Figure 5 shows the existing traffic volumes at the study intersections during the morning and evening peak hours.

Background Conditions

To provide an analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. In order to calculate the future traffic volumes for non-ODOT facilities, a compounded growth rate of two percent per year for an assumed buildout condition of two years was applied to the measured existing traffic volumes to approximate year 2022 background conditions.

To estimate the future traffic volumes for ODOT facilities, a linear growth rate of approximately 0.70 percent per year was calculated for the traffic volumes along OR-99E using data from ODOT's 2038 Future Volume Tables. This growth rate was applied to the measured existing traffic volumes over a two-year period to determine year

2022 background volumes for the through traffic traveling along OR-99E. A compounded growth rate of two percent per year for an assumed buildout condition of two years was applied to all other turning movement traffic volumes.

In addition to the traffic volume growth described above, there are four nearby in-process development projects that are currently approved for construction and are expected to impact nearby study intersections. These projects include the following:

- Axeltree (11125 SE 21st Avenue), which includes the construction of 110 apartment units with 7,000 square feet of retail/restaurant space
- Northwest Housing Alternatives (2316 SE Willard Street), which includes the construction of a temporary shelter for eight families, 28 affordable housing units, and a 12,500 square-foot office building.
- Cereghino Farms (located southeast of the intersection of SE Lake Road at SE Kuehn Road), which includes the construction of a 55-lot residential subdivision.
- Waverly Woods Apartments (located at 10415 SE Waverly Court), which includes the construction of a 132-unit apartment facility.
- Monroe Apartments (located southwest of the intersection of SE Monroe Street at SE 37th Avenue), which includes the construction of a 234-unit apartment facility.

These in-process development projects are currently not fully contributing trips to the transportation system but may potentially be by the 2022 buildout year of the site. Additional trips corresponding to these uses were added to the existing year traffic volumes in addition to the two years of traffic growth at each of the applicable study intersections. To maintain a conservative analysis of operation at the study intersections, all in-process development projects were assumed to be constructed and occupied by year 2022.

Additionally, in-process development impacts associated with the nearby Milwaukie High School reconstruction project were considered. Based on a review of the project's traffic study/application materials and subsequent correspondence with the City and their transportation consultant, minimal impacts to the study intersections are expected from this in-process project.

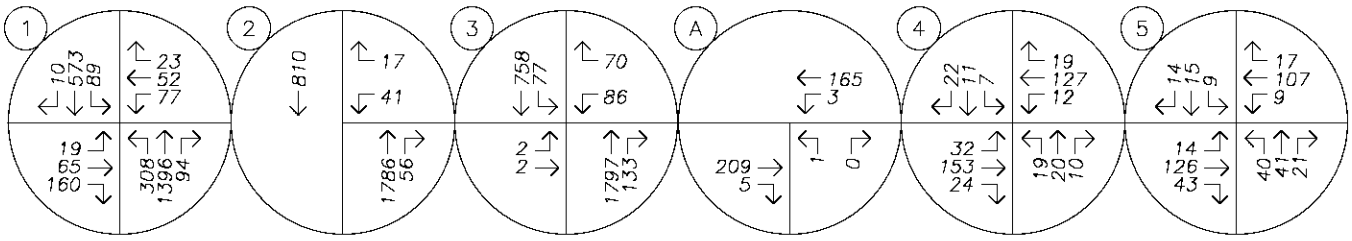
Figure 6 shows the projected year 2022 background traffic volumes at the study intersections during the morning and evening peak hours. In-process development morning and evening peak hour trips applied to the study intersections are included in Figure A in the appendix.

Buildout Conditions

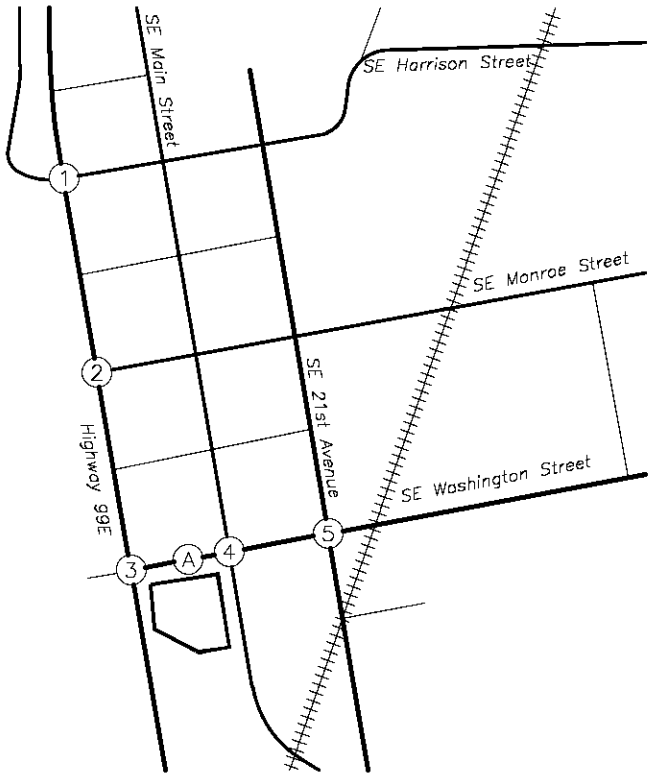
Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes. Additionally, site trips associated with the existing office building were rerouted to through the transportation system to coincide with the potential changes to the allowed turning movements at the site access intersection.

The projected 2022 site buildout year traffic volumes at the study intersections during the morning and evening peak hours are shown in the following figures for each of the three access configuration scenarios, as described in the *Site Access Configuration* section:

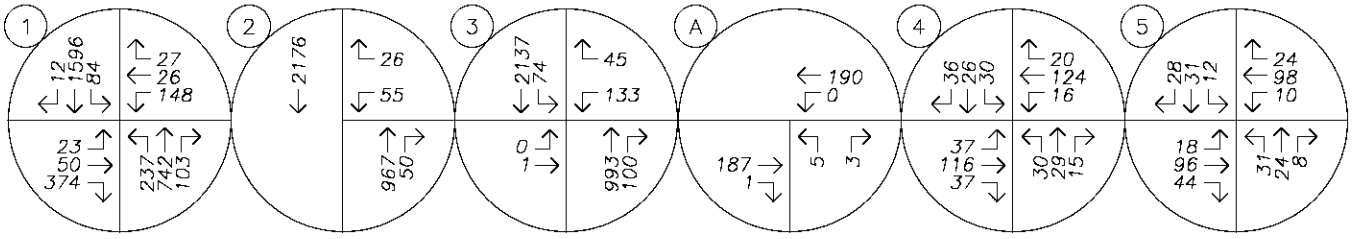
- Figure 7: Full-Movement Access;
- Figure 8: Restricted Left-turn Egress Access; and
- Figure 9: Right-in/Right-out Access.



AM PEAK HOUR



PM PEAK HOUR

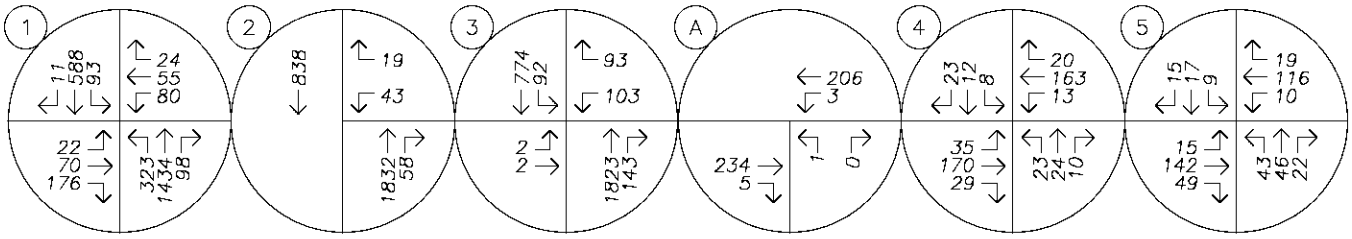


no scale

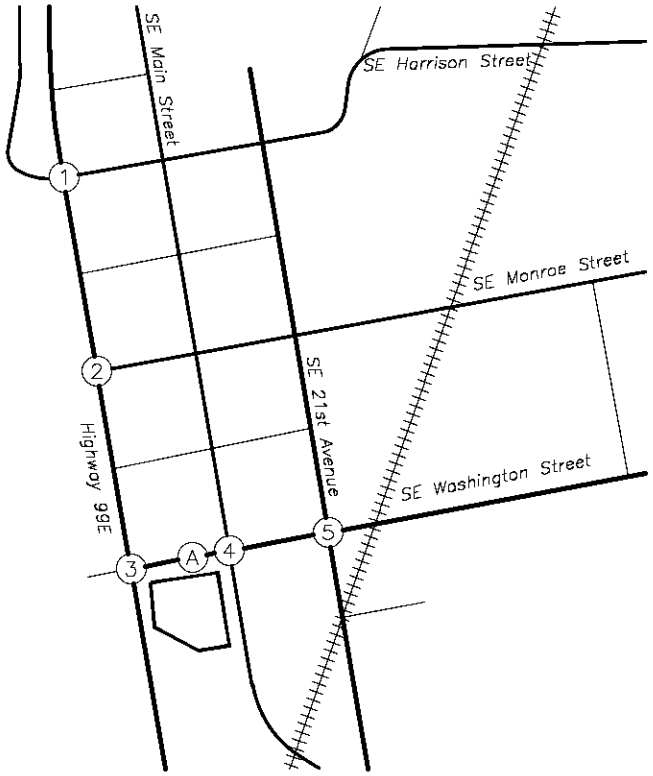
lancaster mobley

TRAFFIC VOLUMES
2020 Existing Conditions
AM & PM Peak Hours

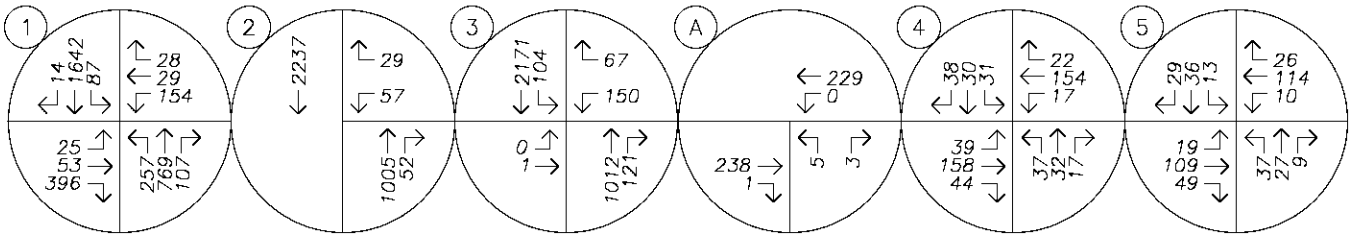
Figure 5
Coho Point
4/9/2021



AM PEAK HOUR



PM PEAK HOUR

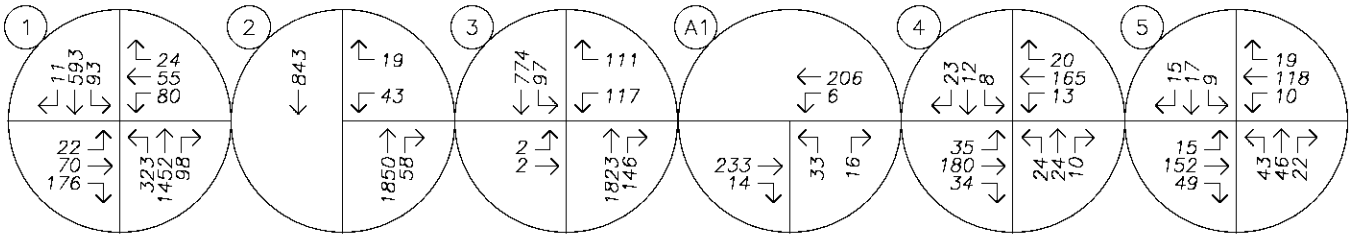


no scale

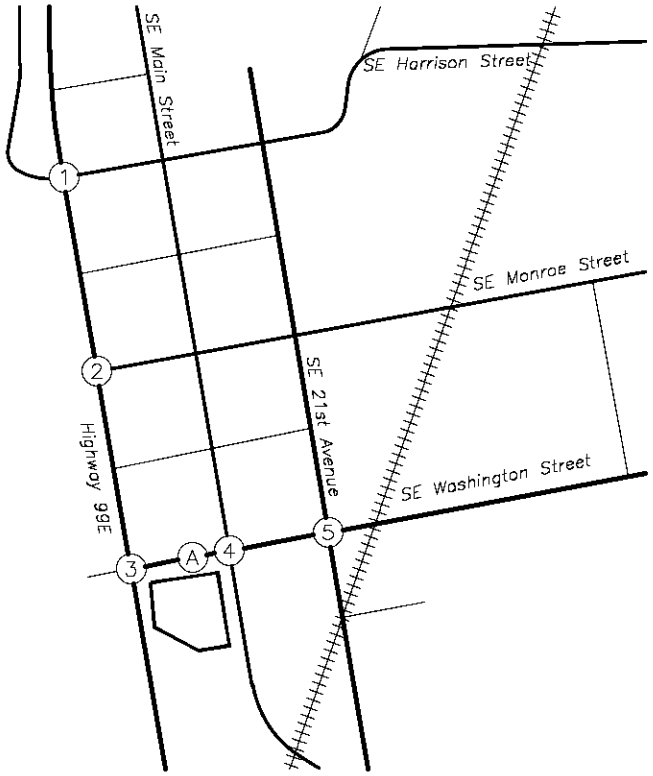
lancaster mobley

TRAFFIC VOLUMES
2022 Background Conditions
AM & PM Peak Hours

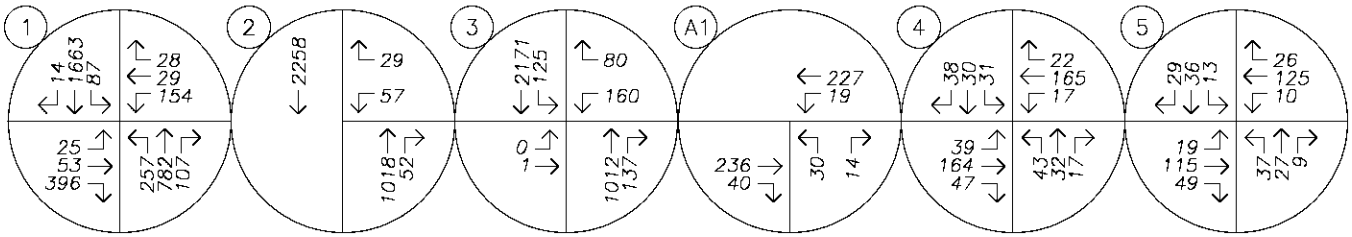
Figure 6
Coho Point
4/9/2021



AM PEAK HOUR



PM PEAK HOUR



no scale

lancaster mobley

TRAFFIC VOLUMES

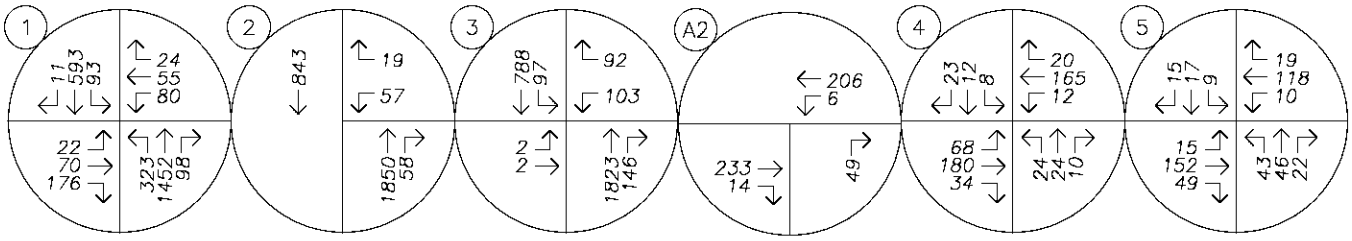
2022 Buildout Conditions - Full Movement

AM & PM Peak Hours

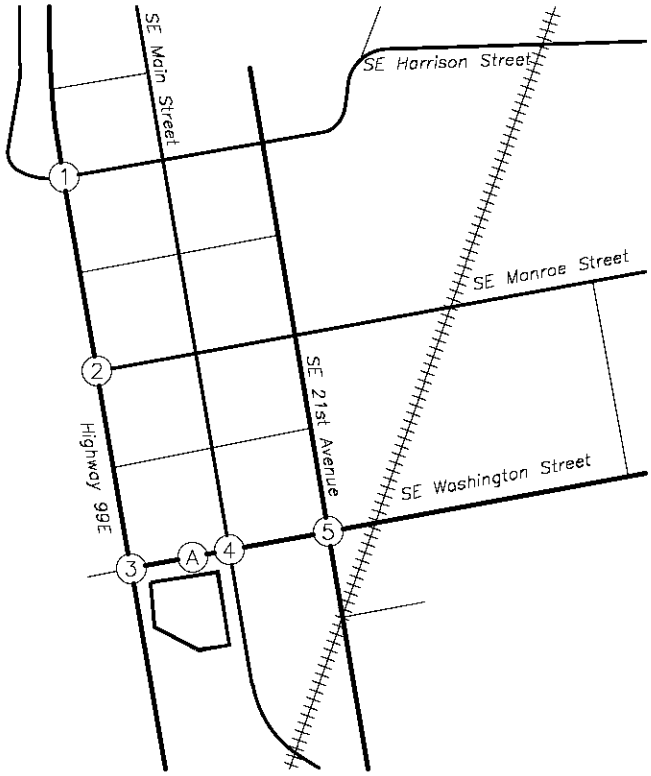
Figure 7

Coho Point

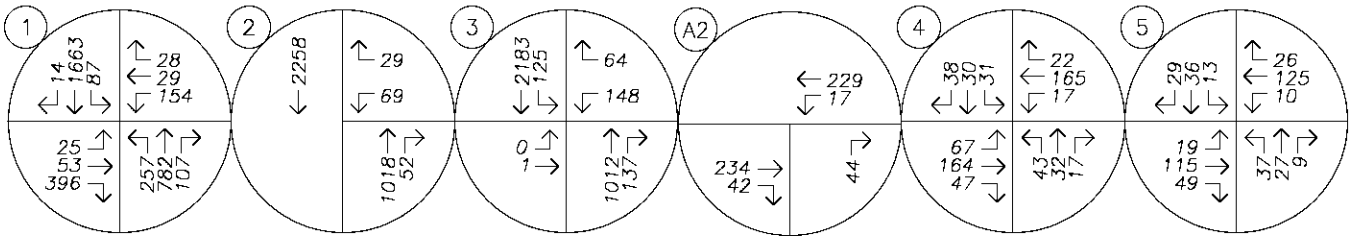
4/9/2021



AM PEAK HOUR



PM PEAK HOUR



no scale

lancaster mobley

TRAFFIC VOLUMES

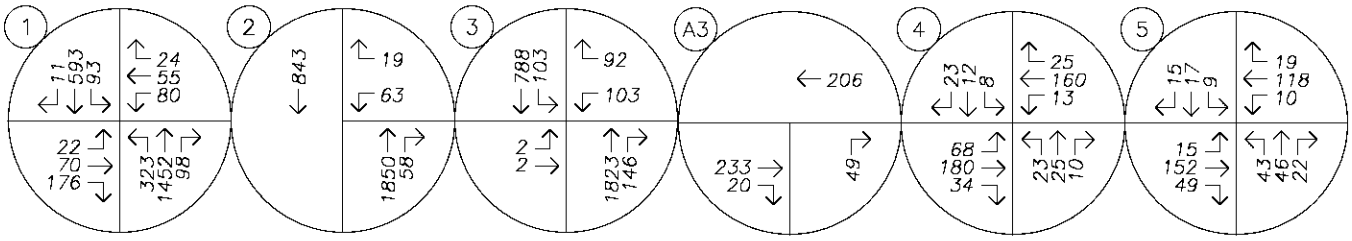
2022 Buildout Conditions - Restricted Left-turn Egress

AM & PM Peak Hours

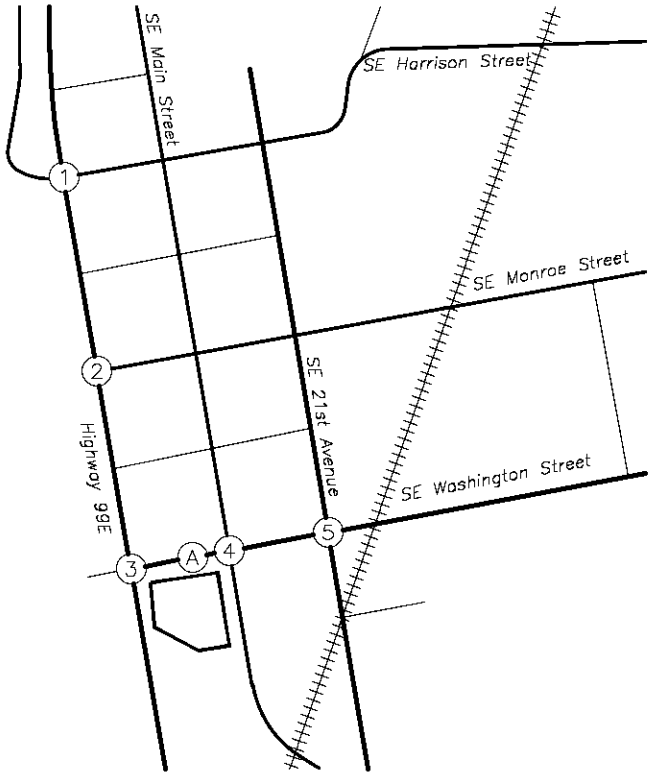
Figure 8

Coho Point

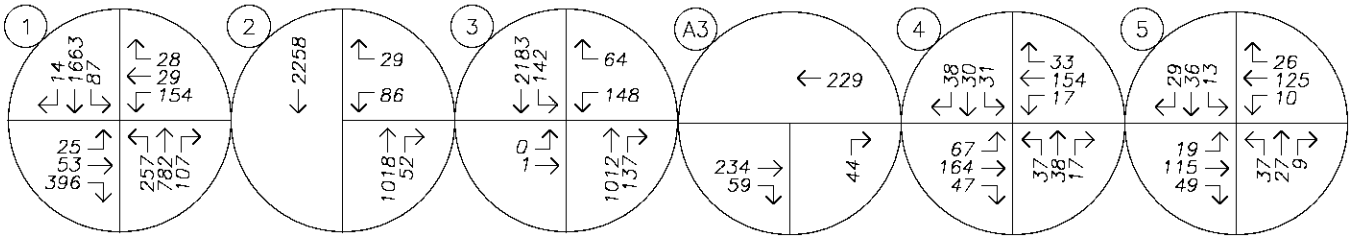
4/9/2021



AM PEAK HOUR



PM PEAK HOUR



no scale

lancaster mobley

TRAFFIC VOLUMES

2022 Buildout Conditions - Right-in/Right-out

AM & PM Peak Hours

Figure 9

Coho Point

4/9/2021

Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Analysis and Reporting Unit, a review of the most recent available five years of crash history (January 2014 to December 2018) at the study intersections was performed. The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for the intersection. Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

With regard to crash severity, ODOT classifies crashes in the following categories:

- *Property Damage Only* (PDO);
- *Possible Injury – Complaint of Pain* (Injury C);
- *Non-Incapacitating Injury* (Injury B);
- *Incapacitating Injury – Bleeding, Broken Bones* (Injury A); and
- Fatality or Fatal Injury.

The study intersections along OR-99E are ODOT facilities which adhere to the crash analysis methodologies within ODOT's *Analysis Procedures Manual* (APM). According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of the 90th percentile crash rate should be "flagged for further analysis". For signalized intersections in urban settings, the 90th percentile rates for three-legged and four-legged intersections are 0.509 CMEV and 0.860 CMEV, respectively.

Table 6 provides a summary of crash types while Table 7 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in the appendix to this report.

Table 6: Crash Type Summary

Number	Intersection	Crash Type							Total
		Rear End	Turn	Angle	Fixed Object	Side swipe	Ped/ Bike	Other	
1	SE Harrison Street at OR-99E	11	6	4	0	0	1	1	23
2	SE Monroe Street at OR-99E	5	2	0	0	1	0	0	8
3	SE Washington Street at OR-99E	9	4	0	0	0	1	0	14
4	SE Washington Street at SE Main Street	1	2	2	0	0	0	0	5
5	SE Washington Street at SE 21st Avenue	0	2	0	1	0	2	0	5

Table 7: Crash Severity and Rate Summary

Number	Intersection	Crash Severity						Total Crashes	AADT	Crash Rate
		PDO	C	B	A	Fatal	Unknown			
1	SE Harrison Street at OR-99E	9	11	3	0	0	0	23	34,220	0.37
2	SE Monroe Street at OR-99E	4	3	1	0	0	0	8	32,740	0.13
3	SE Washington Street at OR-99E	9	4	1	0	0	0	14	34,830	0.22
4	SE Washington Street at SE Main Street	4	1	0	0	0	0	5	5,160	0.53
5	SE Washington Street at SE 21st Avenue	3	0	2	0	0	0	5	4,240	0.65

Table Notes: ***BOLDED*** *text indicates a crash rate in excess of 1.00 CMEV.*

As shown in Table 5 above, there were four crashes at the study intersection which involved either a pedestrian or bicyclist. An in-depth analysis of these crashes is detailed in the following sections.

SE Harrison Street at OR-99E

The intersection of SE Harrison Street at OR-99E had one crash which involved a bicyclist. The crash occurred when the driver of an eastbound passenger car failed to yield right-of-way to a north/south traveling bicyclist. The bicyclist sustained injuries consistent with *Injury B* classification.

SE Washington Street at OR-99E

The intersection of SE Washington Street at OR-99E had one crash which involved a bicyclist. The crash occurred when the driver of a westbound, left-turning passenger car failed to yield right-of-way to an east/west traveling bicyclist who was utilizing an intersection crosswalk. The bicyclist sustained injuries consistent with *Injury C* classification.

SE Washington Street at SE 21st Avenue

The intersection of SE Washington Street at SE 21st Avenue had two crashes which involved a pedestrian. One of the crashes occurred when a north/south traveling pedestrian disregarded the traffic signal, illegally crossed through the intersection, and was struck by a southbound passenger car. The other crash occurred when the driver of a southbound left-turning passenger car failed to yield right-of-way to a north/south pedestrian who was crossing at the intersection. In both crashes, the pedestrian sustained injuries consistent with *Injury B* classification.

Analysis Conclusions

Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. In addition, none of the study intersections exhibit crash rates near or above the 1.00 CMEV threshold nor do any of the study intersections along OR-99E have a crash rate exceeding ODOT's 90th percentile rate. Accordingly, no safety mitigation is recommended per the crash data analysis.

Sight Distance Evaluation

Intersection sight distance was measured for the site access intersection located along SE Washington Street. Sight distance was measured and evaluated in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*[3]. According to AASHTO, the driver's eye is assumed to be 15 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Based on a posted speed of 25 mph, the minimum recommended intersection sight distance to provide efficient operation of the proposed access intersection is 280 feet to the east and west along the major street. The minimum required stopping sight distance to ensure safe operation is 155 feet in both directions, assuming a travel speed of 25 mph. However, in instances where vehicles may be turning onto SE Washington Street from a

[3] American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011.

cross-street a vehicle may conduct such a maneuver at a conservative 20 mph, requiring a minimum stopping sight distance of 115 feet.

Under existing conditions, sight distance at the site access intersection were measured back to SE 21st Avenue to the east (approximately 400 feet away) and back to OR-99E to the west (approximately 140 feet away). To determine whether sufficient sight distances will be available with buildout of the site (i.e. the proposed building will not obstruct sight lines below minimum safe standards), sight lines were reviewed based on the proposed development's site plan. With buildout of the proposed development, from the garage to the west sight distances will be available back to OR-99E (approximately 140 feet away). To the east, sight distances would be limited to 209 feet, approximately 64 feet beyond the all-way stop-controlled intersection of SE Washington Street at SW Main Street. Since westbound approaching vehicles are required to stop at the intersection SE Washington Street at SW Main Street (i.e. will be traveling at 0 mph when stopped), sufficient sight distance is available to ensure safe and efficient operation of the roadway to the east.

Based on the sight distance analysis, adequate sight distances will be available at the site access intersection to ensure safe and efficient operation along SE Washington Street. No sight distance mitigation is necessary or recommended.

An exhibit depicting sight distances with buildout of the proposed development is presented in Figure B in the technical appendix.

Warrant Analysis

Preliminary traffic signal warrants were examined for the intersection of SE Washington Street at SE Main Street to determine whether the installation of a new traffic signal will be warranted upon completion of the proposed development. Based on the preliminary signal warrant analysis, traffic signal warrants are not projected to be met at the unsignalized study intersection under any of the analysis scenarios.

Safe Pedestrian Routes to Vicinity School

According to the North Clackamas School District's school boundary maps, there are four nearby public schools which may reasonably serve the site:

- Milwaukie High School & Milwaukie Academy of the Arts;
- Milwaukie El Puente Elementary; and
- Rowe Middle School.

Milwaukie High School & Milwaukie Academy of the Arts

Milwaukie High School & Milwaukie Academy of the Arts are located within a 0.25-mile walking/biking distance to the east of the site. Pedestrian travel between the school and site is available utilizing multiple routes of travel by way of SE Washington Street, SE Main Street/SE Lake Road, and/or SE 21st Avenue. Complete sidewalks are available along both sides of these roadways, with marked crossings at the applicable intersections of SE Washington Street at SE Main Street, SE Washington Street at SE 21st Avenue, SE Washington Street at SE 23rd Avenue, SE Adams Street at SE 21st Avenue, and SE Lake Road at SE 21st Avenue.

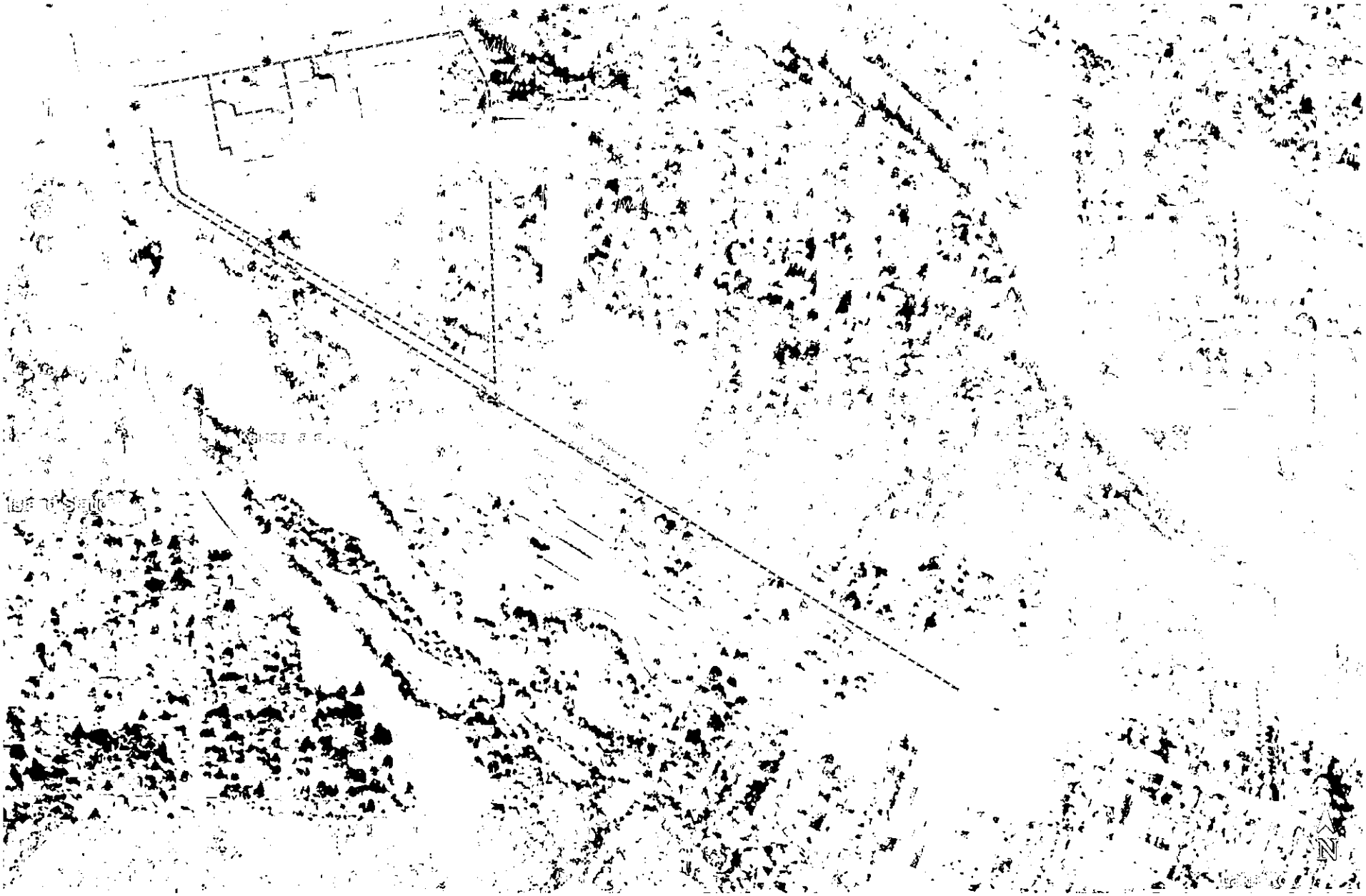
Milwaukie El Puente Elementary

Milwaukie El Puente Elementary is located within an approximate 0.50-mile walking/biking distance to the east of the site. Pedestrian travel between the school and site is available by way of either SE Washington Street and SE 27th Avenue or by SE Main Street/SE Lake Road and SE 27th Avenue. Complete sidewalks are available along both sides of these roadways. Relevant marked crossings are available across all intermittent intersections along these routes. Additionally, multiple mid-block crossings are available along SE Main Street/SE Lake Road, SE Washington Street, and SE 27th Avenue.

Rowe Middle School

Rowe Middle School is located within a 1.00-mile walking/biking distance to the southeast of the site. Pedestrian travel between the school and site is available by way of SE Main Street/SE Lake Road. Sidewalks are complete along both sides of these roadways and relevant marked crossings are generally available at intermittent intersections as well as across SE Main Street/SE Lake Road.

Figure 10 depicts the available pedestrian routes to the nearby public schools which may serve residents of the site.



lancaster mobley

PEDESTRIAN ROUTES TO SCHOOLS

Figure 10

Coho Point

4/9/2021

Operational Analysis

Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)[4]. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

Performance Standards

According to City of Milwaukie's TSP Article 13, intersections under City jurisdiction are required to operate at LOS D or better. For intersections under ODOT jurisdiction (i.e. intersections along OR-99E), per *Table 7: Volume to Capacity Ratio Targets within Portland Metropolitan Region* of the *Oregon Highway Plan* (OHP) intersections are required to operate with v/c ratios of 0.99 or less.

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 8 for the morning and evening peak hours. Due to the lane configurations of SE Harrison Street at OR-99E and SE Washington Street at OR-99E, the HCM 6th Edition, utilizing Synchro software, does not provide capacity outputs. Therefore, HCM 2000 methodologies and capacity results were reported at these intersections in lieu of the HCM 6th Edition. Additionally, the Synchro software does not report the overall v/c ratio of signalized intersections in the HCM 6th Edition capacity reports. For these intersections, the v/c ratio was calculated utilizing methods detailed in ODOT's APM *Section 13 Signalized Intersection Analysis*.

Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

[4] Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

Table 8: Capacity Analysis Summary

	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
1. SE Harrison Street at OR-99E						
2020 Existing Conditions	C	30	0.76	E	55	0.91
2022 Background Conditions	C	31	0.78	E	69	0.95
2022 Buildout Conditions (Full Movement Access)	C	31	0.79	E	72	0.96
2022 Buildout Conditions (No LT Egress Access)	C	31	0.79	E	72	0.96
2022 Buildout Conditions (RIRO Access)	C	31	0.79	E	72	0.96
2. SE Monroe Street at OR-99E						
2020 Existing Conditions	A	2	0.59	A	4	0.69
2022 Background Conditions	A	2	0.60	A	4	0.71
2022 Buildout Conditions (Full Movement Access)	A	2	0.61	A	4	0.72
2022 Buildout Conditions (No LT Egress Access)	A	3	0.62	A	4	0.73
2022 Buildout Conditions (RIRO Access)	A	3	0.62	A	5	0.74
3. SE Washington Street at OR-99E						
2020 Existing Conditions	B	13	0.75	B	10	0.83
2022 Background Conditions	B	16	0.79	B	12	0.85
2022 Buildout Conditions (Full Movement Access)	B	17	0.81	B	14	0.86
2022 Buildout Conditions (No LT Egress Access)	B	16	0.79	B	13	0.85
2022 Buildout Conditions (RIRO Access)	B	16	0.80	B	13	0.85

Table Notes: ***BOLDED*** *text indicates interseciton operation above jurisdictional standards.*

Table 8: Capacity Analysis Summary (Continued)

	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
A. Site Access at SE Washington Street						
2020 Existing Conditions	A	10	<0.01	A	10	0.01
2022 Background Conditions	B	10	<0.01	B	10	0.01
2022 Buildout Conditions (Full Movement Access)	B	11	0.08	B	11	0.08
2022 Buildout Conditions (No LT Egress Access)	A	9	0.06	A	9	0.06
2022 Buildout Conditions (RIRO Access)	A	9	0.06	A	9	0.06
4. SE Washington Street at SE Main Street						
2020 Existing Conditions	A	9	-	A	9	-
2022 Background Conditions	A	10	-	A	10	-
2022 Buildout Conditions (Full Movement Access)	A	10	-	A	10	-
2022 Buildout Conditions (No LT Egress Access)	B	10	-	B	10	-
2022 Buildout Conditions (RIRO Access)	B	10	-	B	10	-
5. SE Washington Street at SE 21st Avenue						
2020 Existing Conditions	A	7	0.25	A	7	0.17
2022 Background Conditions	A	7	0.27	A	7	0.19
2022 Buildout Conditions (Full Movement Access)	A	7	0.28	A	7	0.20
2022 Buildout Conditions (No LT Egress Access)	A	7	0.28	A	7	0.20
2022 Buildout Conditions (RIRO Access)	A	7	0.28	A	7	0.20

Table Notes: ***BOLDED*** *text indicates interseciton operation above jurisdictional standards.*

Based on the results of the operational analysis, all study intersections are currently operating acceptably per City of Milwaukie and ODOT standards and are projected to continue operating acceptable through the 2022 site buildout year. No operational mitigation is necessary or recommended at these intersections.

Queuing Analysis

To determine whether queue lengths from site entering traffic would extend back to the adjacent study intersections along SE Washington Street, a queuing analysis was conducted. The queue lengths were projected based on the results of a Synchro/SimTraffic simulation, with the reported values based on the 95th percentile queue lengths. The 95th percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field.

The projected 95th percentile queue lengths reported in the simulation are presented in Table 9 for the morning and evening peak hours. Reported queue lengths were rounded up to the nearest five feet. Note, the queuing analysis takes in account potential queues which may form due to the site access and does not take into consideration extended queues which may result from the adjacent intersections of along SE Washington Street. Detailed queuing analysis worksheets are included in the technical appendix to this report.

Table 9: Site Access Queuing Analysis Summary

	Available Storage (Feet)	Full Movement Access		Restricted Left-out Access		Right-in/Right-out Access	
		AM	PM	AM	PM	AM	PM
EB Through Lane/Right-turn Lane	125	0	5	0	5	0	0
WB Left-turn/Through Lane	55	15	30	15	25	-	-

BOLDED *text indicates queue extends beyond available lane storage.*

Based on the analysis, the projected 95th percentile queues which may result from site entering trips are not projected to extend back to the adjacent study intersections along SE Washington Street. Accordingly, no queuing-related issues are expected to occur, and no mitigation is necessary or recommended.

Conclusions

No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. In addition, none of the study intersections exhibit crash rates near or above the 1.00 CMEV threshold nor do any of the study intersections along OR-99E have a crash rate exceeding ODOT's 90th percentile rate.

Adequate sight distances are currently available at the site access intersection to ensure safe and efficient operation along SE Washington Street.

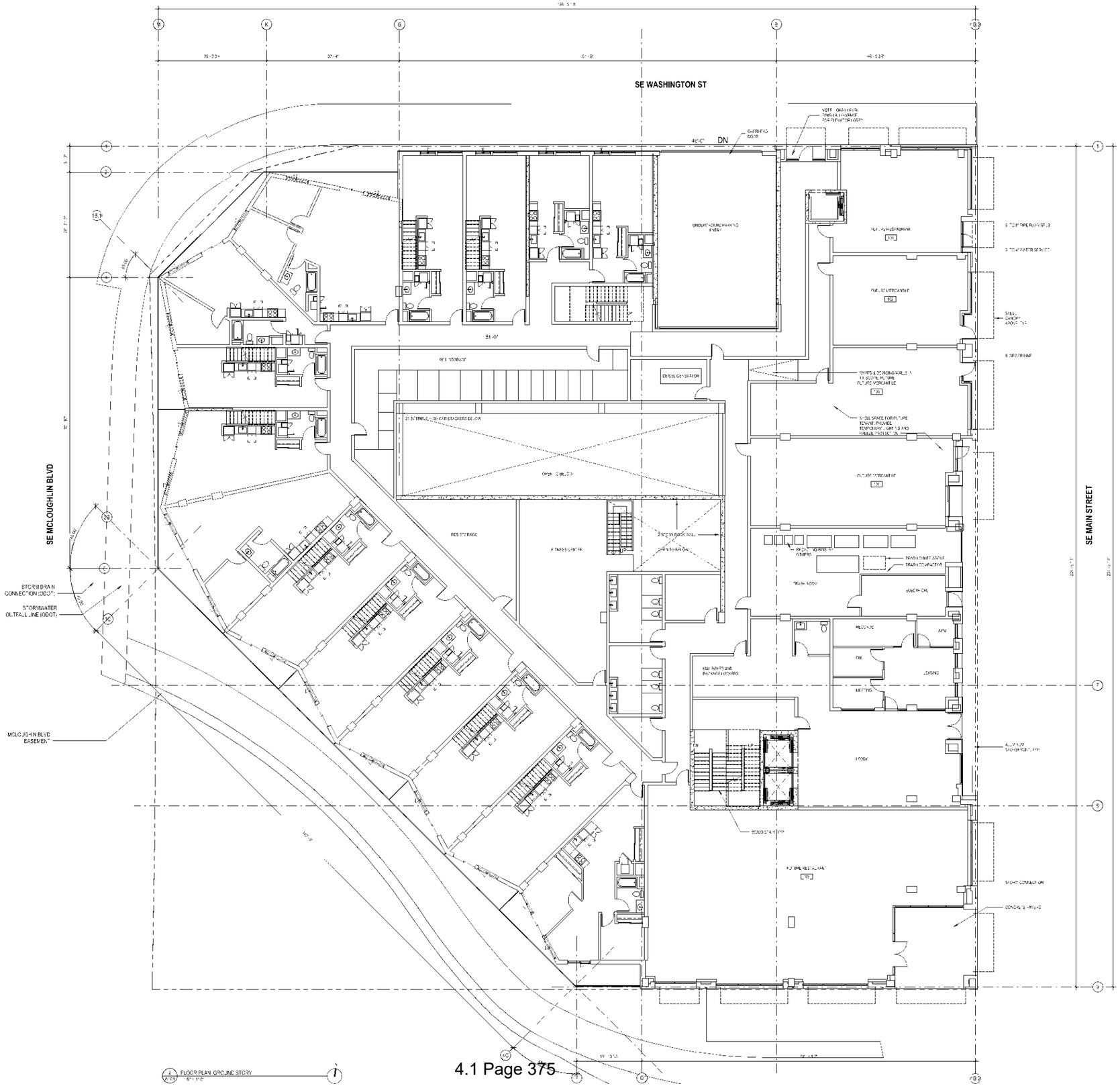
Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at the intersection of SE Washington Street at SE Main Street under any of the analysis scenarios.

All study intersections are currently operating acceptably per City of Milwaukie and ODOT standards and are projected to continue operating acceptably through the 2022 buildout year of the site.

The projected 95th percentile queues which may result from site entering trips are not projected to extend back to the adjacent study intersections along SE Washington Street.

Appendix A

Site Plan



FLOOR PLAN, GROUND STORY

A101 FLOOR PLAN, GROUND STORY

JONES

JONES ARCHITECTURE

720 SW 9TH AVE, STE 270
PORTLAND, OREGON 97205
T 503.477.7615
www.joneswest.com

COHO POINT

17-021

11103 SE MAIN ST
MILWAUKIE, OR 97222

50% DESIGN DEVELOPMENT

APRIL 30, 2019

COPYRIGHT
THESE DRAWINGS ARE AN INSTRUMENT OF SERVICE OF JONES ARCHITECTURE AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF JONES ARCHITECTURE. ALL COPYRIGHTS AND OTHER PROPERTY RIGHTS ARE RESERVED BY JONES ARCHITECTURE.

Appendix B

Trip Generation Calculations

TRIP GENERATION CALCULATIONS
Existing Conditions

Land Use: General Office Building
Land Use Code: 710
Setting/Location General Urban/Suburban
Variable: 1000 Sq Ft Gross Floor Area
Variable Value: 7.706

AM PEAK HOUR

Trip Rate: 1.16

	Enter	Exit	Total
Directional Distribution	86%	14%	
Trip Ends	**8**	**1**	**9**

PM PEAK HOUR

Trip Rate: 1.15

	Enter	Exit	Total
Directional Distribution	16%	84%	
Trip Ends	**1**	**8**	**9**

WEEKDAY

Trip Rate: 9.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**38**	**38**	**76**

SATURDAY

Trip Rate: 2.21

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**9**	**9**	**18**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS
Proposed Conditions

Land Use: Multifamily Housing (Mid-Rise)
Land Use Code: 221
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 195

AM PEAK HOUR

Trip Rate: 0.36

	Enter	Exit	Total
Directional Distribution	26%	74%	
Trip Ends	**18**	**52**	**70**

PM PEAK HOUR

Trip Rate: 0.44

	Enter	Exit	Total
Directional Distribution	61%	39%	
Trip Ends	**52**	**34**	**86**

WEEKDAY

Trip Rate: 5.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**530**	**530**	**1,060**

SATURDAY

Trip Rate: 4.91

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**479**	**479**	**958**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS
Proposed Conditions

Land Use: Shopping Center
Land Use Code: 820
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 6.733

AM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Distribution	62%	38%	
Trip Ends	**4**	**2**	**6**

PM PEAK HOUR

Trip Rate: 3.81

	Enter	Exit	Total
Directional Distribution	48%	52%	
Trip Ends	**12**	**14**	**26**

WEEKDAY

Trip Rate: 37.75

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**127**	**127**	**254**

SATURDAY

Trip Rate: 46.12

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**155**	**155**	**310**

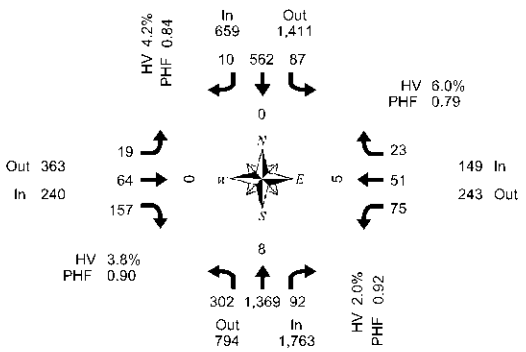
Source: Trip Generation Manual, Tenth Edition

Appendix C

Traffic Counts

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:35 AM to 8:35 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	24	114	4	0	3	25	0	0	2	1	8	0	3	2	0	0	186	0	0	0	0
7:05 AM	17	123	4	0	5	36	1	0	2	0	9	0	6	2	4	0	209	0	0	0	0
7:10 AM	27	140	6	0	1	35	3	0	0	1	9	0	3	3	0	0	228	0	2	0	0
7:15 AM	24	125	5	0	5	32	3	0	2	0	13	0	9	4	0	0	222	0	0	0	0
7:20 AM	32	148	5	0	0	50	0	0	1	3	12	0	4	2	2	0	259	0	0	0	0
7:25 AM	17	98	7	0	4	48	4	0	0	2	9	0	10	1	1	0	201	0	1	0	0
7:30 AM	33	119	4	0	3	33	1	0	0	1	9	0	7	1	1	0	212	0	2	0	0
7:35 AM	20	91	3	0	2	43	1	0	0	4	22	0	6	4	1	0	197	0	1	0	0
7:40 AM	21	155	11	0	2	54	1	0	0	0	14	0	9	0	4	0	271	0	0	0	0
7:45 AM	19	83	6	0	3	65	0	0	3	3	6	0	8	4	1	0	201	0	0	0	0
7:50 AM	38	137	9	0	7	40	3	0	3	4	17	0	4	0	3	0	265	0	0	0	0
7:55 AM	22	97	12	0	6	46	0	0	2	5	10	0	5	2	0	0	207	0	1	0	0
8:00 AM	28	126	4	0	7	43	1	0	1	4	13	0	7	5	2	0	241	0	1	0	0
8:05 AM	9	87	6	0	19	70	1	0	3	6	13	0	5	6	2	0	227	0	1	1	0
8:10 AM	22	133	9	0	12	41	0	0	2	11	14	0	4	4	3	0	255	0	2	1	0
8:15 AM	23	117	8	0	13	37	2	0	1	2	11	0	6	4	3	0	227	0	1	1	0
8:20 AM	39	121	5	0	3	32	0	0	2	11	10	2	7	8	0	0	238	0	0	1	0
8:25 AM	22	104	10	0	11	60	1	0	0	12	15	0	6	5	2	0	248	0	1	0	0
8:30 AM	39	118	9	0	2	31	0	0	2	2	12	0	8	9	2	0	234	0	0	1	0
8:35 AM	23	71	3	0	8	54	1	0	0	5	12	0	4	5	5	0	191	0	2	2	0
8:40 AM	25	72	7	0	10	34	1	0	1	1	15	1	3	3	2	0	174	0	3	2	0
8:45 AM	15	63	3	0	7	61	2	0	0	4	13	0	12	3	3	0	186	0	1	0	0
8:50 AM	20	83	10	0	7	45	0	0	1	3	12	0	7	1	1	0	190	0	0	0	0
8:55 AM	8	57	3	0	10	46	1	0	3	8	10	1	7	1	3	0	157	0	0	0	0
Total Survey	567	2,582	153	0	150	1,061	27	0	31	93	288	4	150	79	45	0	5,226	0	19	9	0

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	68	377	14	0	9	96	4	0	4	2	26	0	12	7	4	0	623	0	2	0	0
7:15 AM	73	371	17	0	9	130	7	0	3	5	34	0	23	7	3	0	682	0	1	0	0
7:30 AM	74	365	18	0	7	130	3	0	0	5	45	0	22	5	6	0	680	0	3	0	0
7:45 AM	79	317	27	0	16	151	3	0	8	12	33	0	17	6	4	0	673	0	1	0	0
8:00 AM	59	346	19	0	38	154	2	0	6	21	40	0	16	15	7	0	723	0	4	2	0
8:15 AM	84	342	23	0	27	129	3	0	3	25	36	2	19	17	5	0	713	0	2	2	0
8:30 AM	87	261	19	0	20	119	2	0	3	8	39	1	15	17	9	0	599	0	5	5	0
8:45 AM	43	203	16	0	24	152	3	0	4	15	35	1	26	5	7	0	533	0	1	0	0
Total Survey	567	2,582	153	0	150	1,061	27	0	31	93	288	4	150	79	45	0	5,226	0	19	9	0

Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,763	794	2,557	0	659	1,411	2,070	0	240	363	603	2	149	243	392	0	2,811	0	8	5	0
%HV		2.0%				4.2%				3.8%				6.0%			2.9%				
PHF		0.92				0.84				0.90				0.79			0.95				

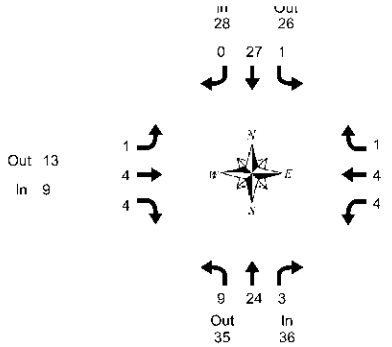
By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	302	1,369	92	1,763	87	562	10	659	19	64	157	240	75	51	23	149	2,811
%HV	3.0%	1.8%	3.3%	2.0%	1.1%	4.8%	0.0%	4.2%	5.3%	6.3%	2.5%	3.8%	5.3%	7.8%	4.3%	6.0%	2.9%
PHF	0.76	0.91	0.85	0.92	0.49	0.87	0.63	0.84	0.59	0.64	0.93	0.90	0.82	0.58	0.72	0.79	0.95

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	294	1,430	76	0	41	507	17	0	15	24	138	0	74	25	17	0	2,658	0	7	0	0
7:15 AM	285	1,399	81	0	70	565	15	0	17	43	152	0	78	33	20	0	2,758	0	9	2	0
7:30 AM	296	1,370	87	0	88	564	11	0	17	63	154	2	74	43	22	0	2,789	0	10	4	0
7:45 AM	309	1,266	88	0	101	553	10	0	20	66	148	3	67	55	25	0	2,708	0	12	9	0
8:00 AM	273	1,152	77	0	109	554	10	0	16	69	150	4	76	54	28	0	2,568	0	12	9	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:35 AM to 8:35 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	1	1	3	0	2	0	2	1	1	1	3	0	0	0	0	8
7:05 AM	0	3	0	3	1	1	0	2	0	0	0	0	0	0	0	0	5
7:10 AM	0	3	0	3	0	1	0	1	0	0	0	0	0	1	0	1	5
7:15 AM	0	2	0	2	2	1	0	3	0	0	0	0	0	0	0	0	5
7:20 AM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
7:25 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
7:30 AM	0	2	0	2	0	1	0	1	0	0	0	0	1	0	0	1	4
7:35 AM	1	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
7:40 AM	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	2	0	2	0	0	1	1	0	1	0	1	4
7:50 AM	1	4	0	5	0	4	0	4	0	0	0	0	0	0	0	0	9
7:55 AM	0	0	1	1	0	3	0	3	0	1	0	1	0	1	0	1	6
8:00 AM	0	1	0	1	0	2	0	2	0	0	0	0	1	0	0	1	4
8:05 AM	0	1	0	1	1	3	0	4	1	1	0	2	0	1	0	1	8
8:10 AM	1	3	1	5	0	1	0	1	0	0	0	0	0	0	1	1	7
8:15 AM	1	6	1	8	0	2	0	2	0	0	1	1	0	0	0	0	11
8:20 AM	2	4	0	6	0	2	0	2	0	1	1	2	1	0	0	1	11
8:25 AM	1	2	0	3	0	2	0	2	0	0	0	0	2	1	0	3	8
8:30 AM	2	2	0	4	0	2	0	2	0	0	1	1	0	0	0	0	7
8:35 AM	0	5	0	5	0	3	0	3	0	1	0	1	0	0	1	1	10
8:40 AM	2	4	0	6	1	2	0	3	0	0	1	1	0	0	0	0	10
8:45 AM	1	0	0	1	0	4	0	4	0	0	1	1	0	2	0	2	8
8:50 AM	1	2	0	3	0	2	0	2	0	1	0	1	0	0	0	0	6
8:55 AM	0	2	0	2	0	1	0	1	1	2	0	3	1	0	0	1	7
Total Survey	14	49	4	67	5	47	0	52	3	10	7	20	6	8	2	16	155

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	7	1	9	1	4	0	5	1	1	1	3	0	1	0	1	18
7:15 AM	0	3	0	3	2	3	0	5	0	1	0	1	0	1	0	1	10
7:30 AM	1	3	0	4	0	5	0	5	0	1	0	1	1	0	0	1	11
7:45 AM	1	4	1	6	0	9	0	9	0	1	1	2	0	2	0	2	19
8:00 AM	1	5	1	7	1	6	0	7	1	1	0	2	1	1	1	3	19
8:15 AM	4	12	1	17	0	6	0	6	0	1	2	3	3	1	0	4	30
8:30 AM	4	11	0	15	1	7	0	8	0	1	2	3	0	0	1	1	27
8:45 AM	2	4	0	6	0	7	0	7	1	3	1	5	1	2	0	3	21
Total Survey	14	49	4	67	5	47	0	52	3	10	7	20	6	8	2	16	155

Heavy Vehicle Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Harrison St			Westbound SE Harrison St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	36	35	71	28	26	54	9	13	22	9	8	17	82
PHF	0.47			0.78			0.75			0.56			0.68

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	9	24	3	36	1	27	0	28	1	4	4	9	4	4	1	9	82
PHF	0.45	0.46	0.38	0.47	0.25	0.75	0.00	0.78	0.25	0.50	0.50	0.75	0.33	0.50	0.25	0.56	0.68

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

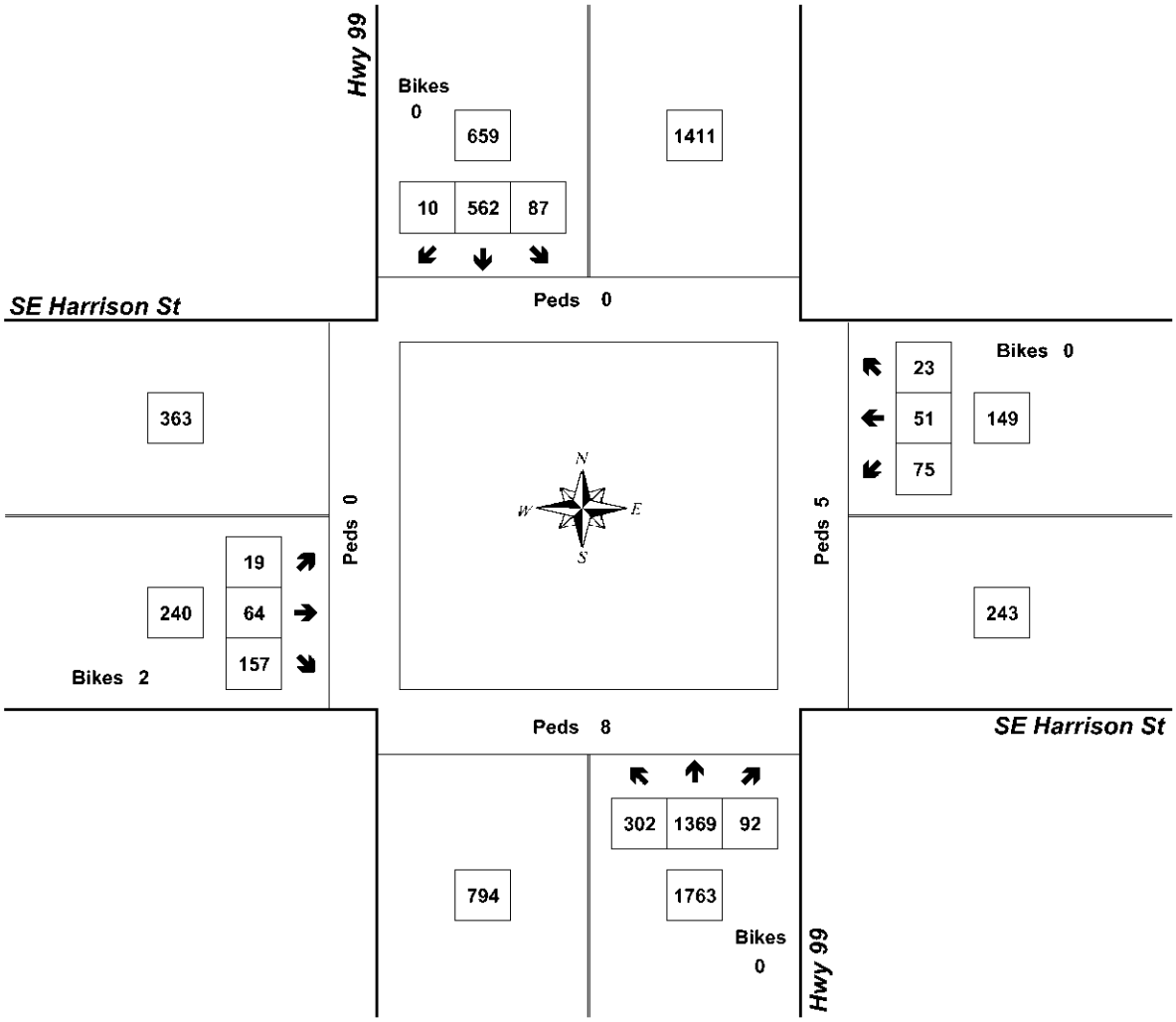
Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	3	17	2	22	3	21	0	24	1	4	2	7	1	4	0	5	58
7:15 AM	3	15	2	20	3	23	0	26	1	4	1	6	2	4	1	7	59
7:30 AM	7	24	3	34	1	26	0	27	1	4	3	8	5	4	1	10	79
7:45 AM	10	32	3	45	2	28	0	30	1	4	5	10	4	4	2	10	95
8:00 AM	11	32	2	45	2	26	0	28	2	6	5	13	5	4	2	11	97

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Hwy 99 & SE Harrison St

7:35 AM to 8:35 AM
Tuesday, March 05, 2019

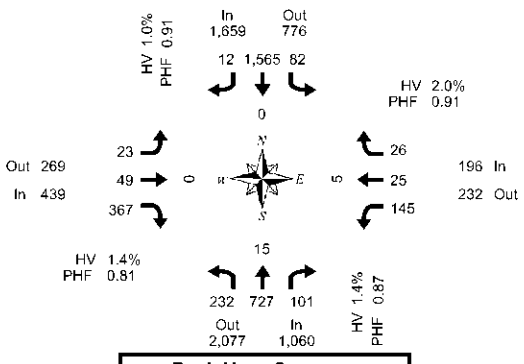


Approach	PHF	HV%	Volume
EB	0.90	3.8%	240
WB	0.79	6.0%	149
NB	0.92	2.0%	1,763
SB	0.84	4.2%	659
Intersection	0.95	2.9%	2,811

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

Hwy 99 & SE Harrison St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	16	36	3	0	10	106	1	0	2	4	38	0	15	5	2	0	238	0	1	0	0
4:05 PM	13	55	5	0	5	162	2	0	0	3	31	0	13	1	0	0	290	0	0	1	0
4:10 PM	26	56	7	1	9	128	0	0	1	6	30	0	10	4	1	0	278	0	1	0	0
4:15 PM	14	66	10	0	9	146	0	0	2	4	32	0	10	2	2	0	297	0	1	0	0
4:20 PM	22	40	6	0	5	124	0	0	2	6	33	0	13	2	2	0	255	0	0	0	0
4:25 PM	15	55	10	0	8	172	1	0	0	2	30	0	5	2	1	1	301	0	0	0	0
4:30 PM	20	43	7	0	4	113	2	0	3	10	43	0	17	3	3	0	268	0	2	0	0
4:35 PM	14	69	11	0	7	136	0	0	3	4	36	0	9	5	1	0	295	0	1	0	0
4:40 PM	17	52	13	0	7	120	0	0	2	6	34	0	13	4	4	0	272	0	1	0	0
4:45 PM	15	45	7	0	6	148	0	0	1	2	20	0	8	4	0	0	256	0	1	0	0
4:50 PM	20	49	5	0	7	116	1	0	1	4	32	0	10	0	4	0	249	0	1	0	0
4:55 PM	15	66	3	0	4	158	1	0	1	3	23	0	12	4	2	0	292	0	1	0	0
5:00 PM	20	48	4	0	7	128	1	0	2	2	30	0	15	1	2	0	260	0	1	0	0
5:05 PM	17	75	10	0	6	148	2	0	5	3	26	0	9	0	1	0	302	0	1	0	0
5:10 PM	26	46	6	0	5	93	1	0	4	5	44	0	17	0	1	0	248	0	1	0	0
5:15 PM	18	76	13	0	10	146	0	0	0	2	28	1	11	4	1	0	309	0	1	0	0
5:20 PM	25	45	10	0	5	133	1	0	0	5	29	0	16	2	2	0	273	0	0	0	0
5:25 PM	18	88	11	0	8	153	0	0	1	2	21	1	10	1	3	0	316	0	0	0	0
5:30 PM	15	42	4	0	9	96	0	0	3	11	40	1	13	3	3	0	239	0	4	3	0
5:35 PM	16	68	16	0	8	135	2	0	2	5	28	0	7	2	5	0	294	0	4	2	0
5:40 PM	24	64	10	0	5	99	0	0	2	3	41	0	14	6	1	0	269	0	1	0	0
5:45 PM	18	60	9	0	8	160	3	0	2	4	25	0	11	2	1	0	303	0	0	0	0
5:50 PM	19	41	9	0	11	106	1	0	1	1	26	1	15	0	2	0	232	0	0	0	0
5:55 PM	18	60	10	0	4	135	5	0	0	4	15	0	6	2	5	0	264	0	0	1	0
Total Survey	441	1,345	199	1	167	3,161	24	0	40	101	735	4	279	59	49	1	6,600	0	23	7	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	55	147	15	1	24	396	3	0	3	13	99	0	38	10	3	0	806	0	2	1	0
4:15 PM	51	161	26	0	22	442	1	0	4	12	95	0	28	6	5	1	853	0	1	0	0
4:30 PM	51	164	31	0	18	369	2	0	8	20	113	0	39	12	8	0	835	0	4	0	0
4:45 PM	50	160	15	0	17	422	2	0	3	9	75	0	30	8	6	0	797	0	3	0	0
5:00 PM	63	169	20	0	18	369	4	0	11	10	100	0	41	1	4	0	810	0	3	0	0
5:15 PM	61	209	34	0	23	432	1	0	1	9	78	2	37	7	6	0	898	0	1	0	0
5:30 PM	55	174	30	0	22	330	2	0	7	19	109	1	34	11	9	0	802	0	9	5	0
5:45 PM	55	161	28	0	23	401	9	0	3	9	66	1	32	4	8	0	799	0	0	1	0
Total Survey	441	1,345	199	1	167	3,161	24	0	40	101	735	4	279	59	49	1	6,600	0	23	7	0

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,060	2,077	3,137	0	1,659	776	2,435	0	439	269	708	3	196	232	428	0	3,354	0	15	5	0
%HV		1.4%				1.0%				1.4%				2.0%			1.2%				
PHF		0.87				0.91				0.81				0.91			0.93				

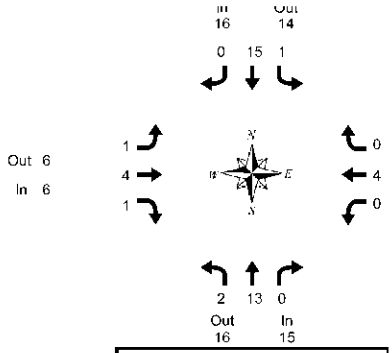
By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	232	727	101	1,060	82	1,565	12	1,659	23	49	367	439	145	25	26	196	3,354
%HV	0.9%	1.8%	0.0%	1.4%	1.2%	1.0%	0.0%	1.0%	4.3%	8.2%	0.3%	1.4%	0.0%	16.0%	0.0%	2.0%	1.2%
PHF	0.84	0.87	0.72	0.87	0.82	0.90	0.60	0.91	0.52	0.64	0.84	0.81	0.82	0.57	0.59	0.91	0.93

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	207	632	87	1	81	1,629	8	0	18	54	382	0	135	36	22	1	3,291	0	10	1	0
4:15 PM	215	654	92	0	75	1,602	9	0	26	51	383	0	138	27	23	1	3,295	0	11	0	0
4:30 PM	225	702	100	0	76	1,592	9	0	23	48	366	2	147	28	24	0	3,340	0	11	0	0
4:45 PM	229	712	99	0	80	1,553	9	0	22	47	362	3	142	27	25	0	3,307	0	16	5	0
5:00 PM	234	713	112	0	86	1,532	16	0	22	47	353	4	144	23	27	0	3,309	0	13	6	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
4:05 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
4:10 PM	0	0	0	0	1	1	0	2	0	1	0	1	0	0	0	0	3
4:15 PM	0	4	0	4	0	1	0	1	0	1	0	1	0	0	0	0	6
4:20 PM	0	1	0	1	0	5	0	5	0	0	0	0	1	1	0	2	8
4:25 PM	0	1	0	1	0	2	0	2	0	0	0	0	1	0	0	1	4
4:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:35 PM	1	3	0	4	0	0	0	0	0	1	0	1	0	1	0	1	6
4:40 PM	0	3	1	4	0	0	0	0	0	0	0	0	0	1	0	1	5
4:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:50 PM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
4:55 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	1	0	1	4
5:00 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
5:05 PM	1	1	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
5:10 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
5:20 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
5:25 PM	1	1	0	2	0	2	0	2	0	1	1	2	0	0	0	0	6
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
5:35 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:40 PM	0	2	0	2	0	4	0	4	0	0	0	0	0	1	0	1	7
5:45 PM	0	1	0	1	1	1	0	2	0	1	0	1	0	0	0	0	4
5:50 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:55 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	3
Total Survey	3	30	1	34	2	30	0	32	1	7	1	9	2	9	0	11	86

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	2	0	2	1	3	0	4	0	1	0	1	0	1	0	1	8
4:15 PM	0	6	0	6	0	8	0	8	0	1	0	1	2	1	0	3	18
4:30 PM	1	6	1	8	0	2	0	2	0	1	0	1	0	2	0	2	13
4:45 PM	0	5	0	5	0	2	0	2	0	1	0	1	0	1	0	1	9
5:00 PM	1	3	0	4	0	5	0	5	0	0	0	0	0	0	0	0	9
5:15 PM	1	2	0	3	0	3	0	3	0	2	1	3	0	1	0	1	10
5:30 PM	0	4	0	4	0	4	0	4	1	0	0	1	0	2	0	2	11
5:45 PM	0	2	0	2	1	3	0	4	0	1	0	1	0	1	0	1	8
Total Survey	3	30	1	34	2	30	0	32	1	7	1	9	2	9	0	11	86

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Harrison St			Westbound SE Harrison St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	15	16	31	16	14	30	6	6	12	4	5	9	41
PHF	0.75			0.67			0.38			0.50			0.79

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	13	0	15	1	15	0	16	1	4	1	6	0	4	0	4	41
PHF	0.50	0.65	0.00	0.75	0.25	0.75	0.00	0.67	0.25	0.50	0.25	0.38	0.00	0.50	0.00	0.50	0.79

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

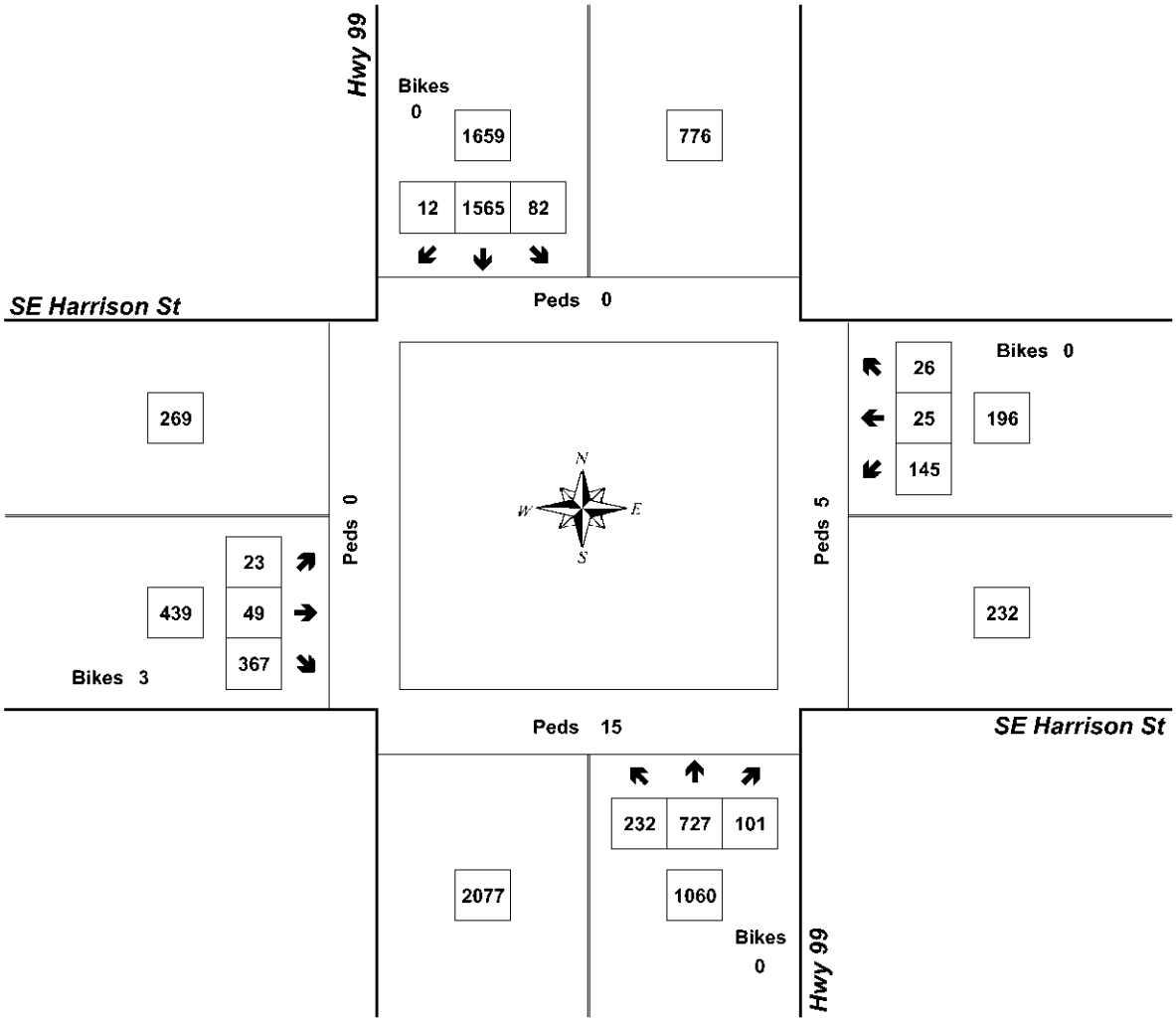
Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	19	1	21	1	15	0	16	0	4	0	4	2	5	0	7	48
4:15 PM	2	20	1	23	0	17	0	17	0	3	0	3	2	4	0	6	49
4:30 PM	3	16	1	20	0	12	0	12	0	4	1	5	0	4	0	4	41
4:45 PM	2	14	0	16	0	14	0	14	1	3	1	5	0	4	0	4	39
5:00 PM	2	11	0	13	1	15	0	16	1	3	1	5	0	4	0	4	38

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Hwy 99 & SE Harrison St

4:50 PM to 5:50 PM
Tuesday, March 05, 2019

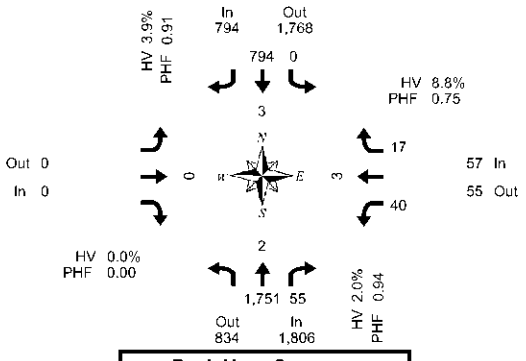


Approach	PHF	HV%	Volume
EB	0.81	1.4%	439
WB	0.91	2.0%	196
NB	0.87	1.4%	1,060
SB	0.91	1.0%	1,659
Intersection	0.93	1.2%	3,354

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99 T	R	Bikes	Southbound Hwy 99 L	T	Bikes	Eastbound SE Monroe St Bikes	Westbound SE Monroe St L	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
7:00 AM	137	1	0	0	39	0	0	2	1	0	180	0	0	0	0
7:05 AM	169	1	0	0	51	0	0	1	0	0	222	0	0	0	0
7:10 AM	140	2	0	0	57	0	0	1	1	0	201	0	0	0	0
7:15 AM	191	3	0	0	51	1	0	1	0	0	246	0	0	0	0
7:20 AM	159	0	0	0	74	0	0	2	2	0	237	0	0	0	0
7:25 AM	125	0	0	0	54	0	0	0	0	0	179	0	0	0	0
7:30 AM	123	4	0	0	66	0	0	3	0	0	196	0	1	0	0
7:35 AM	167	4	0	0	74	0	0	0	0	0	245	0	0	0	0
7:40 AM	152	2	0	0	69	0	0	5	0	0	228	0	0	0	0
7:45 AM	135	3	0	0	76	0	0	4	0	0	218	0	0	0	0
7:50 AM	124	3	0	0	68	0	0	4	4	0	203	0	0	0	0
7:55 AM	143	6	0	0	57	0	0	2	0	0	208	0	0	0	0
8:00 AM	152	8	0	0	67	0	0	5	0	0	232	0	0	0	0
8:05 AM	143	3	0	0	77	0	0	6	2	0	231	1	0	0	0
8:10 AM	142	10	0	0	64	0	0	5	1	0	222	1	0	2	0
8:15 AM	162	7	0	0	48	0	0	2	1	0	220	0	0	0	0
8:20 AM	138	4	0	0	47	0	0	2	5	0	196	1	0	0	0
8:25 AM	170	1	0	0	81	0	0	2	4	0	258	0	1	1	0
8:30 AM	129	5	0	0	53	0	0	5	3	0	195	0	0	0	0
8:35 AM	84	10	0	0	75	0	0	4	0	0	173	0	0	0	0
8:40 AM	107	4	0	0	64	0	0	4	4	0	183	0	1	0	0
8:45 AM	100	4	0	0	75	0	0	1	2	0	182	0	0	0	0
8:50 AM	74	3	0	0	74	0	0	1	1	0	153	2	0	3	0
8:55 AM	85	6	0	0	61	0	0	0	3	0	155	0	0	0	0
Total Survey	3,251	94	0	0	1,522	1	0	62	34	0	4,963	5	3	6	0

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99 T	R	Bikes	Southbound Hwy 99 L	T	Bikes	Eastbound SE Monroe St Bikes	Westbound SE Monroe St L	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
7:00 AM	446	4	0	0	147	0	0	4	2	0	603	0	0	0	0
7:15 AM	475	3	0	0	179	1	0	3	2	0	662	0	0	0	0
7:30 AM	442	10	0	0	209	0	0	8	0	0	669	0	1	0	0
7:45 AM	402	12	0	0	201	0	0	10	4	0	629	0	0	0	0
8:00 AM	437	21	0	0	208	0	0	16	3	0	685	2	0	2	0
8:15 AM	470	12	0	0	176	0	0	6	10	0	674	1	1	1	0
8:30 AM	320	19	0	0	192	0	0	13	7	0	551	0	1	0	0
8:45 AM	259	13	0	0	210	0	0	2	6	0	490	2	0	3	0
Total Survey	3,251	94	0	0	1,522	1	0	62	34	0	4,963	5	3	6	0

Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound Hwy 99 In	Out	Total	Bikes	Southbound Hwy 99 In	Out	Total	Bikes	Eastbound SE Monroe St In	Out	Total	Bikes	Westbound SE Monroe St In	Out	Total	Bikes	Total
Volume	1,806	834	2,640	0	794	1,768	2,562	0	0	0	0	0	57	55	112	0	2,657
%HV		2.0%				3.9%				0.0%				8.8%			2.7%
PHF		0.94				0.91				0.00				0.75			0.96

Pedestrians Crosswalk North	South	East	West
3	2	3	0

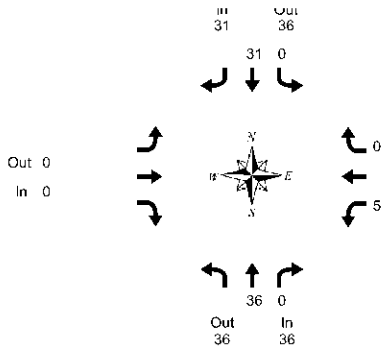
By Movement	Northbound Hwy 99 T	R	Total	Southbound Hwy 99 L	T	Total	Eastbound SE Monroe St Total	Westbound SE Monroe St L	R	Total	Total
Volume	1,751	55	1,806	0	794	794	0	40	17	57	2,657
%HV	NA 2.1%	0.0%	2.0%	0.0%	3.9%	NA 3.9%	NA NA NA	0.0%	12.5%	NA 0.0%	8.8%	2.7%
PHF	0.93	0.65	0.94	0.00	0.91	0.91	0.00	0.63	0.43	0.75	0.96

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99 T	R	Bikes	Southbound Hwy 99 L	T	Bikes	Eastbound SE Monroe St Bikes	Westbound SE Monroe St L	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
7:00 AM	1,765	29	0	0	736	1	0	25	8	0	2,563	0	1	0	0
7:15 AM	1,756	46	0	0	797	1	0	37	9	0	2,645	2	1	2	0
7:30 AM	1,751	55	0	0	794	0	0	40	17	0	2,657	3	2	3	0
7:45 AM	1,629	64	0	0	777	0	0	45	24	0	2,539	3	2	3	0
8:00 AM	1,486	65	0	0	786	0	0	37	26	0	2,400	5	2	6	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
7:00 AM	3	0	3	0	2	2	0	0	0	0	5
7:05 AM	2	0	2	0	1	1	0	1	0	1	4
7:10 AM	2	0	2	0	1	1	0	0	0	0	3
7:15 AM	2	0	2	0	1	1	0	0	0	0	3
7:20 AM	3	0	3	0	1	1	0	0	0	0	4
7:25 AM	2	0	2	0	1	1	0	0	0	0	3
7:30 AM	0	0	0	0	2	2	0	0	0	0	2
7:35 AM	1	0	1	0	1	1	0	0	0	0	2
7:40 AM	3	0	3	0	1	1	0	1	0	1	5
7:45 AM	1	0	1	0	3	3	0	0	0	0	4
7:50 AM	4	0	4	0	5	5	0	0	0	0	9
7:55 AM	2	0	2	0	2	2	0	1	0	1	5
8:00 AM	0	0	0	0	3	3	0	0	0	0	3
8:05 AM	1	0	1	0	3	3	0	1	0	1	5
8:10 AM	7	0	7	0	2	2	0	1	0	1	10
8:15 AM	6	0	6	0	1	1	0	1	0	1	8
8:20 AM	6	0	6	0	5	5	0	0	0	0	11
8:25 AM	5	0	5	0	3	3	0	0	0	0	8
8:30 AM	3	0	3	0	3	3	0	0	0	0	6
8:35 AM	2	0	2	0	4	4	0	0	0	0	6
8:40 AM	5	0	5	0	4	4	0	0	0	0	9
8:45 AM	2	0	2	0	5	5	0	0	0	0	7
8:50 AM	3	0	3	0	2	2	0	0	0	0	5
8:55 AM	3	1	4	0	3	3	0	0	1	1	8
Total Survey	68	1	69	0	59	59	0	6	1	7	135

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
7:00 AM	7	0	7	0	4	4	0	1	0	1	12
7:15 AM	7	0	7	0	3	3	0	0	0	0	10
7:30 AM	4	0	4	0	4	4	0	1	0	1	9
7:45 AM	7	0	7	0	10	10	0	1	0	1	18
8:00 AM	8	0	8	0	8	8	0	2	0	2	18
8:15 AM	17	0	17	0	9	9	0	1	0	1	27
8:30 AM	10	0	10	0	11	11	0	0	0	0	21
8:45 AM	8	1	9	0	10	10	0	0	1	1	20
Total Survey	68	1	69	0	59	59	0	6	1	7	135

Heavy Vehicle Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	36	36	72	31	36	67	0	0	0	5	0	5	72
PHF	0.47			0.78			0.00			0.42			0.62

By Movement	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Total
	T	R	Total	L	T	Total	Total	L	R	Total	
Volume	36	0	36	0	31	31	0	5	0	5	72
PHF	0.47	0.00	0.47	0.00	0.78	0.78	0.00	0.42	0.00	0.42	0.62

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

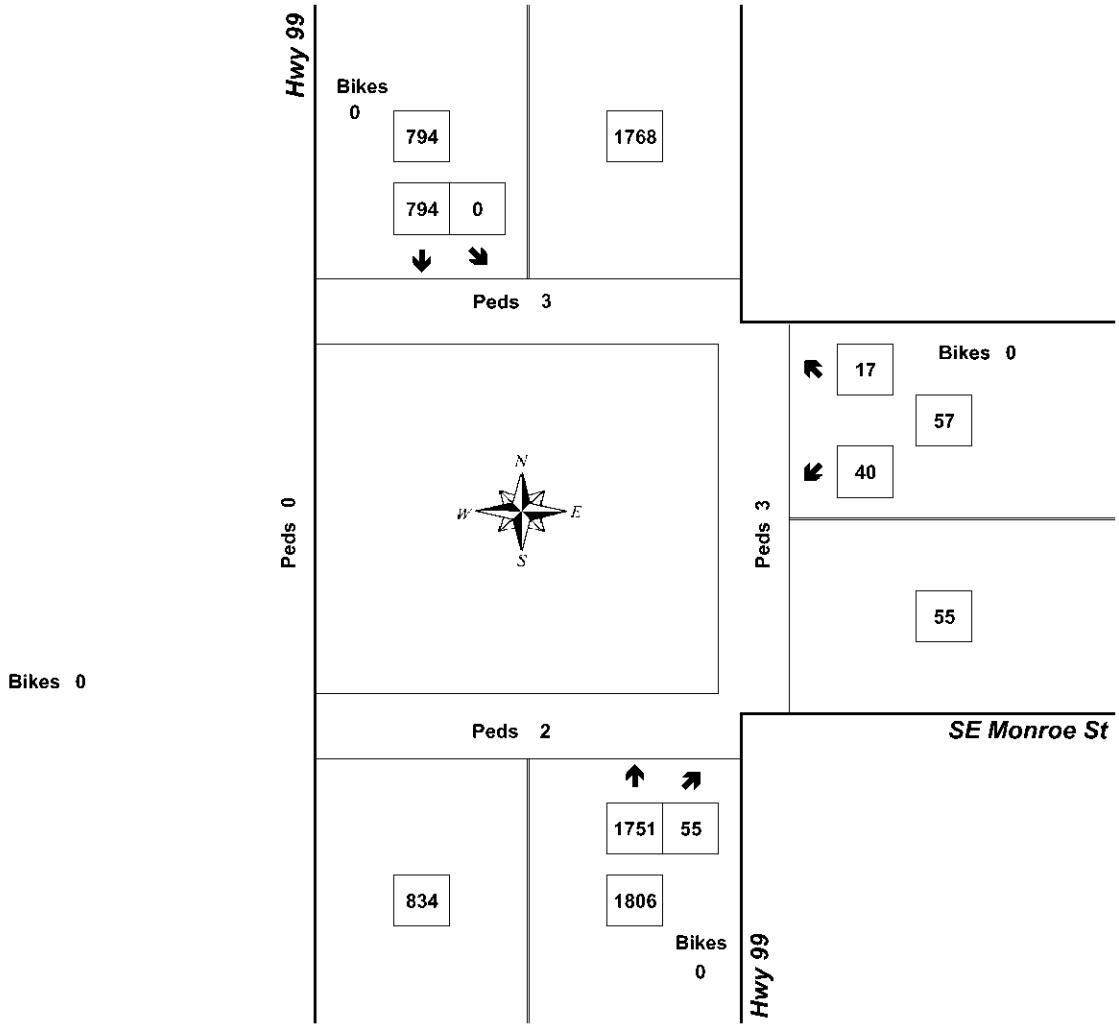
Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
7:00 AM	25	0	25	0	21	21	0	3	0	3	49
7:15 AM	26	0	26	0	25	25	0	4	0	4	55
7:30 AM	36	0	36	0	31	31	0	5	0	5	72
7:45 AM	42	0	42	0	38	38	0	4	0	4	84
8:00 AM	43	1	44	0	38	38	0	3	1	4	86

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Hwy 99 & SE Monroe St

7:30 AM to 8:30 AM
Tuesday, March 05, 2019



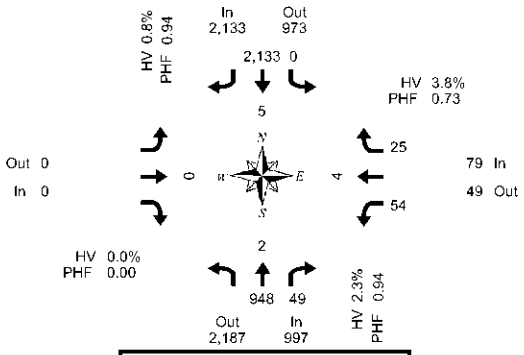
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.75	8.8%	57
NB	0.94	2.0%	1,806
SB	0.91	3.9%	794
Intersection	0.96	2.7%	2,657

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:10 PM to 5:10 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99 T	R	Bikes	Southbound Hwy 99 L	T	Bikes	Eastbound SE Monroe St Bikes	Westbound SE Monroe St L	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	79	2	0	0	185	0	0	1	2	0	269	0	0	2	0
4:05 PM	71	3	0	0	172	0	0	6	1	0	253	0	0	0	0
4:10 PM	98	7	1	0	196	0	0	3	2	0	306	0	0	0	0
4:15 PM	74	2	0	0	170	0	0	6	2	0	254	0	0	0	0
4:20 PM	81	4	0	0	190	0	0	2	4	0	281	1	0	0	0
4:25 PM	63	6	0	0	185	0	0	4	4	0	262	0	0	0	0
4:30 PM	70	6	0	0	194	0	0	2	2	0	274	1	0	2	0
4:35 PM	95	0	0	0	157	0	0	2	1	0	255	1	1	0	0
4:40 PM	67	4	0	0	195	0	0	4	1	0	271	0	0	0	0
4:45 PM	76	3	0	0	148	0	0	3	0	0	230	0	0	0	0
4:50 PM	75	3	0	0	185	0	0	5	5	0	273	1	1	0	0
4:55 PM	72	2	0	0	170	0	0	3	2	0	249	0	0	0	0
5:00 PM	82	6	0	0	182	0	0	11	1	0	282	0	0	2	0
5:05 PM	95	6	0	0	161	0	0	9	1	1	272	1	0	0	0
5:10 PM	82	2	0	0	182	0	0	4	3	0	273	0	0	1	0
5:15 PM	94	4	0	0	163	0	0	3	3	0	267	0	0	2	0
5:20 PM	84	1	0	0	186	0	0	4	3	0	278	0	0	0	0
5:25 PM	91	2	0	0	169	1	0	9	4	0	275	1	0	0	0
5:30 PM	77	3	0	0	177	0	0	3	3	0	263	0	0	1	0
5:35 PM	92	4	0	0	151	0	0	2	3	0	252	0	0	0	0
5:40 PM	77	1	0	0	168	0	0	6	4	0	256	0	1	0	0
5:45 PM	77	3	0	0	180	0	0	5	2	0	267	0	0	0	0
5:50 PM	75	3	0	0	169	1	0	2	1	0	250	0	0	0	0
5:55 PM	71	3	0	0	135	0	0	1	4	0	214	0	0	1	0
Total Survey	1,918	80	1	0	4,170	2	0	100	58	1	6,326	6	3	11	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99 T	R	Bikes	Southbound Hwy 99 L	T	Bikes	Eastbound SE Monroe St Bikes	Westbound SE Monroe St L	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	248	12	1	0	553	0	0	10	5	0	828	0	0	2	0
4:15 PM	218	12	0	0	545	0	0	12	10	0	797	1	0	0	0
4:30 PM	232	10	0	0	546	0	0	8	4	0	800	2	1	2	0
4:45 PM	223	8	0	0	503	0	0	11	7	0	752	1	1	0	0
5:00 PM	259	14	0	0	525	0	0	24	5	1	827	1	0	3	0
5:15 PM	269	7	0	0	518	1	0	16	10	0	820	1	0	2	0
5:30 PM	246	8	0	0	496	0	0	11	10	0	771	0	1	1	0
5:45 PM	223	9	0	0	484	1	0	8	7	0	731	0	0	1	0
Total Survey	1,918	80	1	0	4,170	2	0	100	58	1	6,326	6	3	11	0

Peak Hour Summary
4:10 PM to 5:10 PM

By Approach	Northbound Hwy 99 In	Out	Total	Bikes	Southbound Hwy 99 In	Out	Total	Bikes	Eastbound SE Monroe St In	Out	Total	Bikes	Westbound SE Monroe St In	Out	Total	Bikes	Total
Volume	997	2,187	3,184	1	2,133	973	3,106	0	0	0	0	0	79	49	128	1	3,209
%HV		2.3%				0.8%				0.0%				3.8%			1.4%
PHF		0.94				0.94				0.00				0.73			0.95

Pedestrians Crosswalk North	South	East	West
5	2	4	0

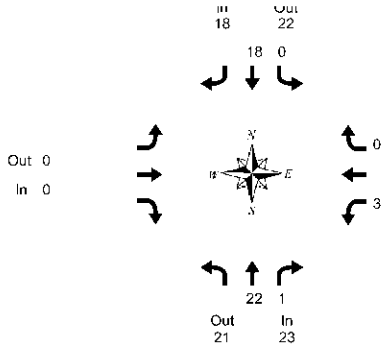
By Movement	Northbound Hwy 99 T	R	Total	Southbound Hwy 99 L	T	Total	Eastbound SE Monroe St Total	Westbound SE Monroe St L	R	Total	Total
Volume	948	49	997	0	2,133	2,133	0	54	25	79	3,209
%HV	NA 2.3%	2.0%	2.3%	0.0%	0.8%	NA 0.8%	NA NA	NA 0.0%	5.6%	NA 0.0%	3.8%	1.4%
PHF	0.94	0.77	0.94	0.00	0.94	0.94	0.00	0.59	0.63	0.73	0.95

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99 T	R	Bikes	Southbound Hwy 99 L	T	Bikes	Eastbound SE Monroe St Bikes	Westbound SE Monroe St L	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	921	42	1	0	2,147	0	0	41	26	0	3,177	4	2	4	0
4:15 PM	932	44	0	0	2,119	0	0	55	26	1	3,176	5	2	5	0
4:30 PM	983	39	0	0	2,092	1	0	59	26	1	3,199	5	2	7	0
4:45 PM	997	37	0	0	2,042	1	0	62	32	1	3,170	3	2	6	0
5:00 PM	997	36	0	0	2,023	2	0	59	32	1	3,149	2	1	7	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:10 PM to 5:10 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
4:00 PM	0	0	0	0	3	3	0	0	0	0	3
4:05 PM	2	0	2	0	0	0	0	0	0	0	2
4:10 PM	1	0	1	0	1	1	0	0	0	0	2
4:15 PM	6	0	6	0	2	2	0	1	0	1	9
4:20 PM	0	0	0	0	6	6	0	0	0	0	6
4:25 PM	1	0	1	0	2	2	0	1	0	1	4
4:30 PM	0	0	0	0	1	1	0	0	0	0	1
4:35 PM	5	0	5	0	0	0	0	0	0	0	5
4:40 PM	2	1	3	0	0	0	0	1	0	1	4
4:45 PM	2	0	2	0	0	0	0	0	0	0	2
4:50 PM	2	0	2	0	1	1	0	0	0	0	3
4:55 PM	1	0	1	0	0	0	0	0	0	0	1
5:00 PM	2	0	2	0	4	4	0	0	0	0	6
5:05 PM	0	0	0	0	1	1	0	0	0	0	1
5:10 PM	1	0	1	0	1	1	0	1	0	1	3
5:15 PM	1	0	1	0	0	0	0	0	0	0	1
5:20 PM	1	0	1	0	1	1	0	1	0	1	3
5:25 PM	1	0	1	0	3	3	0	1	0	1	5
5:30 PM	1	0	1	0	0	0	0	0	0	0	1
5:35 PM	0	0	0	0	1	1	0	0	0	0	1
5:40 PM	2	0	2	0	4	4	0	0	0	0	6
5:45 PM	1	0	1	0	1	1	0	1	0	1	3
5:50 PM	0	0	0	0	1	1	0	0	0	0	1
5:55 PM	1	0	1	0	2	2	0	0	0	0	3
Total Survey	33	1	34	0	35	35	0	7	0	7	76

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
4:00 PM	3	0	3	0	4	4	0	0	0	0	7
4:15 PM	7	0	7	0	10	10	0	2	0	2	19
4:30 PM	7	1	8	0	1	1	0	1	0	1	10
4:45 PM	5	0	5	0	1	1	0	0	0	0	6
5:00 PM	3	0	3	0	6	6	0	1	0	1	10
5:15 PM	3	0	3	0	4	4	0	2	0	2	9
5:30 PM	3	0	3	0	5	5	0	0	0	0	8
5:45 PM	2	0	2	0	4	4	0	1	0	1	7
Total Survey	33	1	34	0	35	35	0	7	0	7	76

Heavy Vehicle Peak Hour Summary
4:10 PM to 5:10 PM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	23	21	44	18	22	40	0	0	0	3	1	4	44
PHF	0.58			0.45			0.00			0.38			0.58

By Movement	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Total
	T	R	Total	L	T	Total	Total	L	R	Total	
Volume	22	1	23	0	18	18	0	3	0	3	44
PHF	0.61	0.25	0.58	0.00	0.45	0.45	0.00	0.38	0.00	0.38	0.58

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

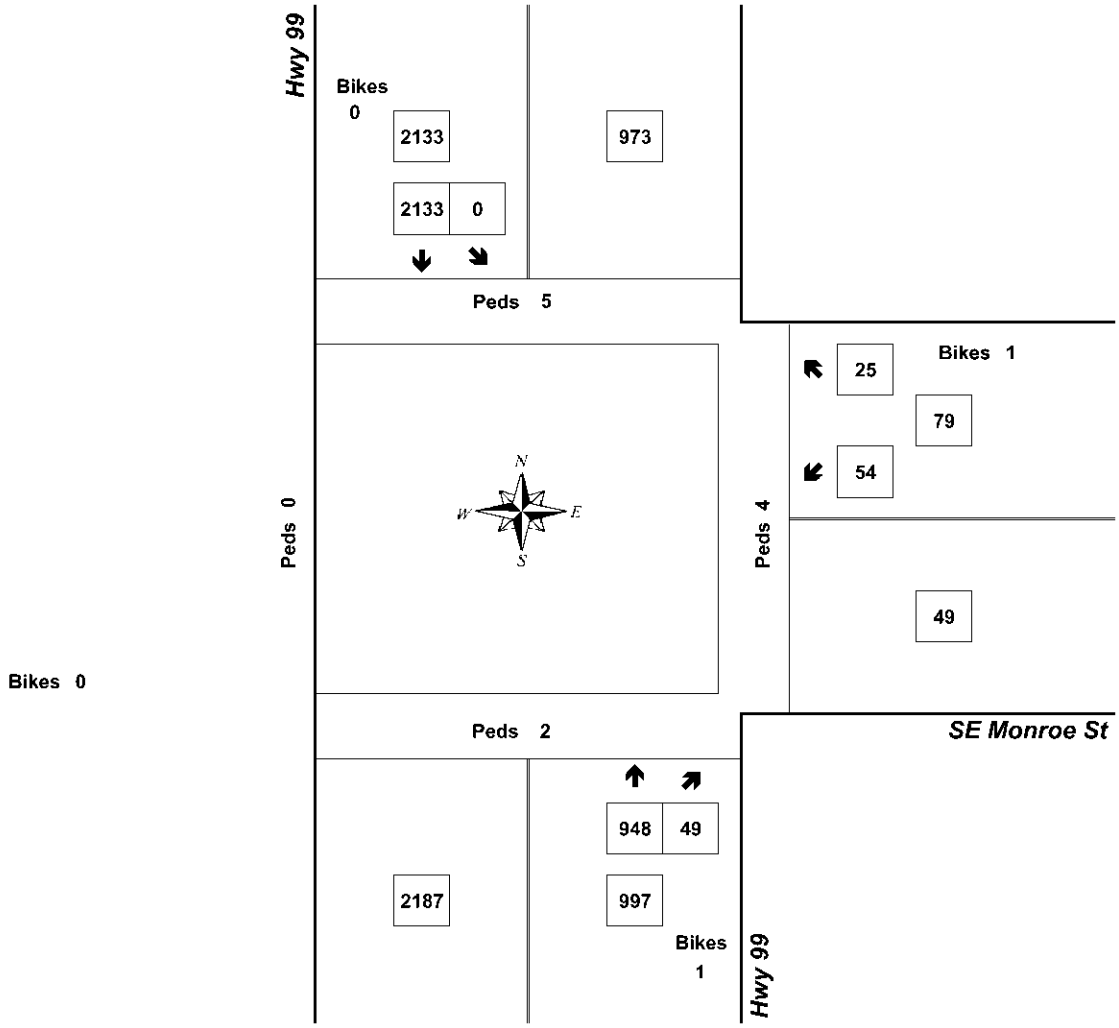
Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St	Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
4:00 PM	22	1	23	0	16	16	0	3	0	3	42
4:15 PM	22	1	23	0	18	18	0	4	0	4	45
4:30 PM	18	1	19	0	12	12	0	4	0	4	35
4:45 PM	14	0	14	0	16	16	0	3	0	3	33
5:00 PM	11	0	11	0	19	19	0	4	0	4	34

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Hwy 99 & SE Monroe St

4:10 PM to 5:10 PM
Tuesday, March 05, 2019

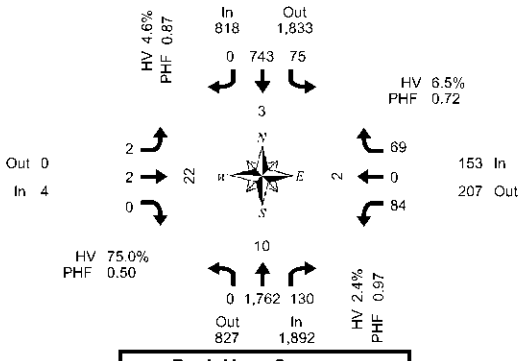


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.73	3.8%	79
NB	0.94	2.3%	997
SB	0.94	0.8%	2,133
Intersection	0.95	1.4%	3,209

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:35 AM to 8:35 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	144	3	0	4	35	0	0	0	0	0	0	3	0	1	0	190	0	0	0	0
7:05 AM	0	163	8	0	3	49	0	0	0	0	0	0	5	0	2	0	230	0	0	0	0
7:10 AM	0	146	3	0	5	46	0	0	0	0	0	0	5	0	3	0	208	0	0	0	0
7:15 AM	0	188	7	0	3	51	0	0	0	0	0	0	1	0	1	0	251	0	0	0	0
7:20 AM	0	158	5	0	8	61	0	0	0	0	0	0	4	0	3	0	239	0	0	0	0
7:25 AM	0	134	16	0	7	44	0	0	0	0	0	0	3	0	5	0	209	0	0	0	1
7:30 AM	0	125	13	0	6	46	0	0	0	0	0	0	3	0	5	0	198	1	1	0	2
7:35 AM	0	170	15	0	6	73	0	0	0	0	0	0	4	0	6	0	274	1	0	0	4
7:40 AM	0	157	5	0	4	62	0	0	0	1	0	0	5	0	3	0	237	0	0	0	0
7:45 AM	0	136	7	0	3	86	0	0	0	0	0	0	3	0	4	0	239	0	0	0	2
7:50 AM	0	134	12	1	6	47	0	1	0	1	0	0	10	0	4	0	214	1	1	0	5
7:55 AM	0	143	13	0	11	58	0	0	1	0	0	0	7	0	8	0	241	0	0	0	3
8:00 AM	0	156	9	0	3	58	0	0	0	0	0	0	8	0	7	0	241	0	1	0	1
8:05 AM	0	133	10	0	9	81	0	0	0	0	0	0	14	0	9	0	256	0	5	0	1
8:10 AM	0	154	8	0	11	55	0	0	0	0	0	0	5	0	7	0	240	0	0	2	2
8:15 AM	0	161	16	0	3	49	0	0	1	0	0	0	6	0	8	0	244	0	0	0	1
8:20 AM	0	132	12	0	9	42	0	0	0	0	0	0	7	0	4	0	206	1	0	0	1
8:25 AM	0	152	17	0	7	75	0	0	0	0	0	0	4	0	2	0	257	0	2	0	1
8:30 AM	0	134	6	1	3	57	0	0	0	0	0	0	11	0	7	0	218	0	1	0	1
8:35 AM	0	90	9	0	12	64	0	0	0	0	0	0	6	0	5	0	186	0	0	0	0
8:40 AM	0	113	6	0	7	48	0	0	2	0	0	0	10	0	0	0	186	0	2	0	0
8:45 AM	0	96	7	0	8	77	0	0	0	0	0	0	4	0	5	0	197	0	5	0	2
8:50 AM	0	77	11	0	11	57	0	0	0	0	0	0	9	0	4	0	169	1	1	0	3
8:55 AM	0	80	8	0	5	60	0	0	0	1	0	0	3	0	5	0	162	0	1	0	0
Total Survey	0	3,276	226	2	154	1,381	0	1	4	3	0	0	140	0	108	0	5,292	5	20	2	30

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	453	14	0	12	130	0	0	0	0	0	0	13	0	6	0	628	0	0	0	0
7:15 AM	0	480	28	0	18	156	0	0	0	0	0	0	8	0	9	0	699	0	0	0	1
7:30 AM	0	452	33	0	16	181	0	0	0	1	0	0	12	0	14	0	709	2	1	0	6
7:45 AM	0	413	32	1	20	191	0	1	1	1	0	0	20	0	16	0	694	1	1	0	10
8:00 AM	0	443	27	0	23	194	0	0	0	0	0	0	27	0	23	0	737	0	6	2	4
8:15 AM	0	445	45	0	19	166	0	0	1	0	0	0	17	0	14	0	707	1	2	0	3
8:30 AM	0	337	21	1	22	169	0	0	2	0	0	0	27	0	12	0	590	0	3	0	1
8:45 AM	0	253	26	0	24	194	0	0	0	1	0	0	16	0	14	0	528	1	7	0	5
Total Survey	0	3,276	226	2	154	1,381	0	1	4	3	0	0	140	0	108	0	5,292	5	20	2	30

Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	1,892	827	2,719	2	818	1,833	2,651	1	4	0	4	0	153	207	360	0	2,867
%HV		2.4%				4.6%				75.0%				6.5%			3.3%
PHF		0.97				0.87				0.50				0.72			0.96

Pedestrians Crosswalk			
North	South	East	West
3	10	2	22

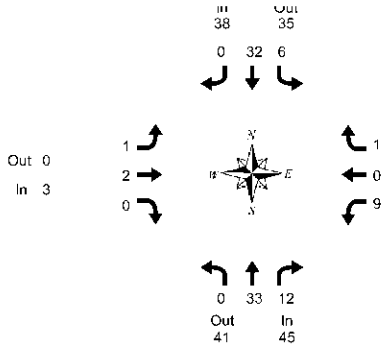
By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1,762	130	1,892	75	743	0	818	2	2	0	4	84	0	69	153	2,867
%HV	0.0%	1.9%	9.2%	2.4%	8.0%	4.3%	0.0%	4.6%	50.0%	#####	0.0%	75.0%	10.7%	0.0%	1.4%	6.5%	3.3%
PHF	0.00	0.95	0.72	0.97	0.82	0.84	0.00	0.87	0.50	0.25	0.00	0.50	0.72	0.00	0.72	0.72	0.96

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	1,798	107	1	66	658	0	1	1	2	0	0	53	0	45	0	2,730	3	2	0	17
7:15 AM	0	1,788	120	1	77	722	0	1	1	2	0	0	67	0	62	0	2,839	3	8	2	21
7:30 AM	0	1,753	137	1	78	732	0	1	2	2	0	0	76	0	67	0	2,847	4	10	2	23
7:45 AM	0	1,638	125	2	84	720	0	1	4	1	0	0	91	0	65	0	2,728	2	12	2	18
8:00 AM	0	1,478	119	1	88	723	0	0	3	1	0	0	87	0	63	0	2,562	2	18	2	13

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:35 AM to 8:35 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	3	1	4	1	2	0	3	0	0	0	0	0	0	0	0	7
7:05 AM	0	2	1	3	0	3	0	3	0	0	0	0	0	0	0	0	6
7:10 AM	0	1	0	1	0	1	0	1	0	0	0	0	2	0	0	2	4
7:15 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
7:20 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
7:25 AM	0	0	1	1	1	0	0	1	0	0	0	0	1	0	0	1	3
7:30 AM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
7:35 AM	0	1	3	4	0	2	0	2	0	0	0	0	0	0	0	0	6
7:40 AM	0	1	0	1	0	2	0	2	0	1	0	1	2	0	0	2	6
7:45 AM	0	2	0	2	1	3	0	4	0	0	0	0	0	0	0	0	6
7:50 AM	0	2	0	2	2	1	0	3	0	1	0	1	2	0	0	2	8
7:55 AM	0	2	1	3	1	3	0	4	0	0	0	0	1	0	0	1	8
8:00 AM	0	2	1	3	0	3	0	3	0	0	0	0	0	0	0	0	6
8:05 AM	0	1	1	2	0	4	0	4	0	0	0	0	1	0	0	1	7
8:10 AM	0	6	2	8	0	3	0	3	0	0	0	0	1	0	1	2	13
8:15 AM	0	5	2	7	0	2	0	2	1	0	0	1	0	0	0	0	10
8:20 AM	0	5	1	6	0	5	0	5	0	0	0	0	0	0	0	0	11
8:25 AM	0	4	1	5	1	1	0	2	0	0	0	0	0	0	0	0	7
8:30 AM	0	2	0	2	1	3	0	4	0	0	0	0	2	0	0	2	8
8:35 AM	0	1	1	2	0	2	0	2	0	0	0	0	0	0	2	2	6
8:40 AM	0	5	0	5	1	2	0	3	0	0	0	0	1	0	0	1	9
8:45 AM	0	1	1	2	2	3	0	5	0	0	0	0	0	0	0	0	7
8:50 AM	0	2	1	3	0	3	0	3	0	0	0	0	1	0	1	2	8
8:55 AM	0	3	0	3	2	1	0	3	0	0	0	0	0	0	0	0	6
Total Survey	0	54	18	72	13	53	0	66	1	2	0	3	14	0	4	18	159

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	6	2	8	1	6	0	7	0	0	0	0	2	0	0	2	17
7:15 AM	0	1	1	2	1	2	0	3	0	0	0	0	1	0	0	1	6
7:30 AM	0	4	3	7	0	6	0	6	0	1	0	1	2	0	0	2	16
7:45 AM	0	6	1	7	4	7	0	11	0	1	0	1	3	0	0	3	22
8:00 AM	0	9	4	13	0	10	0	10	0	0	0	0	2	0	1	3	26
8:15 AM	0	14	4	18	1	8	0	9	1	0	0	1	0	0	0	0	28
8:30 AM	0	8	1	9	2	7	0	9	0	0	0	0	3	0	2	5	23
8:45 AM	0	6	2	8	4	7	0	11	0	0	0	0	1	0	1	2	21
Total Survey	0	54	18	72	13	53	0	66	1	2	0	3	14	0	4	18	159

Heavy Vehicle Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	45	41	86	38	35	73	3	0	3	10	20	30	96
PHF	0.54			0.86			0.38			0.63			0.71

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	33	12	45	6	32	0	38	1	2	0	3	9	0	1	10	96
PHF	0.00	0.52	0.60	0.54	0.38	0.80	0.00	0.86	0.25	0.25	0.00	0.38	0.56	0.00	0.25	0.63	0.71

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

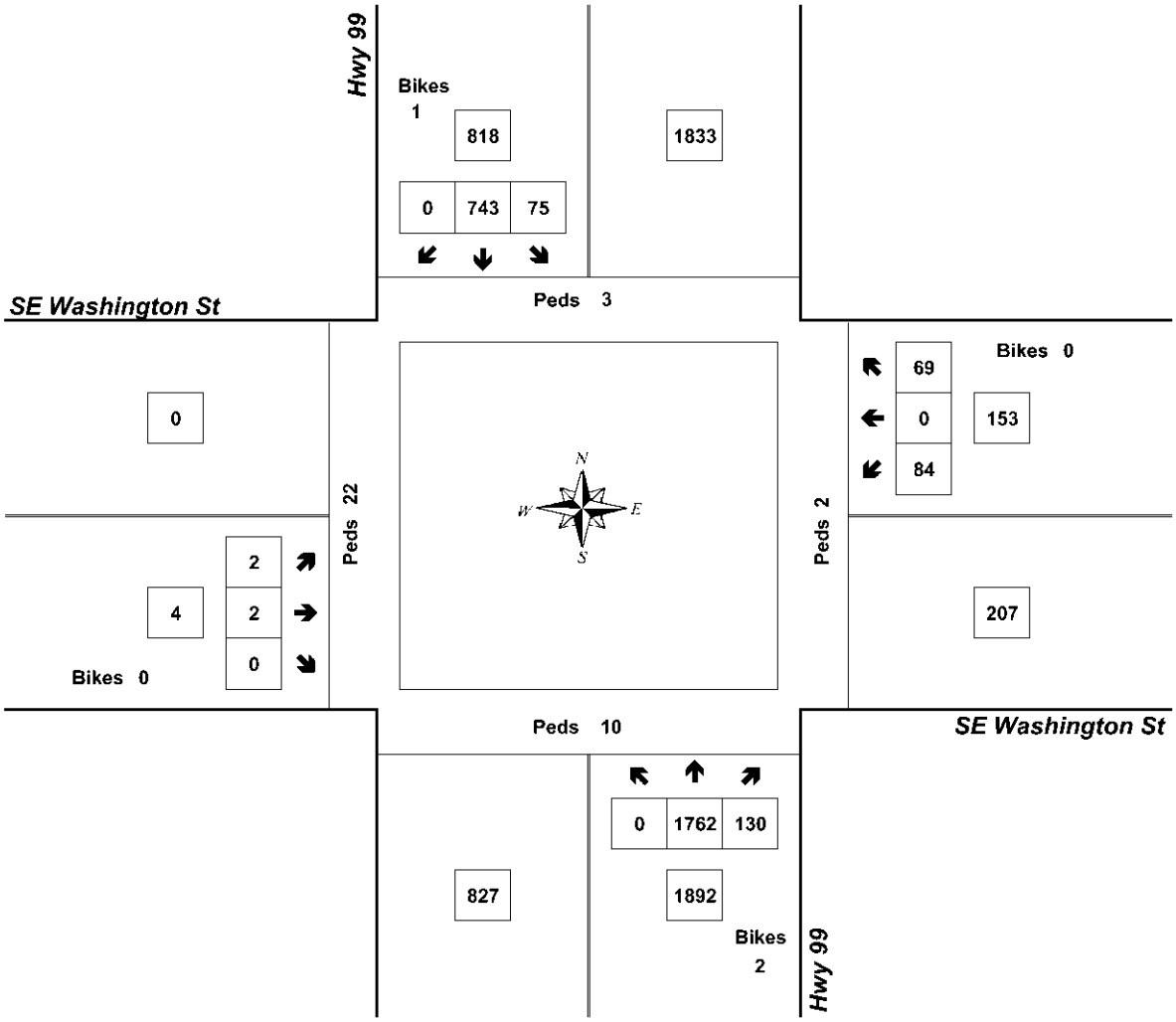
Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	17	7	24	6	21	0	27	0	2	0	2	8	0	0	8	61
7:15 AM	0	20	9	29	5	25	0	30	0	2	0	2	8	0	1	9	70
7:30 AM	0	33	12	45	5	31	0	36	1	2	0	3	7	0	1	8	92
7:45 AM	0	37	10	47	7	32	0	39	1	1	0	2	8	0	3	11	99
8:00 AM	0	37	11	48	7	32	0	39	1	0	0	1	6	0	4	10	98

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Hwy 99 & SE Washington St

7:35 AM to 8:35 AM
Tuesday, March 05, 2019

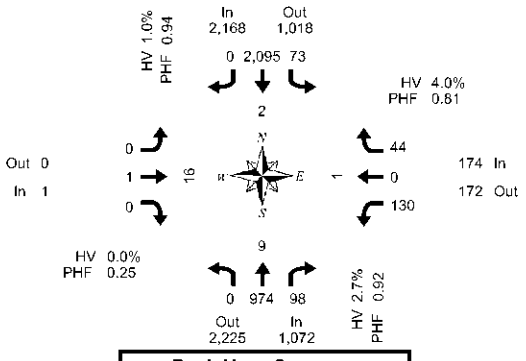


Approach	PHF	HV%	Volume
EB	0.50	75.0%	4
WB	0.72	6.5%	153
NB	0.97	2.4%	1,892
SB	0.87	4.6%	818
Intersection	0.96	3.3%	2,867

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Washington St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:10 PM to 5:10 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	84	9	0	8	184	0	0	0	0	0	0	12	0	5	0	302	0	0	0	2
4:05 PM	0	60	8	1	7	178	0	0	0	0	0	0	16	0	10	0	279	1	1	0	1
4:10 PM	0	112	9	0	10	183	0	0	0	0	0	0	3	0	5	0	322	0	0	0	0
4:15 PM	0	69	7	0	5	169	0	0	0	0	0	0	15	0	3	0	268	0	1	0	1
4:20 PM	0	85	10	0	10	185	0	0	0	0	0	0	13	0	5	0	308	0	0	0	2
4:25 PM	0	69	6	1	7	179	0	0	0	0	0	0	17	0	1	0	279	0	1	0	2
4:30 PM	0	82	10	0	6	192	0	0	0	0	0	0	8	0	3	0	301	0	0	0	1
4:35 PM	0	88	10	0	7	152	0	0	0	0	0	0	9	0	6	0	272	1	2	1	3
4:40 PM	0	69	13	0	6	192	0	0	0	0	0	0	8	0	3	0	291	0	0	0	3
4:45 PM	0	74	8	0	4	144	0	0	0	0	0	0	13	0	3	0	246	1	1	0	3
4:50 PM	0	80	7	0	7	185	0	0	0	0	0	0	10	0	3	0	292	0	1	0	0
4:55 PM	0	63	5	1	7	159	0	0	0	0	0	0	16	0	3	0	253	0	0	0	0
5:00 PM	0	87	7	0	2	185	0	1	0	1	0	0	5	0	3	0	290	0	0	0	1
5:05 PM	0	96	6	0	2	170	0	0	0	0	0	0	13	0	6	0	293	0	3	0	0
5:10 PM	0	76	5	1	4	165	0	0	0	0	0	0	8	0	5	0	263	0	1	0	1
5:15 PM	0	92	3	1	7	158	0	0	0	0	0	0	22	0	2	0	284	2	1	0	2
5:20 PM	0	90	5	0	2	183	0	0	0	0	0	0	8	0	2	0	290	2	0	0	2
5:25 PM	0	96	14	0	7	172	0	1	0	0	0	0	8	0	3	0	300	0	0	0	0
5:30 PM	0	69	7	1	5	167	0	0	0	0	0	0	2	0	1	2	251	0	0	0	0
5:35 PM	0	88	7	1	2	142	0	0	0	0	0	0	12	0	5	0	256	0	1	0	0
5:40 PM	0	83	14	0	10	164	0	0	0	0	0	0	3	0	2	0	276	0	0	0	0
5:45 PM	0	79	10	0	10	181	0	0	0	0	0	0	7	0	4	0	291	0	0	0	0
5:50 PM	0	78	2	0	9	151	0	1	0	0	0	0	7	0	0	0	247	0	0	0	0
5:55 PM	0	80	4	0	7	134	0	0	1	0	0	0	11	0	1	0	238	0	1	0	1
Total Survey	0	1,949	186	7	151	4,074	0	3	1	1	0	0	246	0	84	2	6,692	7	14	1	25

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	256	26	1	25	545	0	0	0	0	0	0	31	0	20	0	903	1	1	0	3
4:15 PM	0	223	23	1	22	533	0	0	0	0	0	0	45	0	9	0	855	0	2	0	5
4:30 PM	0	239	33	0	19	536	0	0	0	0	0	0	25	0	12	0	864	1	2	1	7
4:45 PM	0	217	20	1	18	488	0	0	0	0	0	0	39	0	9	0	791	1	2	0	3
5:00 PM	0	259	18	1	8	520	0	1	0	1	0	0	26	0	14	0	846	0	4	0	2
5:15 PM	0	278	22	1	16	513	0	1	0	0	0	0	38	0	7	0	874	4	1	0	4
5:30 PM	0	240	28	2	17	473	0	0	0	0	0	0	17	0	8	2	783	0	1	0	0
5:45 PM	0	237	16	0	26	466	0	1	1	0	0	0	25	0	5	0	776	0	1	0	1
Total Survey	0	1,949	186	7	151	4,074	0	3	1	1	0	0	246	0	84	2	6,692	7	14	1	25

Peak Hour Summary
4:10 PM to 5:10 PM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	1,072	2,225	3,297	2	2,168	1,018	3,186	1	1	0	1	0	174	172	346	0	3,415
%HV		2.7%				1.0%				0.0%				4.0%			1.7%
PHF		0.92				0.94				0.25				0.81			0.95

Pedestrians Crosswalk			
North	South	East	West
2	9	1	16

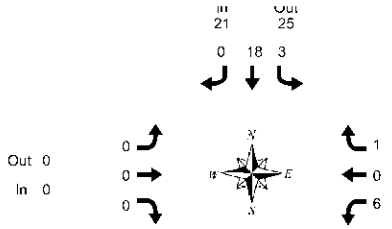
By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	974	98	1,072	73	2,095	0	2,168	0	1	0	1	130	0	44	174	3,415
%HV	0.0%	2.5%	5.1%	2.7%	4.1%	0.9%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%	2.3%	4.0%	1.7%
PHF	0.00	0.92	0.74	0.92	0.73	0.94	0.00	0.94	0.00	0.25	0.00	0.25	0.72	0.00	0.85	0.81	0.95

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	935	102	3	84	2,102	0	0	0	0	0	0	140	0	50	0	3,413	3	7	1	18
4:15 PM	0	938	94	3	67	2,077	0	1	0	1	0	0	135	0	44	0	3,356	2	10	1	17
4:30 PM	0	993	93	3	61	2,057	0	2	0	1	0	0	128	0	42	0	3,375	6	9	1	16
4:45 PM	0	994	88	5	59	1,994	0	2	0	1	0	0	120	0	38	2	3,294	5	8	0	9
5:00 PM	0	1,014	84	4	67	1,972	0	3	1	1	0	0	106	0	34	2	3,279	4	7	0	7

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Hwy 99 & SE Washington St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:10 PM to 5:10 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	2
4:05 PM	0	2	2	4	0	1	0	1	0	0	0	0	0	0	0	0	5
4:10 PM	0	2	0	2	0	1	0	1	0	0	0	0	1	0	0	1	4
4:15 PM	0	4	0	4	0	2	0	2	0	0	0	0	0	0	0	0	6
4:20 PM	0	0	2	2	1	3	0	4	0	0	0	0	0	0	0	0	6
4:25 PM	0	2	0	2	0	3	0	3	0	0	0	0	1	0	0	1	6
4:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
4:35 PM	0	4	1	5	0	0	0	0	0	0	0	0	1	0	1	2	7
4:40 PM	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
4:45 PM	0	3	0	3	0	0	0	0	0	0	0	0	2	0	0	2	5
4:50 PM	0	2	1	3	1	0	0	1	0	0	0	0	0	0	0	0	4
4:55 PM	0	1	1	2	0	0	0	0	0	0	0	0	1	0	0	1	3
5:00 PM	0	1	0	1	0	4	0	4	0	0	0	0	0	0	0	0	5
5:05 PM	0	2	0	2	1	1	0	2	0	0	0	0	0	0	0	0	4
5:10 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	2	3
5:20 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
5:25 PM	0	0	2	2	0	4	0	4	0	0	0	0	1	0	1	2	8
5:30 PM	0	1	1	2	0	1	0	1	0	0	0	0	0	0	0	0	3
5:35 PM	0	1	1	2	0	2	0	2	0	0	0	0	0	0	0	0	4
5:40 PM	0	2	0	2	0	4	0	4	0	0	0	0	0	0	0	0	6
5:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	0	1	2	4
5:50 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:55 PM	0	2	1	3	0	2	0	2	0	0	0	0	2	0	0	2	7
Total Survey	0	34	13	47	3	40	0	43	0	0	0	0	12	0	3	15	105

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	4	3	7	0	3	0	3	0	0	0	0	1	0	0	1	11
4:15 PM	0	6	2	8	1	8	0	9	0	0	0	0	1	0	0	1	18
4:30 PM	0	7	1	8	0	4	0	4	0	0	0	0	1	0	1	2	14
4:45 PM	0	6	2	8	1	0	0	1	0	0	0	0	3	0	0	3	12
5:00 PM	0	3	0	3	1	7	0	8	0	0	0	0	0	0	0	0	11
5:15 PM	0	2	2	4	0	6	0	6	0	0	0	0	3	0	1	4	14
5:30 PM	0	4	2	6	0	7	0	7	0	0	0	0	0	0	0	0	13
5:45 PM	0	2	1	3	0	5	0	5	0	0	0	0	3	0	1	4	12
Total Survey	0	34	13	47	3	40	0	43	0	0	0	0	12	0	3	15	105

Heavy Vehicle Peak Hour Summary
4:10 PM to 5:10 PM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	29	24	53	21	25	46	0	0	0	7	8	15	57
PHF	0.66			0.53			0.00			0.44			0.79

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	24	5	29	3	18	0	21	0	0	0	0	6	0	1	7	57
PHF	0.00	0.60	0.63	0.66	0.75	0.50	0.00	0.53	0.00	0.00	0.00	0.00	0.50	0.00	0.25	0.44	0.79

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

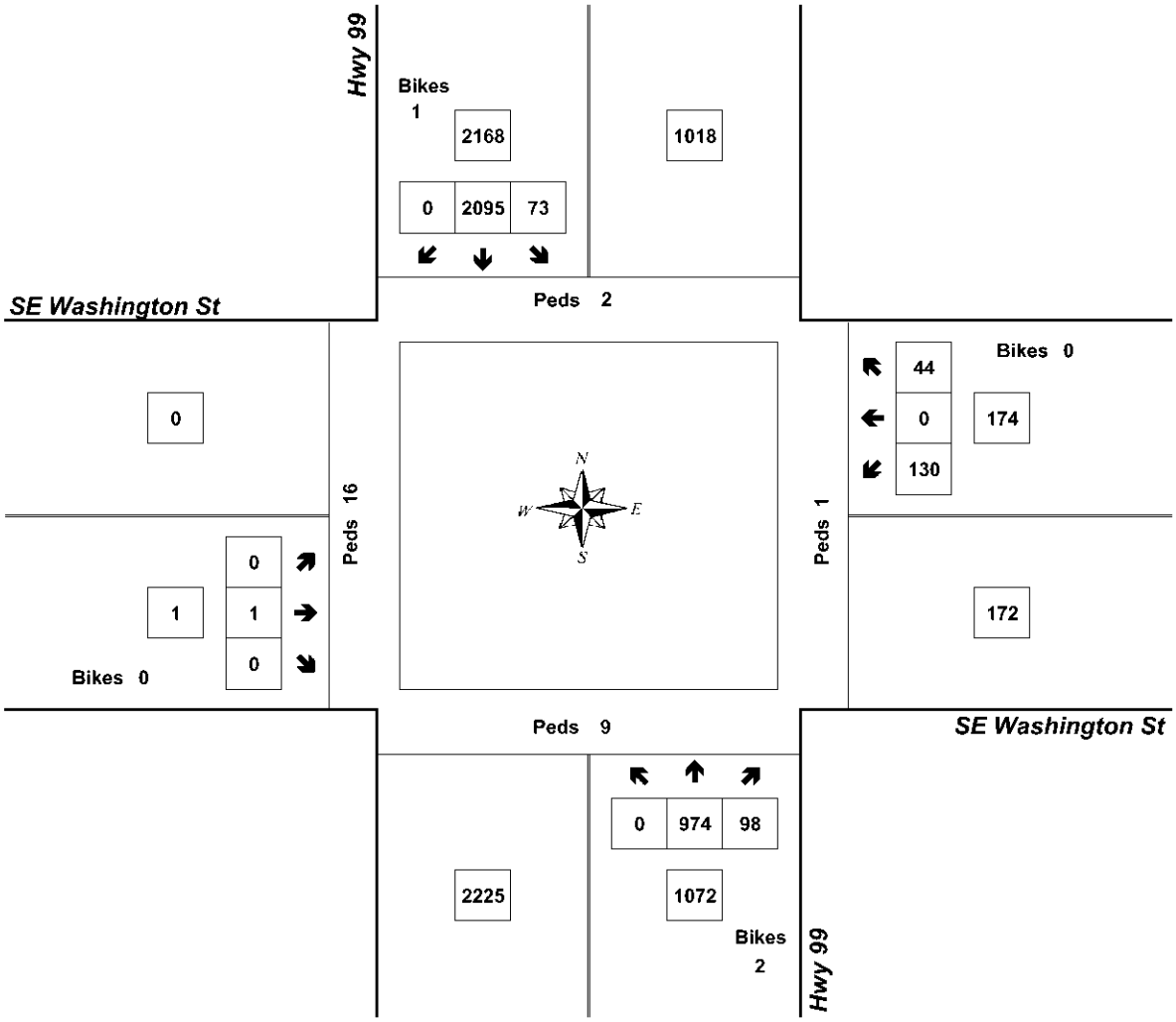
Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	23	8	31	2	15	0	17	0	0	0	0	6	0	1	7	55
4:15 PM	0	22	5	27	3	19	0	22	0	0	0	0	5	0	1	6	55
4:30 PM	0	18	5	23	2	17	0	19	0	0	0	0	7	0	2	9	51
4:45 PM	0	15	6	21	2	20	0	22	0	0	0	0	6	0	1	7	50
5:00 PM	0	11	5	16	1	25	0	26	0	0	0	0	6	0	2	8	50

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Hwy 99 & SE Washington St

4:10 PM to 5:10 PM
Tuesday, March 05, 2019

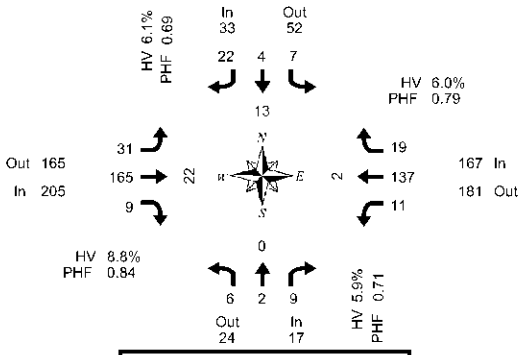


Approach	PHF	HV%	Volume
EB	0.25	0.0%	1
WB	0.81	4.0%	174
NB	0.92	2.7%	1,072
SB	0.94	1.0%	2,168
Intersection	0.95	1.7%	3,415

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE Main St & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:50 AM to 8:50 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	0	0	0	0	0	0	1	6	1	1	0	3	0	0	11	0	0	1	1
7:05 AM	0	0	0	0	0	1	0	0	1	9	0	0	0	6	4	0	21	0	0	0	0
7:10 AM	0	0	0	0	0	0	1	0	0	8	1	0	0	8	1	0	19	0	0	0	0
7:15 AM	0	0	1	0	2	0	0	0	2	6	0	0	0	3	2	0	16	0	0	0	1
7:20 AM	0	1	0	0	2	0	2	0	5	8	1	0	1	4	1	0	25	0	0	0	0
7:25 AM	0	0	1	0	3	0	1	0	1	18	1	0	0	7	2	0	34	0	0	0	2
7:30 AM	1	0	0	0	1	1	1	0	1	19	2	0	0	5	3	0	34	0	0	0	4
7:35 AM	0	0	0	0	0	0	0	0	2	17	0	0	0	10	0	1	29	1	0	0	2
7:40 AM	0	0	0	0	2	0	1	0	0	11	1	0	0	8	0	0	23	0	0	0	0
7:45 AM	0	1	1	0	1	0	2	0	2	6	0	1	1	7	2	0	23	0	0	0	1
7:50 AM	3	0	0	0	0	1	2	0	0	19	2	0	0	13	3	0	43	0	0	0	0
7:55 AM	0	0	1	0	0	0	3	0	5	16	1	0	0	13	2	0	41	1	0	0	1
8:00 AM	0	0	0	0	1	0	4	0	4	8	0	0	2	15	2	0	36	0	0	0	1
8:05 AM	0	0	0	0	0	0	2	0	1	15	0	0	0	15	1	0	34	1	0	1	2
8:10 AM	1	1	0	0	0	2	2	0	2	12	2	0	1	16	1	0	40	0	0	0	4
8:15 AM	0	0	1	0	0	1	1	0	4	15	0	0	1	12	1	0	36	2	0	0	3
8:20 AM	0	1	2	0	4	0	2	0	2	19	1	1	0	7	1	0	39	2	0	0	1
8:25 AM	0	0	1	0	1	0	3	0	2	18	0	0	0	5	2	0	32	3	0	0	3
8:30 AM	0	0	0	1	0	0	1	0	3	8	1	1	1	18	2	0	34	2	0	0	2
8:35 AM	1	0	1	0	0	0	0	0	3	14	1	0	3	8	1	0	32	1	0	0	0
8:40 AM	1	0	0	0	0	0	2	0	3	12	0	0	2	6	1	0	27	0	0	0	3
8:45 AM	0	0	3	0	1	0	0	0	2	9	1	0	1	9	2	0	28	1	0	1	2
8:50 AM	0	0	2	0	0	1	2	0	5	16	2	0	1	9	1	0	39	2	0	1	1
8:55 AM	0	0	0	0	1	1	1	0	3	10	0	0	1	9	0	0	26	2	1	1	2
Total Survey	7	4	14	1	19	8	33	0	54	299	18	4	15	216	35	1	722	18	1	5	36

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	0	0	0	1	1	0	2	23	2	1	0	17	5	0	51	0	0	1	1
7:15 AM	0	1	2	0	7	0	3	0	8	32	2	0	1	14	5	0	75	0	0	0	3
7:30 AM	1	0	0	0	3	1	2	0	3	47	3	0	0	23	3	1	86	1	0	0	6
7:45 AM	3	1	2	0	1	1	7	0	7	41	3	1	1	33	7	0	107	1	0	0	2
8:00 AM	1	1	0	0	1	2	8	0	7	35	2	0	3	45	4	0	110	1	0	1	7
8:15 AM	0	1	4	0	5	1	6	0	8	52	1	1	1	24	4	0	107	7	0	0	7
8:30 AM	2	0	1	1	0	0	3	0	9	34	2	1	6	32	4	0	93	3	0	0	5
8:45 AM	0	0	5	0	2	2	3	0	10	35	3	0	3	27	3	0	93	5	1	3	5
Total Survey	7	4	14	1	19	8	33	0	54	299	18	4	15	216	35	1	722	18	1	5	36

Peak Hour Summary
7:50 AM to 8:50 AM

By Approach	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	17	24	41	1	33	52	85	0	205	165	370	2	167	181	348	0	422	13	0	2	22
%HV		5.9%				6.1%				8.8%				6.0%			7.3%				
PHF		0.71				0.69				0.84				0.79			0.88				

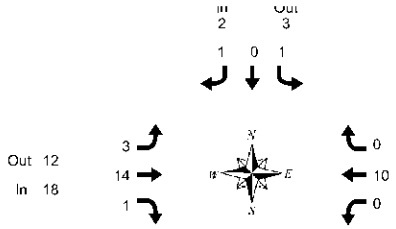
By Movement	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	6	2	9	17	7	4	22	33	31	165	9	205	11	137	19	167	422
%HV	16.7%	0.0%	0.0%	5.9%	14.3%	0.0%	4.5%	6.1%	9.7%	8.5%	11.1%	8.8%	0.0%	7.3%	0.0%	6.0%	7.3%
PHF	0.50	0.25	0.56	0.71	0.35	0.33	0.61	0.69	0.78	0.79	0.75	0.84	0.46	0.74	0.68	0.79	0.88

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	4	2	4	0	11	3	13	0	20	143	10	2	2	87	20	1	319	2	0	1	12
7:15 AM	5	3	4	0	12	4	20	0	25	155	10	1	5	116	19	1	378	3	0	1	18
7:30 AM	5	3	6	0	10	5	23	0	25	175	9	2	5	126	18	1	410	10	0	1	22
7:45 AM	6	3	7	1	7	4	24	0	31	162	8	3	11	135	19	0	417	12	0	1	21
8:00 AM	3	2	10	1	8	5	20	0	34	156	8	2	13	129	15	0	403	16	1	4	24

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE Main St & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:50 AM to 8:50 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	1	2	1	4	0	0	0	0	4
7:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
7:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
7:25 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
7:35 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
7:40 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
7:50 AM	1	0	0	1	0	0	0	0	0	2	1	3	0	1	0	1	5
7:55 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
8:00 AM	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	2
8:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:10 AM	0	0	0	0	0	0	1	1	1	0	0	1	0	1	0	1	3
8:15 AM	0	0	0	0	0	0	0	0	1	1	0	2	0	1	0	1	3
8:20 AM	0	0	0	0	1	0	0	1	0	2	0	2	0	0	0	0	3
8:25 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:35 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
8:40 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:50 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
8:55 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Survey	1	0	1	2	1	0	1	2	5	24	4	33	1	16	3	20	57

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	1	3	1	5	0	2	1	3	8
7:15 AM	0	0	1	1	0	0	0	0	0	1	0	1	1	1	2	4	6
7:30 AM	0	0	0	0	0	0	0	0	0	3	2	5	0	2	0	2	7
7:45 AM	1	0	0	1	0	0	0	0	0	5	1	6	0	2	0	2	9
8:00 AM	0	0	0	0	0	0	1	1	2	2	0	4	0	2	0	2	7
8:15 AM	0	0	0	0	1	0	0	1	1	5	0	6	0	2	0	2	9
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4	6
8:45 AM	0	0	0	0	0	0	0	0	1	3	0	4	0	1	0	1	5
Total Survey	1	0	1	2	1	0	1	2	5	24	4	33	1	16	3	20	57

Heavy Vehicle Peak Hour Summary
7:50 AM to 8:50 AM

By Approach	Northbound SE Main St			Southbound SE Main St			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	2	3	5	18	12	30	10	15	25	31
PHF	0.25			0.25			0.64			0.63			0.78

By Movement	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	0	1	1	0	1	2	3	14	1	18	0	10	0	10	31
PHF	0.25	0.00	0.00	0.25	0.25	0.00	0.25	0.25	0.38	0.70	0.25	0.64	0.00	0.63	0.00	0.63	0.78

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

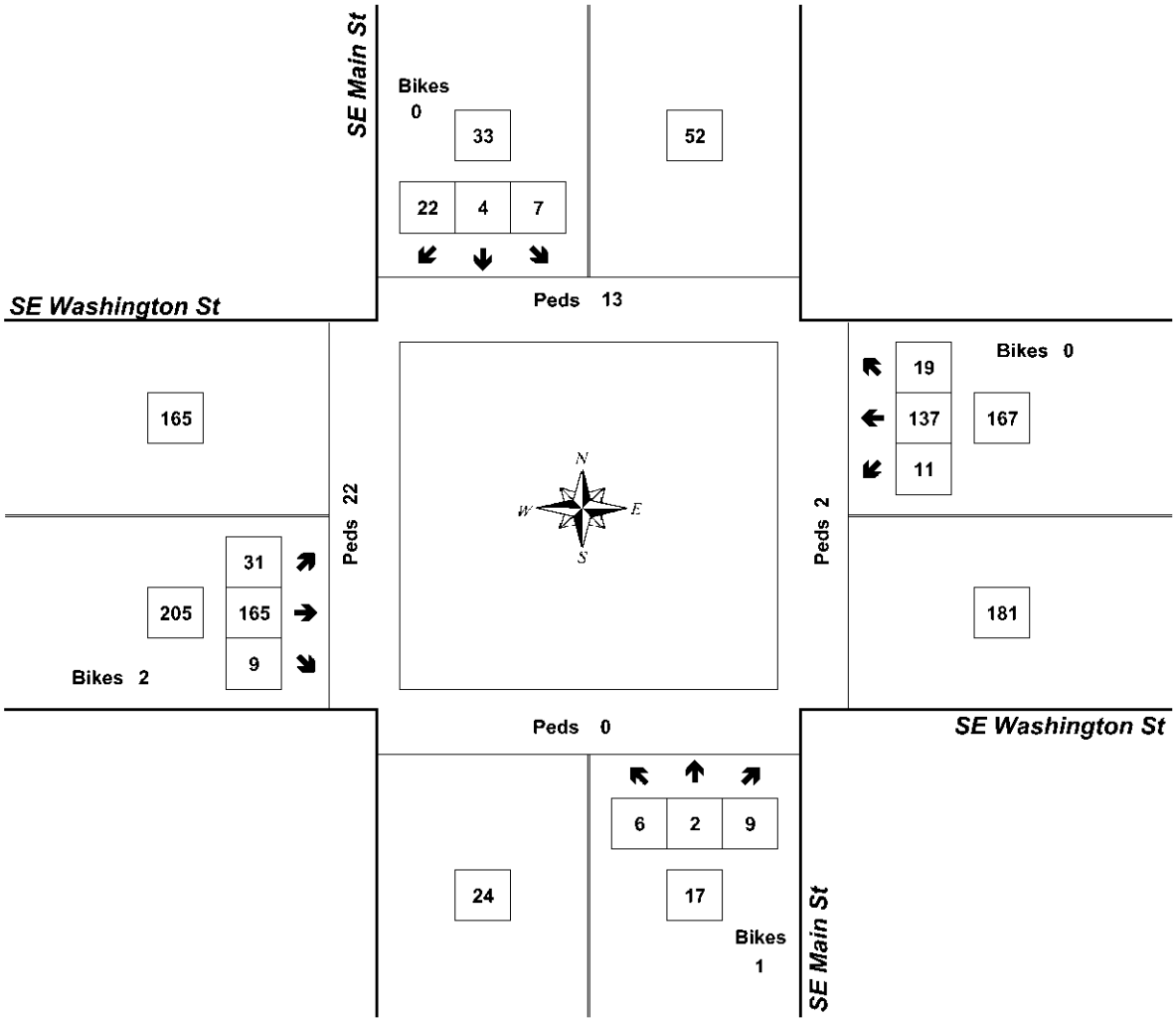
Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	0	1	2	0	0	0	0	1	12	4	17	1	7	3	11	30
7:15 AM	1	0	1	2	0	0	1	1	2	11	3	16	1	7	2	10	29
7:30 AM	1	0	0	1	1	0	1	2	3	15	3	21	0	8	0	8	32
7:45 AM	1	0	0	1	1	0	1	2	3	14	1	18	0	10	0	10	31
8:00 AM	0	0	0	0	1	0	1	2	4	12	0	16	0	9	0	9	27

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

SE Main St & SE Washington St

7:50 AM to 8:50 AM
Tuesday, March 05, 2019

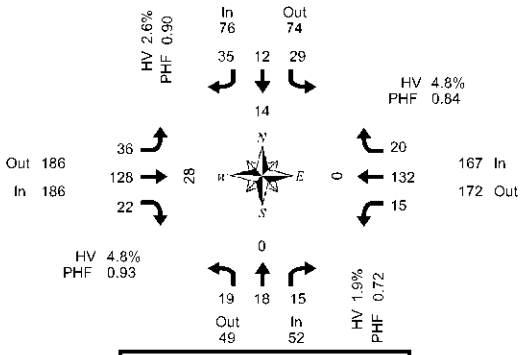


Approach	PHF	HV%	Volume
EB	0.84	8.8%	205
WB	0.79	6.0%	167
NB	0.71	5.9%	17
SB	0.69	6.1%	33
Intersection	0.88	7.3%	422

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE Main St & SE Washington St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	2	0	2	0	4	0	4	0	5	12	0	0	0	11	1	0	41	2	0	0	2
4:05 PM	4	0	0	0	5	1	2	0	3	11	0	0	1	16	1	0	44	1	0	0	3
4:10 PM	0	2	1	0	1	0	2	0	2	12	4	0	3	6	4	0	37	1	0	0	1
4:15 PM	1	2	3	0	4	0	5	0	2	6	6	0	1	11	0	0	41	4	0	0	8
4:20 PM	0	4	0	1	1	0	3	0	3	14	1	0	3	15	2	0	46	0	0	0	3
4:25 PM	2	2	1	0	0	1	3	0	2	13	0	1	2	13	3	0	42	1	0	0	4
4:30 PM	0	0	0	0	3	2	1	0	2	10	1	0	1	8	1	0	29	0	0	0	0
4:35 PM	1	1	2	0	2	1	2	0	5	12	3	0	1	14	0	0	44	1	0	0	1
4:40 PM	0	3	1	0	3	3	2	0	4	13	0	0	1	11	0	0	41	1	0	0	3
4:45 PM	4	1	0	0	1	1	3	0	4	7	2	0	0	7	0	0	30	0	0	0	1
4:50 PM	3	1	3	0	1	2	4	0	1	11	2	0	2	11	2	0	43	3	0	0	1
4:55 PM	2	2	2	0	4	1	4	1	3	7	3	0	0	9	6	0	43	0	0	0	1
5:00 PM	0	2	1	0	4	0	2	1	1	8	1	0	1	6	4	0	30	1	0	0	1
5:05 PM	1	0	0	0	1	0	4	0	3	5	0	0	1	13	1	0	29	0	0	0	1
5:10 PM	3	2	1	0	2	2	7	0	0	8	1	1	3	10	4	0	43	0	0	0	2
5:15 PM	3	2	1	0	8	0	8	0	0	9	1	1	0	10	1	0	43	0	0	0	1
5:20 PM	1	0	0	0	1	0	2	0	3	4	0	0	0	4	2	1	17	2	0	0	1
5:25 PM	0	0	0	0	1	0	2	0	4	15	1	0	1	10	2	0	36	0	0	0	1
5:30 PM	0	1	1	0	6	1	3	0	2	9	2	1	1	3	3	2	32	0	0	0	0
5:35 PM	0	0	0	1	4	1	5	0	2	7	0	0	0	10	0	0	29	0	0	0	2
5:40 PM	0	1	0	0	2	0	0	0	1	20	2	1	1	7	5	0	39	2	0	0	1
5:45 PM	2	3	1	0	3	1	1	0	5	15	1	0	0	6	1	0	39	0	0	0	2
5:50 PM	2	0	0	0	1	1	2	0	1	9	1	0	1	8	2	0	28	0	0	2	1
5:55 PM	2	1	2	0	1	0	3	0	2	7	2	0	0	4	4	0	28	2	0	0	1
Total Survey	33	30	22	2	63	18	74	2	60	244	34	5	24	223	49	3	874	21	0	2	42

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	6	2	3	0	10	1	8	0	10	35	4	0	4	33	6	0	122	4	0	0	6
4:15 PM	3	8	4	1	5	1	11	0	7	33	7	1	6	39	5	0	129	5	0	0	15
4:30 PM	1	4	3	0	8	6	5	0	11	35	4	0	3	33	1	0	114	2	0	0	4
4:45 PM	9	4	5	0	6	4	11	1	8	25	7	0	2	27	8	0	116	3	0	0	3
5:00 PM	4	4	2	0	7	2	13	1	4	21	2	1	5	29	9	0	102	1	0	0	4
5:15 PM	4	2	1	0	10	0	12	0	7	28	2	1	1	24	5	1	96	2	0	0	3
5:30 PM	0	2	1	1	12	2	8	0	5	36	4	2	2	20	8	2	100	2	0	0	3
5:45 PM	6	4	3	0	5	2	6	0	8	31	4	0	1	18	7	0	95	2	0	2	4
Total Survey	33	30	22	2	63	18	74	2	60	244	34	5	24	223	49	3	874	21	0	2	42

Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	52	49	101	1	76	74	150	1	186	186	372	1	167	172	339	0	481
%HV		1.9%				2.6%				4.8%				4.8%			4.2%
PHF		0.72				0.90				0.93				0.84			0.93

Pedestrians Crosswalk			
North	South	East	West
14	0	0	28

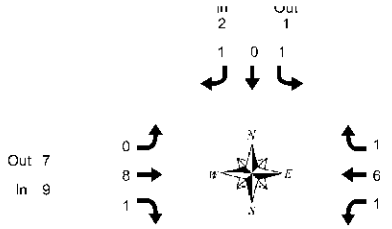
By Movement	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	19	18	15	52	29	12	35	76	36	128	22	186	15	132	20	167	481
%HV	0.0%	0.0%	6.7%	1.9%	3.4%	0.0%	2.9%	2.6%	0.0%	6.3%	4.5%	4.8%	6.7%	4.5%	5.0%	4.8%	4.2%
PHF	0.53	0.56	0.75	0.72	0.73	0.50	0.80	0.90	0.69	0.86	0.50	0.93	0.54	0.85	0.63	0.84	0.93

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	19	18	15	1	29	12	35	1	36	128	22	1	15	132	20	0	481	14	0	0	28
4:15 PM	17	20	14	1	26	13	40	2	30	114	20	2	16	128	23	0	461	11	0	0	26
4:30 PM	18	14	11	0	31	12	41	2	30	109	15	2	11	113	23	1	428	8	0	0	14
4:45 PM	17	12	9	1	35	8	44	2	24	110	15	4	10	100	30	3	414	8	0	0	13
5:00 PM	14	12	7	1	34	6	39	1	24	116	12	4	9	91	29	3	393	7	0	2	14

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE Main St & SE Washington St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:05 PM	0	0	0	0	1	0	0	1	0	2	0	2	0	1	0	1	4
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:20 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
4:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
4:50 PM	0	0	1	1	0	0	0	0	0	1	1	2	0	1	0	1	4
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:05 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	2	0	2	1	2	0	3	5
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
Total Survey	1	0	2	3	1	0	1	2	0	14	1	15	2	13	1	16	36

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	1	1	2	6
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	1	4
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:45 PM	0	0	1	1	0	0	1	1	0	1	1	2	0	3	0	3	7
5:00 PM	0	0	1	1	0	0	0	0	0	1	0	1	0	2	0	2	4
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	1	2	0	3	5
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
5:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	0	2	0	2	4
Total Survey	1	0	2	3	1	0	1	2	0	14	1	15	2	13	1	16	36

Heavy Vehicle Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound SE Main St			Southbound SE Main St			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	2	1	3	9	7	16	8	10	18	20
PHF	0.25			0.50			0.75			0.67			0.71

By Movement	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	1	1	1	0	1	2	0	8	1	9	1	6	1	8	20
PHF	0.00	0.00	0.25	0.25	0.25	0.00	0.25	0.50	0.00	0.67	0.25	0.75	0.25	0.50	0.25	0.67	0.71

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

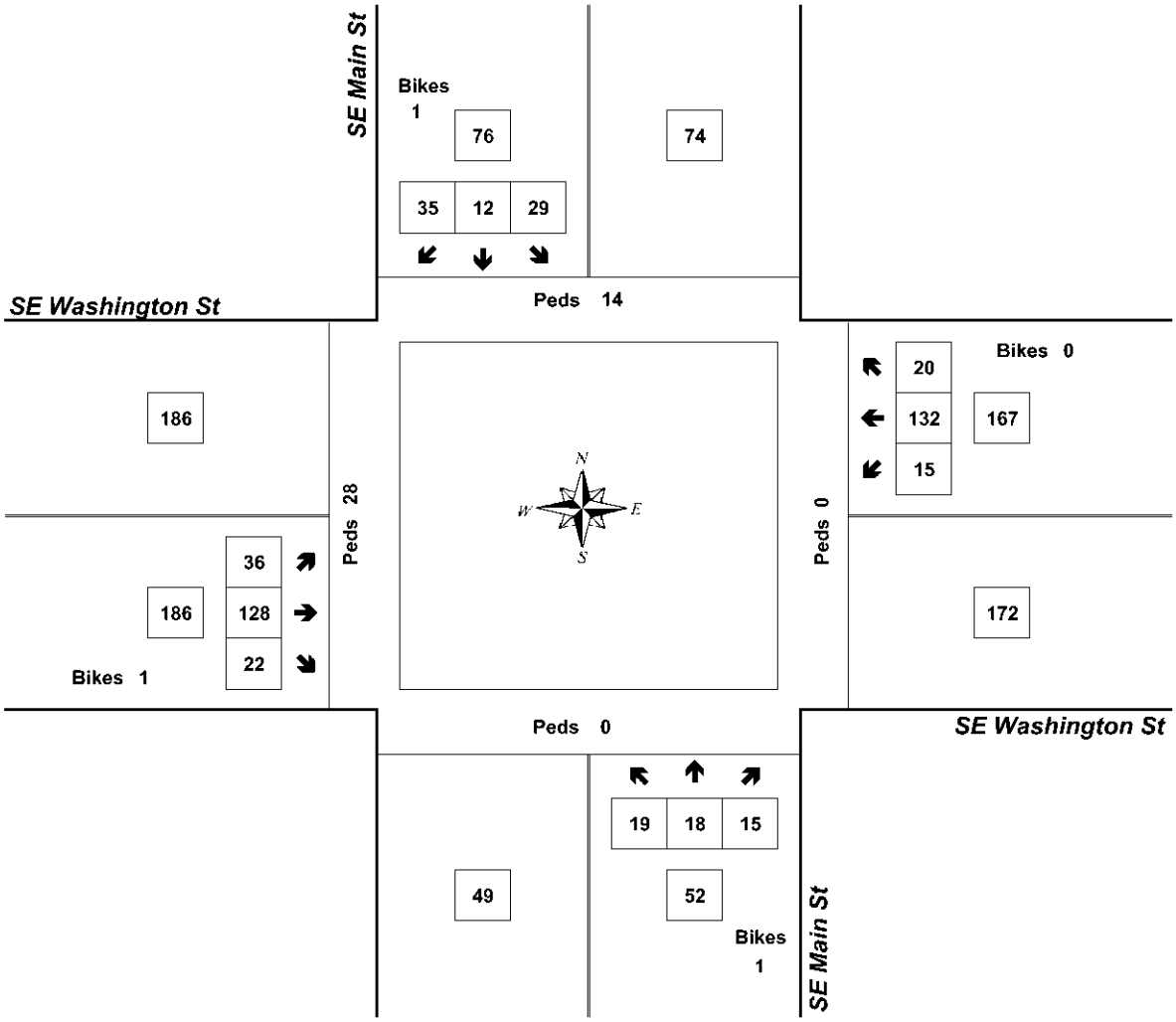
Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	1	0	1	2	0	8	1	9	1	6	1	8	20
4:15 PM	0	0	2	2	0	0	1	1	0	6	1	7	1	7	0	8	18
4:30 PM	0	0	2	2	0	0	1	1	0	5	1	6	1	9	0	10	19
4:45 PM	0	0	2	2	0	0	1	1	0	6	1	7	1	8	0	9	19
5:00 PM	1	0	1	2	0	0	0	0	0	6	0	6	1	7	0	8	16

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

SE Main St & SE Washington St

4:00 PM to 5:00 PM
Tuesday, March 05, 2019

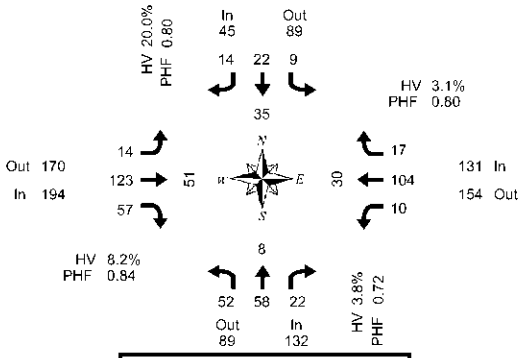


Approach	PHF	HV%	Volume
EB	0.93	4.8%	186
WB	0.84	4.8%	167
NB	0.72	1.9%	52
SB	0.90	2.6%	76
Intersection	0.93	4.2%	481

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 21st Ave & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:45 AM to 8:45 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave L	T	R	Bikes	Southbound SE 21st Ave L	T	R	Bikes	Eastbound SE Washington St L	T	R	Bikes	Westbound SE Washington St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
7:00 AM	1	1	0	0	1	0	0	0	0	0	5	0	1	1	0	0	10	0	0	0	2
7:05 AM	4	3	1	0	0	0	4	0	4	4	3	0	3	6	3	0	35	2	0	1	8
7:10 AM	2	5	2	1	0	0	3	0	0	8	1	0	0	2	0	0	23	0	0	1	0
7:15 AM	1	4	0	0	1	2	0	0	0	7	2	0	1	2	2	0	22	0	0	1	0
7:20 AM	4	1	3	0	2	5	1	0	1	3	7	0	0	1	1	0	29	2	1	2	17
7:25 AM	3	3	2	1	2	2	3	0	1	11	4	0	0	4	0	0	35	0	0	1	1
7:30 AM	1	0	1	0	0	2	2	0	2	20	7	0	1	4	0	0	40	1	2	4	3
7:35 AM	5	4	0	1	2	0	1	0	2	13	2	0	1	5	0	1	35	2	0	1	0
7:40 AM	3	3	0	0	1	1	1	0	0	11	1	0	0	4	1	0	26	1	0	3	5
7:45 AM	3	9	2	0	0	3	0	0	0	13	3	1	3	10	0	0	46	1	0	4	2
7:50 AM	3	6	2	0	1	3	2	0	1	16	6	0	1	10	2	0	53	0	0	3	1
7:55 AM	7	11	3	0	0	1	1	0	0	13	5	0	1	7	1	0	50	3	0	0	7
8:00 AM	5	6	2	0	2	0	1	0	1	4	4	0	1	14	0	0	40	0	0	2	1
8:05 AM	6	3	2	0	1	0	2	0	2	8	5	0	0	11	0	0	40	2	0	3	2
8:10 AM	5	4	4	0	2	4	2	0	0	10	4	0	0	13	2	0	50	4	1	1	12
8:15 AM	5	3	2	0	0	1	0	0	3	9	4	0	1	7	0	0	35	3	0	3	6
8:20 AM	1	3	1	0	0	2	0	0	4	12	7	0	0	5	5	0	40	2	0	4	3
8:25 AM	5	7	0	0	0	2	1	0	2	14	3	0	2	4	2	0	42	4	5	5	6
8:30 AM	7	1	2	0	0	3	1	0	0	9	5	0	0	11	2	0	41	10	1	3	4
8:35 AM	3	3	2	0	1	3	0	0	0	7	5	1	1	8	0	0	33	4	0	2	1
8:40 AM	2	2	0	0	2	0	4	0	1	8	6	0	0	4	3	0	32	2	1	0	6
8:45 AM	6	6	2	1	1	2	1	0	2	3	5	0	0	4	2	0	34	0	0	1	1
8:50 AM	7	1	0	0	2	5	0	0	3	8	7	0	1	5	4	0	43	3	0	2	3
8:55 AM	4	3	0	0	0	1	3	0	1	5	6	0	0	6	2	0	31	3	2	1	2
Total Survey	93	92	33	4	21	42	33	0	30	216	107	2	18	148	32	1	865	49	13	48	93

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave L	T	R	Bikes	Southbound SE 21st Ave L	T	R	Bikes	Eastbound SE Washington St L	T	R	Bikes	Westbound SE Washington St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
7:00 AM	7	9	3	1	1	0	7	0	4	12	9	0	4	9	3	0	68	2	0	2	10
7:15 AM	8	8	5	1	5	9	4	0	2	21	13	0	1	7	3	0	86	2	1	4	18
7:30 AM	9	7	1	1	3	3	4	0	4	44	10	0	2	13	1	1	101	4	2	8	8
7:45 AM	13	26	7	0	1	7	3	0	1	42	14	1	5	27	3	0	149	4	0	7	10
8:00 AM	16	13	8	0	5	4	5	0	3	22	13	0	1	38	2	0	130	6	1	6	15
8:15 AM	11	13	3	0	0	5	1	0	9	35	14	0	3	16	7	0	117	9	5	12	15
8:30 AM	12	6	4	0	3	6	5	0	1	24	16	1	1	23	5	0	106	16	2	5	11
8:45 AM	17	10	2	1	3	8	4	0	6	16	18	0	1	15	8	0	108	6	2	4	6
Total Survey	93	92	33	4	21	42	33	0	30	216	107	2	18	148	32	1	865	49	13	48	93

Peak Hour Summary
7:45 AM to 8:45 AM

By Approach	Northbound SE 21st Ave In	Out	Total	Bikes	Southbound SE 21st Ave In	Out	Total	Bikes	Eastbound SE Washington St In	Out	Total	Bikes	Westbound SE Washington St In	Out	Total	Bikes	Total
Volume	132	89	221	0	45	89	134	0	194	170	364	2	131	154	285	0	502
%HV		3.8%				20.0%				8.2%				3.1%			6.8%
PHF		0.72				0.80				0.84				0.80			0.84

Pedestrians Crosswalk North	South	East	West
35	8	30	51

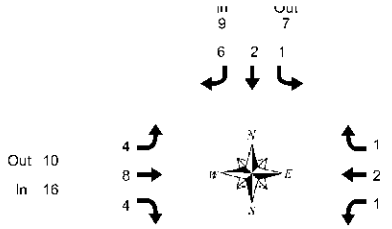
By Movement	Northbound SE 21st Ave L	T	R	Total	Southbound SE 21st Ave L	T	R	Total	Eastbound SE Washington St L	T	R	Total	Westbound SE Washington St L	T	R	Total	Total
Volume	52	58	22	132	9	22	14	45	14	123	57	194	10	104	17	131	502
%HV	3.8%	3.4%	4.5%	3.8%	11.1%	9.1%	42.9%	20.0%	28.6%	6.5%	7.0%	8.2%	10.0%	1.9%	5.9%	3.1%	6.8%
PHF	0.72	0.56	0.69	0.72	0.45	0.69	0.70	0.80	0.39	0.73	0.89	0.84	0.50	0.68	0.47	0.80	0.84

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave L	T	R	Bikes	Southbound SE 21st Ave L	T	R	Bikes	Eastbound SE Washington St L	T	R	Bikes	Westbound SE Washington St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
7:00 AM	37	50	16	3	10	19	18	0	11	119	46	1	12	56	10	1	404	12	3	21	46
7:15 AM	46	54	21	2	14	23	16	0	10	129	50	1	9	85	9	1	466	16	4	25	51
7:30 AM	49	59	19	1	9	19	13	0	17	143	51	1	11	94	13	1	497	23	8	33	48
7:45 AM	52	58	22	0	9	22	14	0	14	123	57	2	10	104	17	0	502	35	8	30	51
8:00 AM	56	42	17	1	11	23	15	0	19	97	61	1	6	92	22	0	451	37	10	27	47

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 21st Ave & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:45 AM to 8:45 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	2
7:05 AM	0	1	0	1	0	0	1	1	2	0	0	2	1	0	1	2	6
7:10 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:20 AM	0	0	1	1	0	1	1	2	0	0	0	0	0	1	0	1	4
7:25 AM	0	0	0	0	1	0	1	2	1	0	0	1	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:35 AM	0	0	0	0	1	0	0	1	2	0	1	3	1	0	0	1	5
7:40 AM	1	0	0	1	1	0	1	2	0	0	0	0	0	0	0	0	3
7:45 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
7:50 AM	0	0	0	0	0	0	1	1	0	0	2	2	0	0	1	1	4
7:55 AM	0	0	0	0	0	1	1	2	0	1	0	1	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	1	3
8:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:10 AM	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	2
8:15 AM	1	0	0	1	0	0	0	0	1	0	1	2	0	0	0	0	3
8:20 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3
8:25 AM	0	1	0	1	0	0	1	1	0	2	0	2	0	0	0	0	4
8:30 AM	1	0	0	1	0	1	1	2	0	0	0	0	0	0	0	0	3
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:40 AM	0	0	0	0	1	0	1	2	1	1	0	2	0	0	0	0	4
8:45 AM	0	1	1	2	0	0	0	0	0	1	0	1	0	0	0	0	3
8:50 AM	0	0	0	0	0	1	0	1	2	0	0	2	0	1	0	1	4
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	5	3	11	5	4	11	20	11	9	6	26	3	4	2	9	66

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	1	0	1	1	0	2	3	2	0	1	3	1	0	1	2	9
7:15 AM	0	1	1	2	1	1	2	4	1	0	0	1	0	1	0	1	8
7:30 AM	1	0	0	1	2	0	1	3	2	0	1	3	1	0	0	1	8
7:45 AM	0	1	0	1	0	1	2	3	0	2	2	4	0	0	1	1	9
8:00 AM	0	0	1	1	0	0	1	1	1	1	1	3	1	1	0	2	7
8:15 AM	1	1	0	2	0	0	1	1	2	4	1	7	0	0	0	0	10
8:30 AM	1	0	0	1	1	1	2	4	1	1	0	2	0	1	0	1	8
8:45 AM	0	1	1	2	0	1	0	1	2	1	0	3	0	1	0	1	7
Total Survey	3	5	3	11	5	4	11	20	11	9	6	26	3	4	2	9	66

Heavy Vehicle Peak Hour Summary
7:45 AM to 8:45 AM

By Approach	Northbound SE 21st Ave			Southbound SE 21st Ave			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	5	7	12	9	7	16	16	10	26	4	10	14	34
PHF	0.63			0.56			0.57			0.50			0.85

By Movement	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	2	1	5	1	2	6	9	4	8	4	16	1	2	1	4	34
PHF	0.50	0.50	0.25	0.63	0.25	0.50	0.75	0.56	0.50	0.50	0.33	0.57	0.25	0.50	0.25	0.50	0.85

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

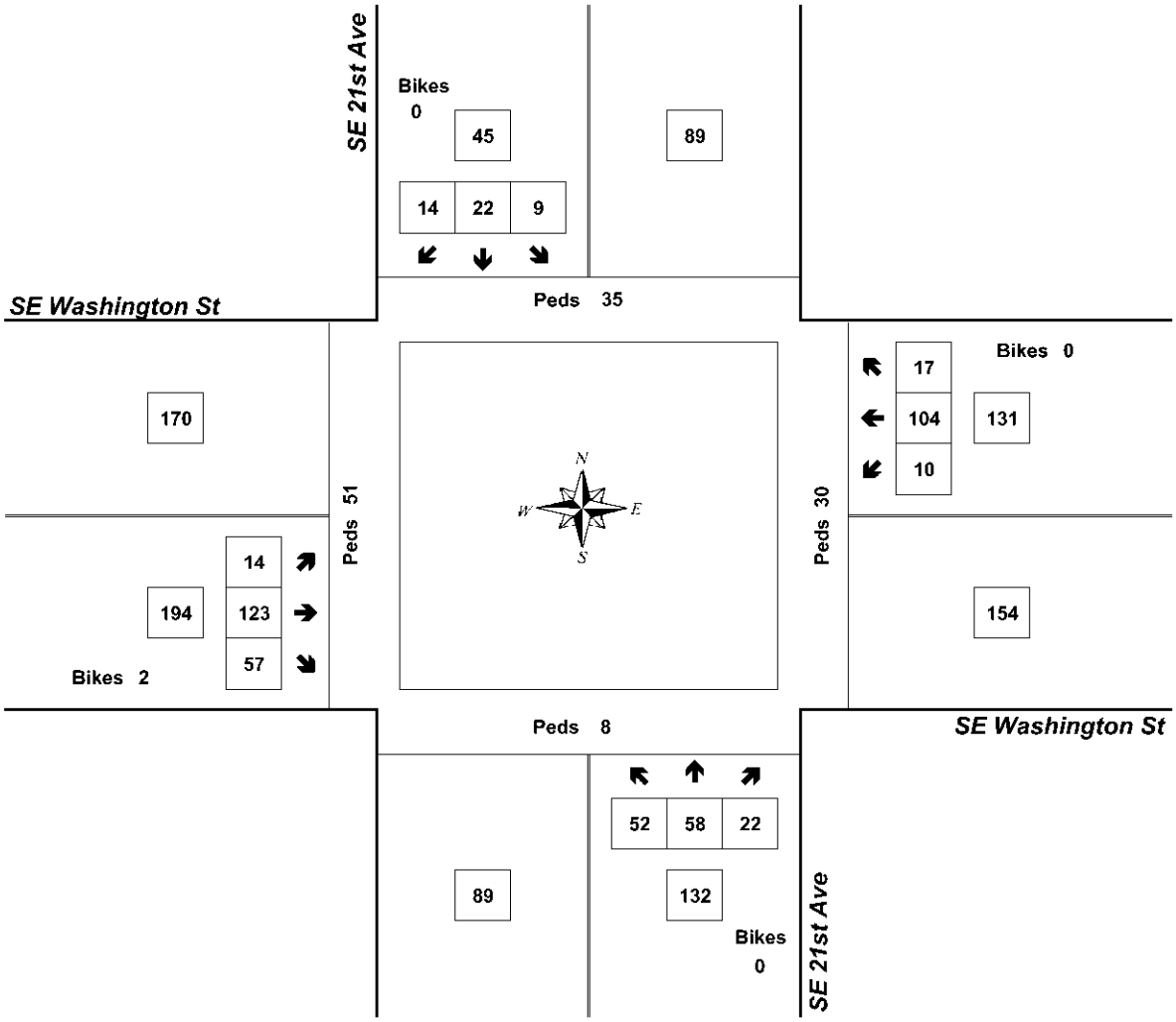
Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	3	1	5	4	2	7	13	5	2	4	11	2	1	2	5	34
7:15 AM	1	2	2	5	3	2	6	11	4	3	4	11	2	2	1	5	32
7:30 AM	2	2	1	5	2	1	5	8	5	7	5	17	2	1	1	4	34
7:45 AM	2	2	1	5	1	2	6	9	4	8	4	16	1	2	1	4	34
8:00 AM	2	2	2	6	1	2	4	7	6	7	2	15	1	3	0	4	32

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

SE 21st Ave & SE Washington St

7:45 AM to 8:45 AM
Tuesday, March 05, 2019

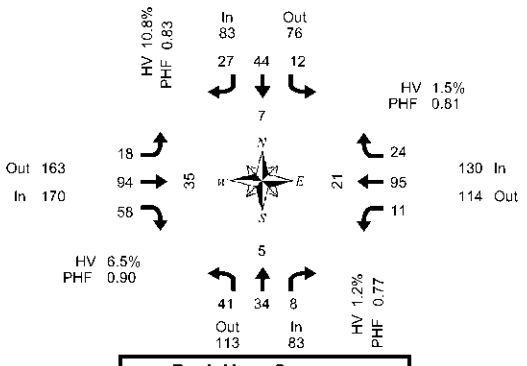


Approach	PHF	HV%	Volume
EB	0.84	8.2%	194
WB	0.80	3.1%	131
NB	0.72	3.8%	132
SB	0.80	20.0%	45
Intersection	0.84	6.8%	502

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 21st Ave & SE Washington St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:05 PM to 5:05 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval	Pedestrians Crosswalk			
Time	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	Total	North	South	East	West
4:00 PM	2	0	1	1	2	6	1	0	3	10	4	0	0	6	0	0	35	2	1	4	6
4:05 PM	5	3	0	0	1	4	4	0	2	11	5	0	1	9	0	0	45	3	2	5	2
4:10 PM	3	0	0	0	0	4	1	0	1	11	1	0	1	7	2	0	31	0	0	0	1
4:15 PM	6	5	1	0	0	0	2	0	1	8	5	0	3	6	2	0	39	0	0	2	8
4:20 PM	4	3	0	0	0	3	2	0	2	6	6	0	2	11	5	0	44	0	0	0	2
4:25 PM	5	3	0	0	2	0	5	0	3	4	8	1	1	9	1	1	41	0	1	1	0
4:30 PM	2	1	0	0	2	4	1	0	0	6	5	0	1	5	4	0	31	1	1	4	8
4:35 PM	3	5	0	0	4	4	2	0	2	10	6	0	1	8	2	0	47	0	0	4	1
4:40 PM	2	3	1	0	1	7	0	0	0	13	5	0	0	11	1	0	44	1	0	1	2
4:45 PM	2	2	1	0	0	4	1	0	0	3	5	0	0	2	1	0	21	0	0	3	8
4:50 PM	3	3	2	0	1	2	4	1	2	6	6	0	0	11	4	0	44	0	0	0	1
4:55 PM	3	1	3	0	1	3	2	0	4	7	3	0	0	11	0	0	38	0	0	0	1
5:00 PM	3	5	0	0	0	9	3	0	1	9	3	0	1	5	2	0	41	2	1	1	1
5:05 PM	5	1	0	0	1	3	1	0	2	3	1	0	0	11	1	0	29	2	0	2	1
5:10 PM	8	2	0	0	2	5	2	0	0	8	4	0	0	6	2	0	39	1	0	0	0
5:15 PM	2	3	0	0	0	4	2	0	4	9	5	0	0	7	2	0	38	0	0	2	1
5:20 PM	2	6	1	1	0	2	1	0	0	5	0	0	1	7	3	0	28	0	0	2	1
5:25 PM	3	5	1	0	2	2	1	1	2	8	6	0	0	7	1	0	38	1	0	1	1
5:30 PM	1	5	1	0	0	4	1	1	1	7	8	0	2	5	0	1	35	0	0	1	0
5:35 PM	4	6	2	1	1	5	1	0	4	3	5	0	0	4	2	0	37	2	0	6	3
5:40 PM	6	2	0	0	1	5	2	0	1	11	9	0	1	6	4	0	48	0	0	0	5
5:45 PM	2	0	0	0	0	1	1	0	0	9	3	0	1	3	2	0	22	2	0	2	1
5:50 PM	5	13	0	0	2	3	6	0	1	7	7	0	3	5	0	0	52	1	0	2	6
5:55 PM	1	7	2	0	1	6	4	0	2	6	3	0	0	2	0	0	34	2	1	1	8
Total Survey	82	84	16	3	24	90	50	3	38	180	113	1	19	164	41	2	901	20	7	44	68

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval	Pedestrians Crosswalk			
Time	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	Total	North	South	East	West
4:00 PM	10	3	1	1	3	14	6	0	6	32	10	0	2	22	2	0	111	5	3	9	9
4:15 PM	15	11	1	0	2	3	9	0	6	18	19	1	6	26	8	1	124	0	1	3	10
4:30 PM	7	9	1	0	7	15	3	0	2	29	16	0	2	24	7	0	122	2	1	9	11
4:45 PM	8	6	6	0	2	9	7	1	6	16	14	0	0	24	5	0	103	0	0	3	10
5:00 PM	16	8	0	0	3	17	6	0	3	20	8	0	1	22	5	0	109	5	1	3	2
5:15 PM	7	14	2	1	2	8	4	1	6	22	11	0	1	21	6	0	104	1	0	5	3
5:30 PM	11	13	3	1	2	14	4	1	6	21	22	0	3	15	6	1	120	2	0	7	8
5:45 PM	8	20	2	0	3	10	11	0	3	22	13	0	4	10	2	0	108	5	1	5	15
Total Survey	82	84	16	3	24	90	50	3	38	180	113	1	19	164	41	2	901	20	7	44	68

Peak Hour Summary
4:05 PM to 5:05 PM

By Approach	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	83	113	196	0	83	76	159	1	170	163	333	1	130	114	244	1	466	7	5	21	35
%HV		1.2%				10.8%				6.5%				1.5%			4.9%				
PHF		0.77				0.83				0.90				0.81			0.94				

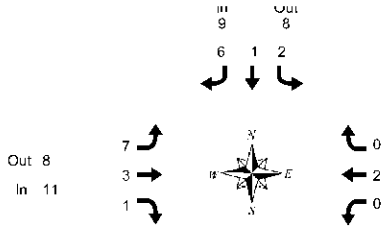
By Movement	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	41	34	8	83	12	44	27	83	18	94	58	170	11	95	24	130	466
%HV	0.0%	2.9%	0.0%	1.2%	16.7%	2.3%	22.2%	10.8%	38.9%	3.2%	1.7%	6.5%	0.0%	2.1%	0.0%	1.5%	4.9%
PHF	0.68	0.77	0.33	0.77	0.38	0.73	0.75	0.83	0.64	0.78	0.76	0.90	0.46	0.88	0.60	0.81	0.94

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval	Pedestrians Crosswalk			
Time	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	Total	North	South	East	West
4:00 PM	40	29	9	1	14	41	25	1	20	95	59	1	10	96	22	1	460	7	5	24	40
4:15 PM	46	34	8	0	14	44	25	1	17	83	57	1	9	96	25	1	458	7	3	18	33
4:30 PM	38	37	9	1	14	49	20	2	17	87	49	0	4	91	23	0	438	8	2	20	26
4:45 PM	42	41	11	2	9	48	21	3	21	79	55	0	5	82	22	1	436	8	1	18	23
5:00 PM	42	55	7	2	10	49	25	2	18	85	54	0	9	68	19	1	441	13	2	20	28

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



SE 21st Ave & SE Washington St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:05 PM to 5:05 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
4:05 PM	0	0	0	0	0	0	2	2	1	2	0	3	0	0	0	0	5
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:20 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
4:25 PM	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	1	0	1	1	1	1	3	1	0	0	1	0	1	0	1	6
4:40 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	1	1	1	0	1	2	0	0	0	0	3
4:55 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:05 PM	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
5:10 PM	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
5:25 PM	0	0	0	0	0	0	0	0	1	1	0	2	0	1	0	1	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0	3
5:40 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	1	0	1	0	0	2	2	0	0	0	0	0	0	0	0	3
5:55 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
Total Survey	0	4	0	4	2	5	12	19	12	5	1	18	0	4	0	4	45

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	1	2	3	1	3	0	4	0	0	0	0	7
4:15 PM	0	0	0	0	0	0	1	1	2	0	0	2	0	1	0	1	4
4:30 PM	0	1	0	1	2	1	1	4	1	0	0	1	0	1	0	1	7
4:45 PM	0	0	0	0	0	0	2	2	3	0	1	4	0	0	0	0	6
5:00 PM	0	1	0	1	0	1	2	3	1	1	0	2	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	1	1	1	1	0	2	0	2	0	2	5
5:30 PM	0	1	0	1	0	1	1	2	2	0	0	2	0	0	0	0	5
5:45 PM	0	1	0	1	0	1	2	3	1	0	0	1	0	0	0	0	5
Total Survey	0	4	0	4	2	5	12	19	12	5	1	18	0	4	0	4	45

Heavy Vehicle Peak Hour Summary
4:05 PM to 5:05 PM

By Approach	Northbound SE 21st Ave			Southbound SE 21st Ave			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	9	8	17	11	8	19	2	5	7	23
PHF	0.25			0.45			0.55			0.50			0.72

By Movement	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	0	1	2	1	6	9	7	3	1	11	0	2	0	2	23
PHF	0.00	0.25	0.00	0.25	0.25	0.25	0.75	0.45	0.58	0.38	0.25	0.55	0.00	0.50	0.00	0.50	0.72

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

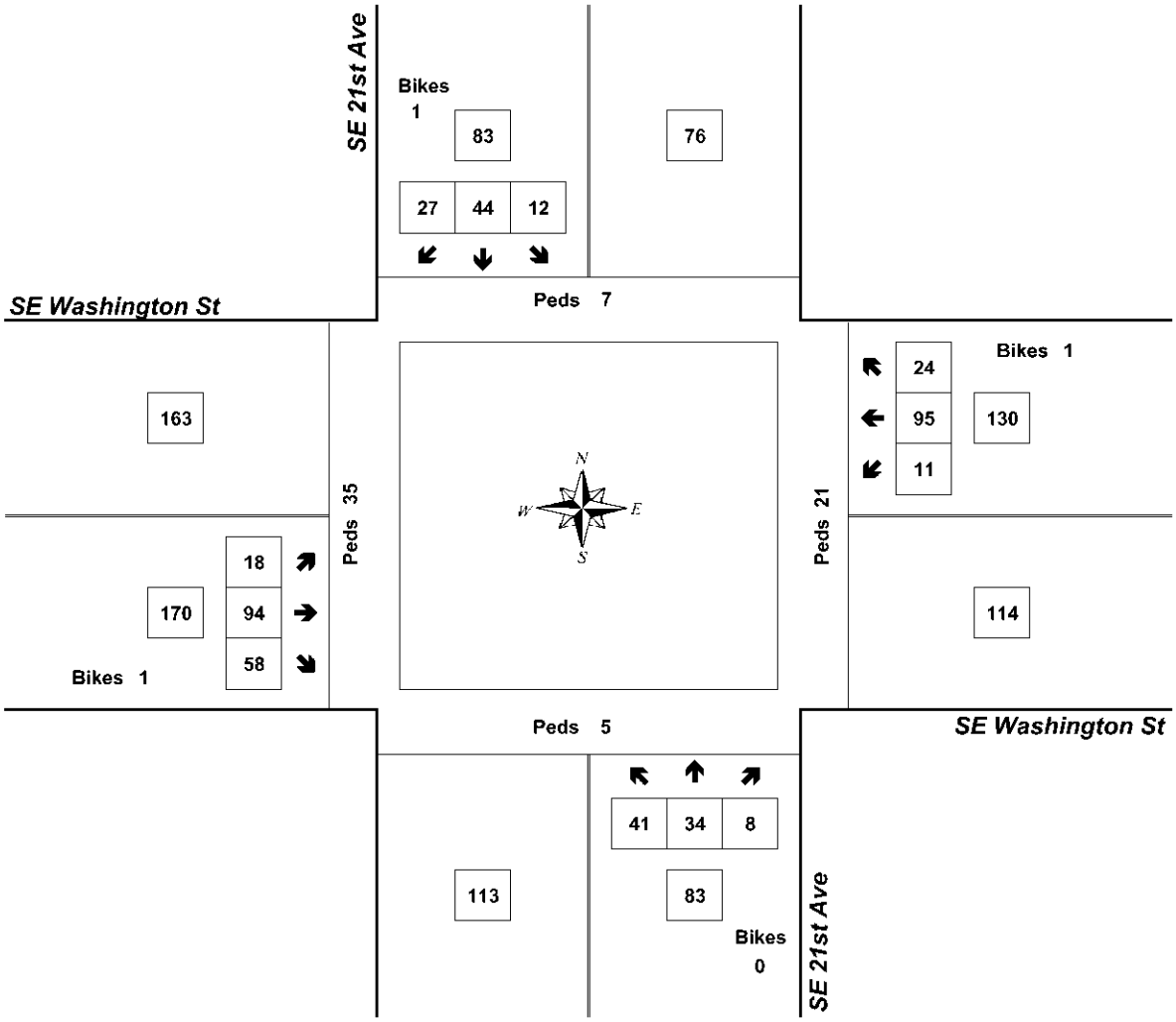
Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	2	2	6	10	7	3	1	11	0	2	0	2	24
4:15 PM	0	2	0	2	2	2	6	10	7	1	1	9	0	2	0	2	23
4:30 PM	0	2	0	2	2	2	6	10	6	2	1	9	0	3	0	3	24
4:45 PM	0	2	0	2	0	2	6	8	7	2	1	10	0	2	0	2	22
5:00 PM	0	3	0	3	0	3	6	9	5	2	0	7	0	2	0	2	21

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

SE 21st Ave & SE Washington St

4:05 PM to 5:05 PM
Tuesday, March 05, 2019

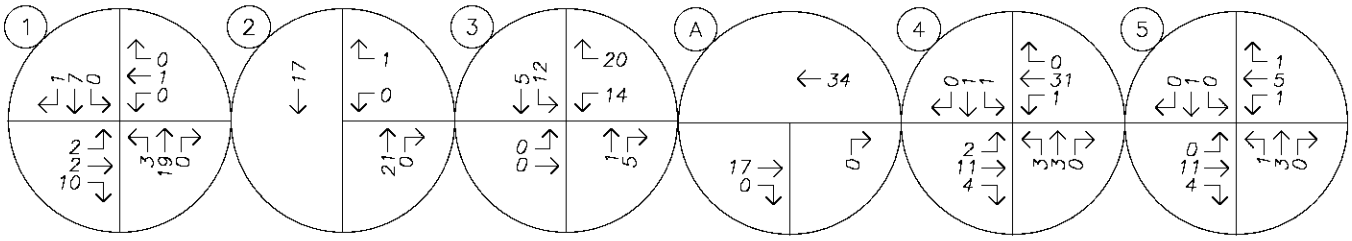


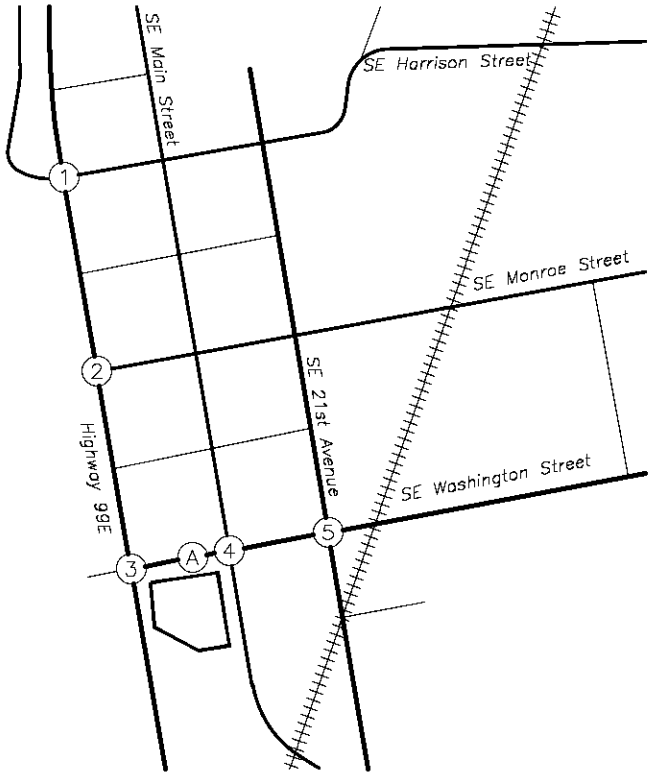
Approach	PHF	HV%	Volume
EB	0.90	6.5%	170
WB	0.81	1.5%	130
NB	0.77	1.2%	83
SB	0.83	10.8%	83
Intersection	0.94	4.9%	466

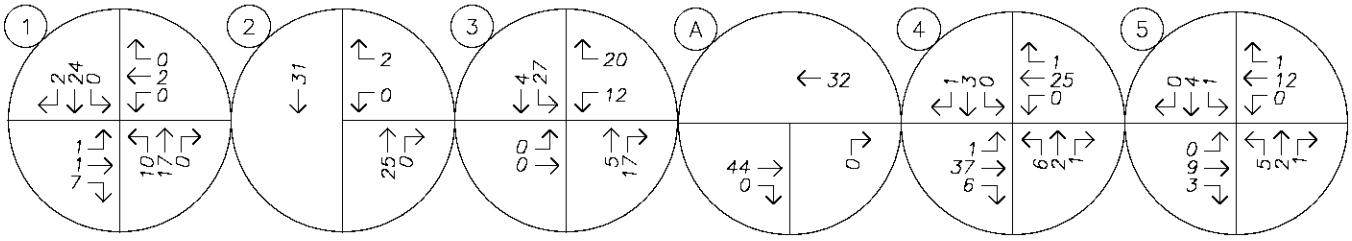
Count Period: 4:00 PM to 6:00 PM

Appendix D

In-Process Trips







no scale

lancaster mobley

TRAFFIC VOLUMES

In-Process Development Trips
AM & PM Peak Hours

Figure A

Coho Point
4/9/2021

Appendix E

Crash History Data

CITY OF MILWAUKIE, CLACKAMAS COUNTY **17TH AVE at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018**

1 4 of 6 Crash records shown.

SER# / INVEST / UNLOC?	S P E D	D R E L	M J G	S U X	W I V	C O I	O D R	DATE / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANAR)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWAY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	VE	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	PR	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS REG	PED LOC	ERROR	ACT EVNT	CAUSE
04900	N	N	N		N	N		11/11/2018	14	MCLOUGHLIN BLVD	INTER	CROSS	X	N	CLR	S-STOP	01	NONE 9	STRGHT										29
CITY				SU						17TH AVE	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S								000		00
X N				1P 45 26 43.38				-122 38 33.98		0081002C0SC0	06	C		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK UNK		000		00
																	02	NONE 9 N/A PSNGR CAR	STOP N -S	01	DRVR	NONE	00	Unk	UNK UNK		000 000		00 00
03142	N	N	N		N	N		11/06/2016	14	MCLOUGHLIN BLVD	INTER	CROSS	X	N	CLR	S OTHER	01	NONE 9	TURN R										27,08
CITY				SU						17TH AVE	S		TRF SIGNAL	N	WET	TURN		N/A	W -S								000		00
X N				9P 45 26 43.37				-122 38 33.97		0081002C0SC0	05	C		A	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK UNK		000		00
																	02	NONE 9 N/A PSNGR CAR	TURN-R W -S	01	DRVR	NONE	00	Unk	UNK UNK		000 000		00 00
00273	N	N	N					01/19/2017	14	MCLOUGHLIN BLVD	INTER	CROSS	X	N	UNK	S-STOP	01	NONE 0	STRGHT										29
NONE				TH						17TH AVE	S		TRF SIGNAL	N	WET	REAR		PRVTE	S N								000		00
X N				9A 45 26 43.37				-122 38 33.97		0081002C0SC0	06	C		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR<25		026	000		29
																	02	NONE C PRVTE PSNGR CAR	STOP S N	01	DRVR	INCC	38	F	OR-Y OR<25		030	011 000		00 00
05466	N	N	N					12/21/2017	14	MCLOUGHLIN BLVD	INTER	CROSS	X	N	CLR	S-STRGHT	01	NONE 0	STRGHT									013	29
NONE				TH						17TH AVE	S		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S								000		00
X N				6P 45 26 43.37				-122 38 33.97		0081002C0SC0	05	C		N	DARK	TNJ		PSNGR CAR		01	DRVR	INCC	33	X	OR Y OR<25		042	000		29
																	02	NONE C PRVTE PSNGR CAR	STRGHT N -S	01	DRVR	INCC	62	F	OR-Y OR<25		030	000 000	013	00 00
																	03	NONE C PRVTR PSNGR CAR	STRGHT N S	01	DRVR	NONE	57	F	OR-Y OR<25		030	022 000		00 00
01895	N	N	N		N	N		04/20/2016	16	MCLOUGHLIN BLVD	INTER	CROSS	X	N	RAIN	BIKE	01	NONE 0	STRGHT										27
CITY				WE		0				17TH AVE	W		TRF SIGNAL	N	WET	ANGL		PRVTE	W -E								000		00
X N				6P 45 26 43.37				-122 38 33.97			06	C		N	DAY	TNJ		PSNGR CAR		01	DRVR	NONE	36	F	OR Y OR<25		016,027	038		27

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY **17TH AVE at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018**

5 6 of 6 Crash records shown.

SER# / INVEST / ED OFF / UNLOAD	S P E D	D R A L	M J U G	S U I N	W C O T	DATE / DAY / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS (PLANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	SPCL USE / TRLR QTY / CYCLE OWNER V#	VEHICLE TYPE	MOVE / FROM / TO	PRTC P#	INJ TYPE	A G SVRTY	S E X	LICNS REQ	PED LOC	ERROR	ACT EVENT	CAUSE
																	- STRGHT S N	01	BIKE	INJB	54	Y		T XWLK	000	035	00
03046	N	N	N			08/31/2018	14	MCLOUGHLIN BLVD	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE C	STRGHT										04
NONE						FR		17TH AVE	ON		TRF SIGNAL	N	DRY	ANGL	PRVTE	W E									000	00
N N						11P	45 26 43.36	122 38 33.97	04	C		N	DLIT	INJ	PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR>25		020	000	04
															02 NONE C PRVTE PSNGR CAR	STRGHT S N	01	DRVR	INJC	59	M	OR-Y OR<25		000	000 000	00 00
															02 NONE C PRVTE PSNGR CAR	STRGHT S -N	02	PSNG	INJC	56	F			000	000 000	00 00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY **HARRISON ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018**

1 - 9 of 17 Crash records shown.

SER# / INVEST / UNLOC?	S P E D	D M R J S W O L	DATE / DAY / TIME / LAT	CRASH DIST / FROM / SECOND STREET / LRS	CITY STREET / FIRST STREET / LOCTN	RD CHAR / DIRECT / LEGS / (MILEPOST)	INT TYPE (MEDIAN) / INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	SPCL USE / TRLR QTY / OWNER / V#	MOVE / FROM / TO	PRTC / INJ / P#	TYPE / SVRTY	A G / S E / R X	LICNS / RES	PED LOC	ERROR	ACT EVENT	CAUSE
05290	N	Y N	12/10/2015	14	HARRISON ST	INTER	CROSS	X	N	RAIN	S-1STOP	01 NONE	0	STRGHT						29,07
CITY			TH		MCLOUGHLIN BLVD	N		L-GRN-SIG	N	WET	REAR	PRVTE		N -S					000	00
X			2A			06	0		N	DLTT	TNJ	PSNGR CAR			01 DRVR	INJC	23 X	OR-Y		043,026	000	29,07
N			45 26 43.37	-122 38 33.97	008100100SC0													OR<25				
												02 NONE	0	STOP								
												PRVTE		N -S						012	00	
												PSNGR CAR			01 DRVR	NONE	51 X	OR-Y	000	000	00	
																		OR<25				
00440	N	N N	N N 02/04/2015	14	HARRISON ST	INTER	CROSS	N	N	CLR	S 1STOP	01 NONE	0	STRGHT						35,13
CITY			WE		MCLOUGHLIN BLVD	N		TRF SIGNAL	N	DRY	REAR	PRVTE		N -S					000	00
X			3P			06	0		N	DAY	PDO	PSNGR CAR			01 DRVR	NONE	43 X	OR Y		045	000	13
N			45 26 43.37	-122 38 33.97	008100100SC0													OR<25				
												02 NONE	0	STRGHT								
												PRVTE		N -S						000	00	
												PSNGR CAR			01 DRVR	NONE	41 F	OR Y		045	000	13
																		OR<25				
84298	N	N N	06/25/2016	14	HARRISON ST	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE	0	STRGHT						29
NONR			SA		MCLOUGHLIN BLVD	N		TRF SIGNAL	N	DRY	REAR	PRVTE		N S					000	00
X			9A			06	0		N	DAY	INJ	PSNGR CAR			01 DRVR	NONE	49 X	OTH-Y		026	000	29
N			45 26 43.37	-122 38 33.97	008100200SC0													N RRS				
												02 NONE	0	STOP								
												PRVTE		N S						011	00	
												PSNGR CAR			01 DRVR	INJC	43 X	OR-Y	000	000	00	
																		OR<25				
00401	N	N N	N N 01/30/2017	14	HARRISON ST	INTER	CROSS	X	N	CLD	S-1STOP	01 NONE	0	STRGHT						29
CITY			MO		MCLOUGHLIN BLVD	N		TRF SIGNAL	N	DRY	REAR	PRVTE		N -S					000	00
X			1P			06	0		N	DAY	TNJ	PSNGR CAR			01 DRVR	NONE	39 X	OR Y		026	000	29
N			45 26 43.37	-122 38 33.97	008100100SC0													OR<25				
												02 NONE	0	STOP								
												PRVTE		N -S						011	00	
												PSNGR CAR			01 DRVR	INJC	63 X	OR-Y	000	000	00	
																		OR<25				
02997	N	N N	07/24/2017	14	HARRISON ST	INTER	CROSS	X	N	CLR	S 1STOP	01 NONE	0	STRGHT						29
NONE			MO		MCLOUGHLIN BLVD	N		TRF SIGNAL	N	DRY	REAR	UNKN		N -S					000	00
X			5P			06	0		N	DAY	INJ	PSNGR CAR			01 DRVR	NONE	38 F	OR-Y		026	000	29
N			45 26 43.37	-122 38 33.97	008100200SC0													UNK				
												02 NONE	0	STOP								
												PRVTE		N -S						011	00	
												PSNGR CAR			01 DRVR	INJC	47 X	OR Y	000	000	00	
																		OR<25				

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

SER# / INVEST / UNLOC	S P E D	D M R J S W A U T C O E L G N H R K S V L K	DATE / DAY / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (ILLNRS)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS REG	PED LOC	ERROR	ACT EVENT	CAUSE
02108	N	N N	05/10/2016	16	HARRISON ST	INTER	CROSS	X	N	CLR	S-1STOP	01	NONE 9	STRGHT										006	29
NONE			TU	0	MCLOUGHLIN BLVD	E		TRF SIGNAL	N	DRY	REAR		N/A	E -W									000		00
X			1P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 26 43.37	-122 38 33.97																UNK				
												02	NONE 9	STOP										
													N/A	E -W									011	00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																				UNK				
01679	N	N N	N N 04/13/2016	14	HARRISON ST	INTER	CROSS	X	N	CLR	S 1STOP	01	NONE 0	STRGHT											29
CITY			WE		MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000		00
N			10A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	64	F	OR Y		026	000	29
N			45 26 43.37	-122 38 33.97	0081002C0SC0															OR<25				
												02	NONE C	STOP										
													PRVTE	S -N									011	00
													PSNGR CAR		01	DRVR	NONE	38	M	OR Y		000	000	00
																				OR<25				
												02	NONE C	STOP										
													PRVTE	S -N									011	00
													PSNGR CAR		02	PSNG	INJC	38	F			000	000	00
05892	N	N N	11/29/2016	14	HARRISON ST	INTER	CROSS	X	N	CLR	O OTHER	01	NONE 9	BACK											10
NONE			TU		MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	BACK		N/A	N -S									000		00
N			1P			06	0		N	DAY	PDO		TRUCK		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 26 43.37	-122 38 33.97	0081002C0SC0															UNK				
												02	NONE 9	STOP										
													N/A	S -N									011	00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																				UNK				
06186	N	N N	12/28/2016	14	HARRISON ST	INTER	CROSS	X	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			WE		MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	REAR		N/A	S N									000		00
N			10A			06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 26 43.37	'22 38 33.97	0081002C0SC0															UNK				
												02	NONE 9	STOP										
													N/A	S N									011	00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																				UNK				
03035	N	N N	07/26/2017	14	HARRISON ST	INTER	CROSS	X	N	CLR	S-OTHER	01	NONE 9	TURN-L											08,14
NONE			WE		MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	TURN		N/A	E -S									000		00
X			3P			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 26 43.37	-122 38 33.97	0081002C0SC0															UNK				

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

SER# / INVEST / ED OFF / UNIQ?	S P E D	D M R J S W O E A U I C O L G N H R K	DATE / DAY / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANAR)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWAY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	VE	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	PRTC #	INJ TYPE	A G SVRTY	S E X	LICNS / REG	PED LOC	ERROR	ACT EVENT	CAUSE
												02	NONE 9 N/A PSNGR CAR	TURN L E -S	01	DRVR	NONE	00	Unk	UNK UNK		000	000	00
02013	N N N	N N	05/27/2014	14	HARRISON ST MCLOUGHLIN BLVD	INTER CN	CROSS TRF SIGNAL	N N	N DRY	CLR ANGL	ANGL-OTH	01	NONE C DRVTR	STRGHT W E									04 000	00
CITY N N			TU 6P 45 26 43.37 -122 38 33.97			CN 04 008108:00SC0		TRF SIGNAL 0	N N	DRY DAY	ANGL INJ		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK UNK		020	000	04
												02	NONE C DRVTR PSNGR CAR	STRGHT S N	01	DRVR	INJC	44	F	OR-Y OR<25		000	000	00
												02	NONE C DRVTR PSNGR CAR	STRGHT S -N	02	PSNG	INJC	09	F			000	000	00
												03	NONE C DRVTR PSNGR CAR	STOP E -W	01	DRVR	INJC	42	F	OR-Y OR<25		000	011 000	00 00
02771 CITY N N	N N N	N N	07/18/2014 FR 7P 45 26 43.37 -122 38 33.97	14	HARRISON ST MCLOUGHLIN BLVD	INTER CN 03 008108:00SC0	CROSS TRF SIGNAL 0	N N N	CLR DRY DAY	ANGL OTH ANGL INJ		01	NONE C DRVTR PSNGR CAR	STRGHT N -S	01	DRVR	INJC	60	F	OR-Y OR<25		000	000	04 00 00
												02	NONE C DRVTR PSNGR CAR	STRGHT W -E	01	DRVR	NONE	21	F	OR-Y OR<25		021	000 000	00 04
03789 CITY N N	N N N	N N	09/15/2015 TU 7P 45 26 43.37 -122 38 33.97	14	HARRISON ST MCLOUGHLIN BLVD	INTER CN 01 008108:00SC0	3-LEG TRF SIGNAL 0	N N N	CLR DRY DUSK	O-1 L-TURN TURN INJ		01	NONE 0 DRVTR PSNGR CAR	STRGHT N S	01	DRVR	NONE	30	X	OR-Y OR<25		097	04 000 000	04 00 00
												02	NONE C DRVTR PSNGR CAR	TURN-L S W	01	DRVR	INJC	22	F	SUSP OR<25		097	000 000	00 00
02359 NONE N N	N N N	N N	05/24/2016 TU 2P 45 26 43.37 -122 38 33.97	14	HARRISON ST MCLOUGHLIN BLVD	INTER CN 03 008108:00SC0	CROSS TRF SIGNAL 0	N N N	CLR DRY DAY	8-OTHER TURN PDO		01	NONE 9 N/A PSNGR CAR	TURN-L E -S	01	DRVR	NONE	00	Unk	UNK UNK		000	06 000 000	06 00 00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

SER# / INVEST / ED OFF / UNLOAD	S P E D	D M R J S W E A U I C O L G N H R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	PRTC #	INJ TYPE	A G SVRTY E	S E X	LICNS / REG	PED LOC	ERROR	ACT	EVENT	CAUSE
											02 NONE 9	TURN L										
											N/A	E -S								000		00
											PSNGR CAR		01	DRVR	NONE	00	Unk UNK UNK		000	000		00
00218	Y N N	N N	01/13/2017	14	HARRISON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE C	STRGHT									124	01,04
CITY			FR		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	ICE	TURN	DRVTR	S N							000	124	00
N			6F			02	C		N	DLIT	INJ	PSNGR CAR		01	DRVR	INJB	27	F OR-Y OR<25		047,020	000		01,04
N			45 26 43.37	-122 38 33.97	00810020C0SC0																	
											02 NONE C	TURN-R										
											PUBLC	E N								000		00
											CITH BUS		01	DRVR	INJC	60	X OR-Y OR<25		000	000		00
00490	N N N	N N	02/06/2017	14	HARRISON ST	INTER	CROSS	N	N	CLD	O-1 L-TURN	01 NONE 0	STRGHT									013	02,08,04
CITY			MO		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	WET	TURN	PRVTE	S -N							000		00
N			1D			04	C		N	DAY	INJ	PSNGR CAR		01	DRVR	NONE	28	X OR-Y OR<25		000	000		00
N			45 26 43.37	-122 38 33.97	00810020C0SC0																	
											02 NONE C	TURN L										
											PRVTE	N -E								000	013	00
											PSNGR CAR		01	DRVR	NONE	30	X SUSP OR<25		028,004,020	000		02,08,04
											03 NONE C	STOP										
											PRVTE	E W								022		00
											PSNGR CAR		01	DRVR	INJB	45	X OR-Y OR<25		000	000		00
01691	N N N		05/18/2018	14	HARRISON ST	INTER	CROSS	N	N	CLR	S-OTHER	01 NONE 9	TURN-L										08
NONE			FR		MCLOUGHLIN BLVD	CN		L-GRN-SIG	N	DRY	TURN	N/A	E -S							000		00
N			2D			01	C		N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00	Unk UNK UNK		000	000		00
N			45 26 43.37	-122 38 33.98	00810020C0SC0																	
											02 NONE 9	TURN L										
											N/A	E -S								000		00
											PSNGR CAR		01	DRVR	NONE	00	Unk UNK UNK		000	000		00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

SER# / INVEST / ED OFF / UNLOC?	S P E D	D M R J S W A U I C O L G N H R K	DATE / DAY / TIME / LAT	CRASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWAY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	SPCL USE / TRLR QTY / OWNER / VE#	MOVE / TYPE / FROM / TO	PRTC / INJ / PE#	A G / S E / TYPE / SVRTY	LICNS / REG / X	PED LOC	ERROR	ACT EVENT	CAUSE
01236	N	N N	04/07/2015	14	MONROE ST	INTER	3-LEG	X	N	CLR	3-1STOP	01	NONE	0	STRGHT					29
NONE			TU		MCLOUGHLIN BLVD	SB		TRF SIGNAL	N	WET	REAR		PRVTE		SB-NW				000		00
X			8A			06	0		N	DAY	TNJ		PSNGR CAR			01 DRVR	NONE	35 X	OR-Y		026	000		29
N			45 26 37.97	-122 38 32.58	00810010OSC0														OR<25					
												02	NONE	0	STOP									
													PRVTE		SB-NW							011		00
													PSNGR CAR			01 DRVR	INJC	39 F	OR-Y		000	000		00
																			OR<25					
												02	NONE	0	STOP									
													PRVTE		SB NW							011		00
													PSNGR CAR			02 PSNG	INJC	07 X			000	000		00
00413	N	N N	N N	02/03/2016	14	MONROE ST	INTER	3-LEG	X	N	CLR	3-1STOP	01	NONE	0	STRGHT					29
CITY				8A		MCLOUGHLIN BLVD	SB		TRF SIGNAL	N	DRY	REAR		PRVTE		SB-NW						000		00
X				1P			06	0		N	DAY	TNJ		MTRCYCLE			01 DRVR	INCP	26 X	OR-Y		026	000		29
N				45 26 37.97	-122 38 32.59	00810010OSC0														OR<25					
												02	NONE	0	STOP									
													PRVTE		SB-NW							011		00
													PSNGR CAR			01 DRVR	NONE	71 F	OR-Y		000	000		00
																			OR<25					
04598	Y	N N	N N	10/06/2016	14	MONROE ST	INTER	3 LEG	X	N	RAIN	S STRGHT	01	NONE	9	STRGHT					01,13
CITY				TH		MCLOUGHLIN BLVD	S		TRF SIGNAL	N	WET	ES-O		N/A		S -N						000		00
X				6P			06	0		A	DLIT	PDO		PSNGR CAR			01 DRVR	NONE	00 Unk	UNK		000	000		00
N				45 26 37.97	-122 38 30.58	00810010OSC0														UNK					
												02	NONE	9	STRGHT									
													N/A			S -N						000		00
													PSNGR CAR			01 DRVR	NONE	00 Unk	UNK		000	000		00
																			UNK					
02388	N	N N	N N	06/21/2014	14	MONROE ST	INTER	3-LEG	X	N	CLR	3-1STOP	01	NONE	0	STRGHT					07
NONR				8A		MCLOUGHLIN BLVD	NW		TRF SIGNAL	N	DRY	REAR		PRVTE		N S						000		00
X				5P			06	0		N	DAY	INJ		PSNGR CAR			01 DRVR	NONE	38 X	OR-Y		043,026	000		07
N				45 26 37.97	-122 38 32.58	00810010OSC0														OR<25					
												02	NONE	0	STOP									
													PRVTE		N S							011		00
													PSNGR CAR			01 DRVR	INJC	59 F	OR-Y		000	000		00
																			OR<25					
04061	N	N N	N N	09/30/2017	14	MONROE ST	INTER	3-LEG	X	N	RAIN	3-1STOP	01	NONE	0	STRGHT					07
CITY				8A		MCLOUGHLIN BLVD	NW		TRF SIGNAL	N	WET	REAR		PRVTE		NW-SE						000		00
X				9P			06	0		N	DLIT	TNJ		PSNGR CAR			01 DRVR	NONE	33 X	OTH Y		043,026	000		07
N				45 26 37.97	-122 38 32.58	00810010OSC0														N-RES					

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY **MONROE ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018**

5 8 of 8 Crash records shown.

SER# / INVEST / RD OFT / UNLOC?	S P E D	D M R J S W E A U I C O L G N H R K	DATE / DAY / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWAY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	Vh	SPCL USE / TRLR QTY / TYPE / OWNER	MOVE / FROM / TO	Pd	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS REG	PED LOC	ERROR	ACT EVENT	CAUSE
												02	NONE C	STOP										
													PRVTE	NW-SE									011	00
													PSNGR CAR		01	DRVR	NONE	23	F	OR Y OR>25		000	000	00
												02	NONE C	STOP										
													PRVTE	NW-SE									011	00
													PSNGR CAR		02	PSNG	INJC	43	F			000	000	00
												02	NONE C	STOP										
													PRVTE	NW-SE									011	00
													PSNGR CAR		03	PSNG	INJC	07	F			000	000	00
03241	N N N	N N	06/08/2017	14	MONROE ST	INTER	3-LEG	N	N	CLR	3-1STOP	01	NONE 9	STRGHT										27,29
CITY			TU		MCLOUGHLIN BLVD	NW		TRF SIGNAL	N	DRY	REAR		N/A	NW SE									000	00
X			6P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 26 37.97	-122 38 32.58	0081001C0SC0															UNK				
												02	NONE 9	STOP										
													N/A	NW-SE									011	00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																				UNK				
02693	N N N		08/04/2018	14	MONROE ST	INTER	3 LEG	N	N	CLR	ANGL OTH	01	NONE 9	STRGHT										27,04
CITY			SA		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		N/A	S -N									000	00
N			6P			02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 26 37.98	-122 38 32.59	0081001C0SC0															UNK				
												02	NONE 9	TURN L										
													N/A	E -S									000	00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																				UNK				
02887	N N N		08/18/2018	14	MONROE ST	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT										02,08
CITY			SA		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		N/A	S N									000	00
N			6P			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
X			45 26 37.97	-122 38 32.59	0081001C0SC0															UNK				
												02	NONE 9	TURN-L										
													N/A	N E									000	00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																				UNK				

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY **WASHINGTON ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018**

1 3 of 14 Crash records shown.

SER# / INVEST / UNLOC?	S P E D	D E A L	M R J S W	DATE / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	VE	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	PED	PEDC	INJ	A G	S E X	LICNS / REG	PED LOC	ERROR	ACT	EVENT	CAUSE
02370	N	N	N	N N 07/08/2018	17	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	CLR	3-STOP	01	NONE 9	STRGHT											07,29
CITY				SU	0	WASHINGTON ST	E		TRF SIGNAL	N	DRY	REAR		N/A	E -W									000		00
X				4P			06	0		N	DAY	PDO		PSNGR CAR			01 DRVR	NONE	00	Unk	UNK		000	000		00
N				45 26 32.48	-122 38 31.16																UNK					
													02	NONE 9	STOP											
														N/A	E -W									011		00
														PSNGR CAR			01 DRVR	NONE	00	Unk	UNK		000		00
88443	N	N	N	08/16/2014	14	MCLOUGHLIN BLVD	INTRR	3 LEG	Y	N	CLR	S ISTOP	01	NONE 0	STRGHT										004	27,29
NONE				SA		WASHINGTON ST	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW									000		00
N				1P			06	0		N	DAY	PDO		PSNGR CAR			01 DRVR	NONE	33	F	OR Y		016,026	038		27,29
N				45 26 32.48	-122 38 31.19	0081001C0SC0															OR<25					
													01	NONE C	STRGHT											
														PRVTE	SE-NW									000		00
														PSNGR CAR			02 PSNG	NO<5	03	F			000	000		00
													02	NONE C	STOP											
														UNKN	SE-NW									011	004	00
														UNKNOWN			01 DRVR	NONE	00	P	OR-Y		000		00
																					UNK					
03513	N	N	N	09/09/2014	14	MCLOUGHLIN BLVD	INTRR	3 LEG	Y	N	CLR	S ISTOP	01	NONE 0	STRGHT											29
CITY				TU		WASHINGTON ST	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW									000		00
N				6A			06	0		N	DAY	PDO		PSNGR CAR			01 DRVR	NONE	35	M	OR-Y		026	000		29
N				45 26 32.48	-122 38 31.19	0081001C0SC0															OR<25					
													02	NONE C	STOP											
														PRVTE	SE-NW									011		00
														PSNGR CAR			01 DRVR	NONE	39	F	OR Y		000	000		00
																					OR<25					
04288	N	N	N	N N 10/18/2015	14	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	CLR	3-STOP	01	NONE 0	STRGHT											17,29
CITY				SU		WASHINGTON ST	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
X				2P			06	0		N	DAY	INJ		PSNGR CAR			01 DRVR	NONE	43	M	OR-Y		026	028		17,29
N				45 26 32.48	-122 38 31.19	0081001C0SC0															OR<25					
													01	NONE C	STRGHT											
														PRVTE	SE NW									000		00
														PSNGR CAR			02 PSNG	INCP	02	M			000	000		00
													01	NONE C	STRGHT											
														PRVTE	SE-NW									000		00
														PSNGR CAR			03 PSNG	INCP	08	F			000	000		00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY

WASHINGTON ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

4 8 of 14 Crash records shown.

SER# / INVEST / RD OPT / UNLOC?	S P E D	D M R J S W A U I C O E L G N H R K	DATE / DAY / TIME / LAT	CLASS / DIST FROM / SECOND STREET / LRS	CITY STREET / FIRST STREET / DIRECT / LOCTN	RD CHAR / INT TYPE (MEDIAN) / LEGS	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWAY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS REG	PED LOC	ERROR	ACT EVENT	CAUSE
											02	NONE C PRVTE PSNGR CAR	STOP SE-NW	C1	DRVR	NONE	37	Y	OTH Y OR<25		000	011 000	00 00
04938	Y N N	N N	10/27/2016 14	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT										01,29
CITY			TH	WASHINGTON ST	SE		TRF SIGNAL	N	WET	REAR		N/A	SE NW									000	00
N N			9E 45 26 32.48 -122 38 31.19		06	C		N	DLIT	PDO		PSNGR CAR		C1	DRVR	NONE	00	Unk	UNK UNK		000	000	00
											02	NONE 9 N/A PSNGR CAR	STOP SE NW	C1	DRVR	NONE	00	Unk	UNK UNK		000	011 000	00 00
00841	N N N	N N	03/03/2017 14	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	RAIN	BIKE	01	NONE 0	TURN-L										02,19
CITY			FR	WASHINGTON ST	SE		TRF SIGNAL	N	WET	TURN		PRVTE	NE-SE									000	00
N N			7D 45 26 32.48 -122 38 31.19		05	C		N	DLIT	INJ		PSNGR CAR		C1	DRVR	NONE	51	X	OR-Y OR<25		027	000	02
													- STRGHT SW NE	C1	BIKE	INJC	67	X		T XWLK	000	035	19
03211	N N N		09/11/2018 14	MCLOUGHLIN BLVD	INTER	3 LEG	N	N	CLR	S 1STOP	01	NONE 9	STRGHT										29
NONE			TU	WASHINGTON ST	SE		TRF SIGNAL	N	DRY	REAR		N/A	SE-NW									000	00
N N			7A 45 26 32.48 -122 38 31.19		06	C		N	DAY	PDO		PSNGR CAR		C1	DRVR	NONE	00	Unk	UNK UNK		000	000	00
											02	NONE 9 N/A PSNGR CAR	STOP SE-NW	C1	DRVR	NONE	00	Unk	UNK UNK		000	011 000	00 00
02217	N N N		06/02/2014 17	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	UNK	ANGL-STP	01	NONE C	TURN-R										08
NO RPT			MO 0	WASHINGTON ST	SE		TRF SIGNAL	N	UNK	TURN		PRVTE	SE NE									000	00
N N			1P 45 26 32.48 -122 38 31.19		06	C		N	DAY	PDO		PSNGR CAR		C1	DRVR	NONE	45	X	OR-Y OR<25		001	000	08
											02	NONE C PRVTE PSNGR CAR	STOP NE-SW	C1	DRVR	NONE	76	F	OR-Y OR<25		000	012 000	00 00
01269	N N N		04/16/2018 14	MCLOUGHLIN BLVD	INTRR	3 LEG	N	N	CLR	S 1STOP	01	NONE 0	STRGHT										27,29
NO RPT			MO	WASHINGTON ST	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000	00
N N			9P 45 26 32.48 -122 38 31.2		06	C		N	DLIT	INJ		PSNGR CAR		C1	DRVR	INJC	19	F	OR Y OR<35		026	000	27,29

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

SER# / INVEST / ED OFF / UNLOAD	S P E D	D M R J S W E A U I C O E L G N H R	DATE / DAY / TIME	CRASS / DIST FROM / SECOND STREET / LRS	CITY STREET / RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWAY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	VE#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	PRTC / INJ	A G	S E X	LICNS / REG	PED LOC	ERROR	ACT	EVENT	CAUSE
											01	NONE C	STRGHT								
												PRVTE	S -N							000		00
												PSNGR CAR		02 PSNG	INJC	25 Y			000	000		00
											02	NONE C	STOP								
												PRVTE	S -N							011		00
												PSNGR CAR		01 DRVR	INJC	18 F	OR-Y OR<25		000	000		00
03920	Y N N	N N	03/14/2015	14	MCLOUGHLIN BLVD	INTER	3 LEG	N	N	RAIN	S ISTOP	01	NONE 0	STRGHT							093	27,01,29
CITY			SA		WASHINGTON ST	NW		TRF SIGNAL	N	WET	REAR		PRVTE	NW-SE						000		00
N			11F			06	0		N	DLIT	INJ		PSNGR CAR		01 DRVR	NONE	20 X	OR Y OR<25		047,026	038	093	27,01,29
N			45 26 32.48	-122 38 31.19	0081081C0SC0																	
											02	NONE C	STOP								
												PRVTE	NW-SE							011		00
												PSNGR CAR		01 DRVR	INJC	41 Y	OR Y OR<25		000	000		00
											02	NONE C	STOP								
												PRVTE	NW-SE							011		00
												PSNGR CAR		02 PSNG	INJC	33 F			000	000		00
01955	N N N		05/20/2017	14	MCLOUGHLIN BLVD	INTER	3 LEG	N	N	CLR	S ISTOP	01	NONE 0	STRGHT								29
NONE			SA		WASHINGTON ST	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW-SE						000		00
N			11A			06	0		N	DAY	INJ		PSNGR CAR		01 DRVR	NONE	33 F	OR Y OR<25		026	000		29
N			45 26 32.48	-122 38 31.19	0081081C0SC0																	
											02	NONE C	STOP								
												PRVTE	NW-SE							011		00
												PSNGR CAR		01 DRVR	INJC	47 F	OR Y OR<25		000	000		00
02456	N N N		06/01/2016	14	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-R								02
NONR			WE		WASHINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		N/A	NB NW						016		00
N			9A			02	0		N	DAY	PDO		PSNGR CAR		01 DRVR	NONE	00 Unk	UNK UNK		000	000		00
N			45 26 32.48	-122 38 31.19	0081081C0SC0																	
											02	NONE 9	STRGHT								
												N/A	SB NW							000		00
												PSNGR CAR		01 DRVR	NONE	00 Unk	UNK UNK		000	000		00
02559	N N N	N N	06/28/2017	14	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT								02,14
STATE			WE		WASHINGTON ST	CN		OFCR/FLAG	N	DRY	TURN		N/A	SE-NW						000		00
N			11A			02	0		N	DAY	PDO		PSNGR CAR		01 DRVR	NONE	00 Unk	UNK UNK		000	000		00
N			45 26 32.48	-122 38 31.19	0081081C0SC0																	

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY

WASHINGTON ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

13 14 of 14 Crash records shown.

SER# / INVEST / ED OFF / UNLOAD	S P E D	R E A L	J U G N	S T V L	W O R K	DATE / DAY / TIME / LAT	CRASH DIST / FROM / TO / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT TYPE (MEDIAN) / LEGS / (PLANAR)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	VE / SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	PRTC / INJ / TYPE	A G / S E / SVRTY	LICNS / REG / EJCT	PED LOC	ERROR	ACT EVENT	CAUSE
															02	NONE 9 N/A PSNGR CAR	TURN L E -S	01 DRVR	NONE	00 Unk	UNK UNK		000	00 00
00327	N	N	N	N	N	01/27/2018 SA 12P 45 26 32.49	14 122 38 31.2	MCLOUGHLIN BLVD WASHINGTON ST 008108:00800	INTER ON	3-LEG TRF SIGNAL	N N	N WET	RAIN DAY	O-1 L-TURN PDO	01	NONE 9 N/A PSNGR CAR	STRGHT SB NB	01 DRVR	NONE	00 Unk	UNK UNK		000	02,38 00
															02	NONE 9 N/A PSNGR CAR	TURN-L NB NB	01 DRVR	NONE	00 Unk	UNK UNK		000	00 00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY **WASHINGTON ST at MAIN ST, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018**

1 5 of 5 Crash records shown.

SER# / INVEST / UNLOC?	S P E D	D M R J S W C O L G N H R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LEGS / LOCTN	INT TYPE (MEDIAN) / INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	SPCL USE / TRLR QTY / OWNER / V#	MOVE / TYPE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S X	LICNS REG	PED LOC	ERROR	ACT EVENT	CAUSE
00990	N	N N N	02/29/2016	16	MAIN ST	INTER	CROSS	X	N	RAIN	S-1STOP	01 NONE	9	STRGHT							29
CITY			MO	0	WASHINGTON ST	E		STOP SIGN	N	WET	REAR	N/A		E -W						000	00
X			10P			06	C		N	DLIT	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	00
N			45 26 32.94	-122 38 27.22															UNK		
												02 NONE	9	STOP							
												N/A		E -W						011	00
												PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	00
																				UNK		
03241	N	N N N	08/21/2014	16	MAIN ST	INTER	CROSS	X	N	CLR	ANGL OTH	01 NONE	C	STRGHT							02
CITY			TH	0	WASHINGTON ST	CN		STOP SIGN	N	DRY	ANGL	PRVTE		S -N						015	00
X			9A			02	C		A	DAY	PDO	PSNGR CAR			01	DRVR	NONE	38	F	OR-Y	000	00
N			45 26 32.94	-122 38 27.22																OR<25		
												02 NONE	C	STRGHT							
												PRVTE		E -W						000	00
												PSNGR CAR			01	DRVR	NONE	87	F	OR Y	021	000	02
																				OR<25		
01695	N	N N N	05/03/2017	16	MAIN ST	INTER	CROSS	X	N	CLR	ANGL-OTH	01 NONE	C	STRGHT							02
CITY			WF	0	WASHINGTON ST	CN		STOP SIGN	N	DRY	ANGL	PRVTE		W R						015	00
X			6P			03	C		N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	54	F	OR-Y	028	000	02
N			45 26 32.94	-122 38 27.22																OR<25		
												02 NONE	C	STRGHT							
												PRVTE		N S						015	00
												PSNGR CAR			01	DRVR	INJC	35	F	OR-Y	000	000	00
																				OR<25		
02067	Y	N N	05/26/2017	16	MAIN ST	INTER	CROSS	X	N	CLR	ANGL-OTH	01 NONE	9	STRGHT							03,01
NONE			FR	0	WASHINGTON ST	CN		STOP SIGN	N	DRY	TURN	N/A		S -N						000	00
X			3P			02	C		N	DAY	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	00
N			45 26 32.94	-122 38 27.22																UNK		
												02 NONE	9	TURN R							
												N/A		E -N						015	00
												PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	00
																				UNK		
04474	N	N N	12/05/2018	16	MAIN ST	INTER	CROSS	X	N	CLR	ANGL OTH	01 NONE	9	STRGHT							02
NONE			WE	0	WASHINGTON ST	CN		STOP SIGN	N	DRY	TURN	N/A		N -S						000	00
X			11A			03	C		N	DAY	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	00
N			45 26 32.94	-122 38 27.22																UNK		
												02 NONE	9	TURN-R							
												N/A		W -S						000	00
												PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	00
																				UNK		

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF MILWAUKIE, CLACKAMAS COUNTY

WASHINGTON ST at 21ST AVE, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

1 - 5 of 5 Crash records shown.

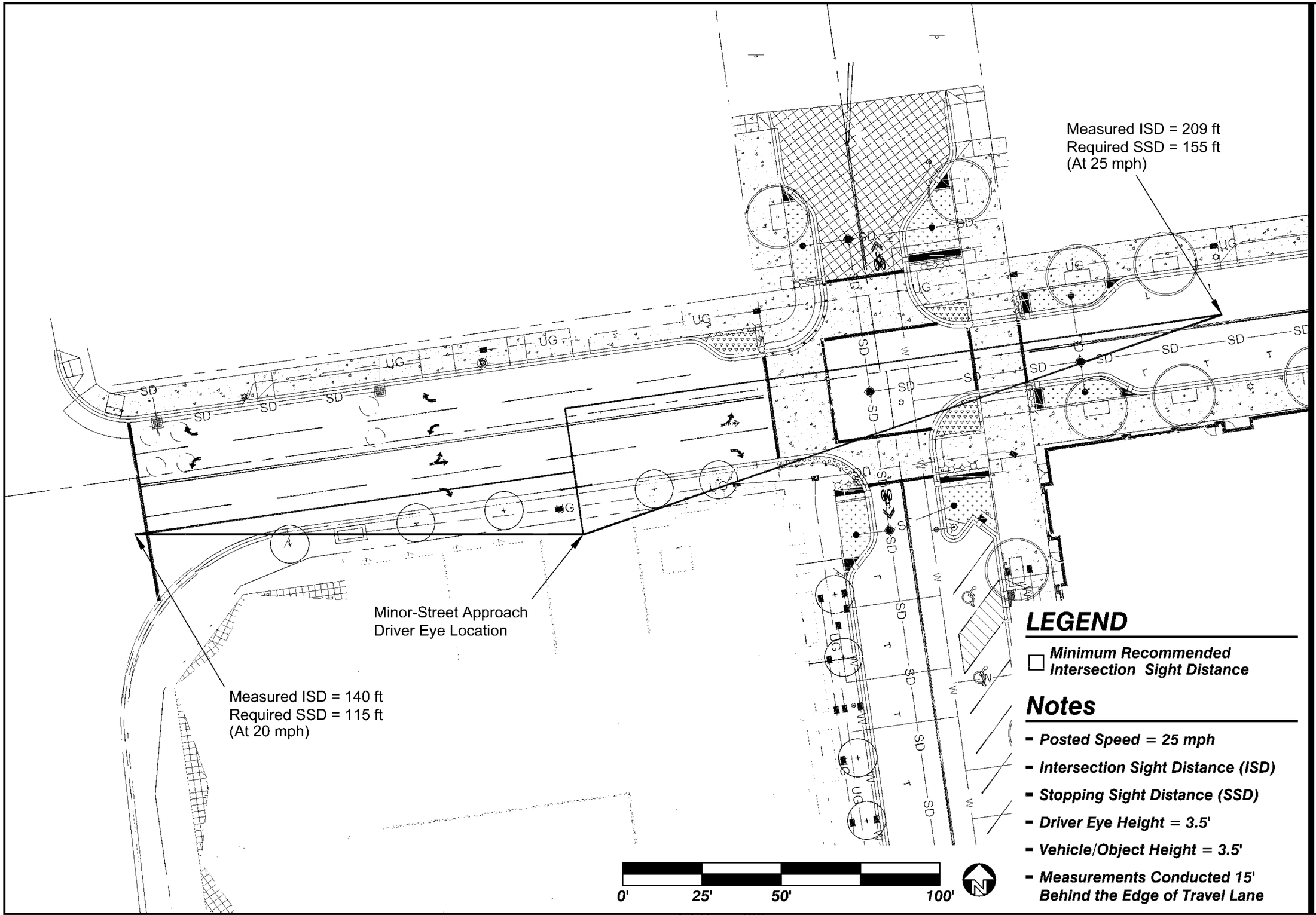
SER# / INVEST / RD OPT / UNLOC?	S P E D	D M R J S W C O I R K	DATE / DAY / TIME / LAT	CLASS / DIST FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LEGS / LOCTN	INT TYPE (MEDIAN) / INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRWWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	SPCL USE / TRLR QTY / OWNER / VE#	MOVE / FROM / TO / TYPE	PRTC / INJ / SVRTY	A G / S E / P#	LICNS / RES / X	PED LOC	ERROR	ACT EVENT	CAUSE
09628	N	N N N N	02/16/2017	17	WASHINGTON ST	INTER	CROSS	N	N	RAIN	PED	01 NONE 0	TURN-L						02
CITY			TH	0	21ST AVE	NE		STOP SIGN	N	WET	PED	PRVTE	NW-NE						000	00
X N			10A 45 26 33.45	-122 38 23.37		05	C		N	DAY	TNJ	PSNGR CAR		01 DRVR	NONE	28 M	DR-Y DR<25		029	000	02
													- STRGHT SE NW	01 PED	INJR	37 F		I XWLK	000	035	00
04551	N	N N N	10/04/2016	17	WASHINGTON ST	INTER	CROSS	N	Y	RAIN	FLX OBJ	01 NONE 9	TURN R						053	08
CITY			TU	0	21ST AVE	E		TRF SIGNAL	N	WET	PDX	N/A	SE-NE						000	00
X N			6A 45 26 33.45	-122 38 23.37		06	C		N	DLIT	PDC	SEMI TOW		01 DRVR	NONE	00 Unk	UNK UNK		000	000	00
02023	N	N N N	05/05/2016	17	WASHINGTON ST	INTER	CROSS	N	N	CLD	ANGL STP	01 NONE 9	TURN R								29
NO RPT			TH	0	21ST AVE	SW		TRF SIGNAL	N	DRY	TURN	N/A	NW-SW						000	00
N N			6P 45 26 33.45	-122 38 23.37		05	C		N	DAY	PDC	OTH BUS		01 DRVR	NONE	00 Unk	UNK UNK		000	000	00
												02 NONE 9 N/A PSNGR CAR	STOP NE-SW	01 DRVR	NONE	00 Unk	UNK UNK		011 000	000 00	00 00
01356	N	N N N	04/05/2017	17	WASHINGTON ST	INTER	CROSS	N	N	CLD	ANGL-STP	01 NONE 9	TURN-R								08
CITY			WE	0	21ST AVE	SW		TRF SIGNAL	N	DRY	TURN	N/A	NW SW						000	00
X N			2P 45 26 33.45	-122 38 23.37		06	C		N	DAY	PDC	OTH BUS		01 DRVR	NONE	00 Unk	UNK UNK		000	000	00
												02 NONE 9 N/A PSNGR CAR	STOP SW NE	01 DRVR	NONE	00 Unk	UNK UNK		011 000	000 00	00 00
04619	N	N N N	10/07/2016	17	WASHINGTON ST	INTER	CROSS	N	N	CLD	PED	01 NONE 0	STRGHT								16,27,14
CITY			FR	0	21ST AVE	NW		TRF SIGNAL	N	DRY	PED	PRVTE	NE-SW						000	00
X N			3P 45 26 33.45	-122 38 23.37		05	C		N	DAY	TNJ	PSNGR CAR		01 DRVR	NONE	17 F	OTH-Y N-RES		000	000	00
													- STRGHT SE NW	01 PED	INJR	15 M		I XWLK	016,020	035	16,27,14

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Appendix F

Sight Distance Exhibit

Figure B



LEGEND

☐ *Minimum Recommended Intersection Sight Distance*

Notes

- *Posted Speed = 25 mph*
- *Intersection Sight Distance (ISD)*
- *Stopping Sight Distance (SSD)*
- *Driver Eye Height = 3.5'*
- *Vehicle/Object Height = 3.5'*
- *Measurements Conducted 15' Behind the Edge of Travel Lane*

SIGHT DISTANCE EXHIBIT

Coho Point Mixed-Use Building

Sight Distance Triangles at Site Access Intersection

lancaster **mobley**

Appendix G

Preliminary Signal Warrant Analysis

Traffic Signal Warrant Analysis

Project: Coho Point Mixed-Use Building
Date: 4/8/2021
Scenario: Year 2021 Buildout Conditions - Full Movement Access Scenario

Major Street:	SE Washington Street	Minor Street:	SE Main Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	454	PM Peak Hour Volumes:	90

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	4,540	8,850	
Minor Street*	900	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	4,540	13,300	
Minor Street*	900	1,350	**No**
Combination Warrant			
Major Street	4,540	10,640	
Minor Street*	900	2,120	**No**

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis

Project: Coho Point Mixed-Use Building
Date: 4/8/2021
Scenario: Year 2021 Buildout Conditions - Restricted LT Egress Scenario

Major Street:	SE Washington Street	Minor Street:	SE Main Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	482	PM Peak Hour Volumes:	90

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	4,820	8,850	
Minor Street*	900	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	4,820	13,300	
Minor Street*	900	1,350	**No**
Combination Warrant			
Major Street	4,820	10,640	
Minor Street*	900	2,120	**No**

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis

Project: Coho Point Mixed-Use Building
Date: 4/8/2021
Scenario: Year 2021 Buildout Conditions - RIRO Access Scenario

Major Street:	SE Washington Street	Minor Street:	SE Main Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	482	PM Peak Hour Volumes:	90

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	4,820	8,850	
Minor Street*	900	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	4,820	13,300	
Minor Street*	900	1,350	**No**
Combination Warrant			
Major Street	4,820	10,640	
Minor Street*	900	2,120	**No**

* Minor street right-turning traffic volumes reduced by 25%.

Appendix H

Capacity Reports

Queuing Reports

LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	65	160	77	52	23	308	1396	94	89	573	10
Future Volume (vph)	19	65	160	77	52	23	308	1396	94	89	573	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1540	1618	1625		1770	3498		1736	3462	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1540	1618	1625		1770	3498		1736	3462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	68	168	81	55	24	324	1469	99	94	603	11
RTOR Reduction (vph)	0	0	114	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	88	54	73	75	0	324	1565	0	94	613	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.2	38.3	10.9	10.9		27.1	68.0		11.9	52.8	
Effective Green, g (s)		11.2	38.3	10.9	10.9		27.1	68.0		11.9	52.8	
Actuated g/C Ratio		0.09	0.32	0.09	0.09		0.23	0.57		0.10	0.44	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		168	491	146	147		399	1982		172	1523	
v/s Ratio Prot		c0.05	0.02	0.05	c0.05		c0.18	c0.45		0.05	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.52	0.11	0.50	0.51		0.81	0.79		0.55	0.40	
Uniform Delay, d1		51.9	28.8	52.0	52.0		44.0	20.4		51.5	22.9	
Progression Factor		1.00	1.00	1.00	1.00		1.12	0.88		1.00	1.00	
Incremental Delay, d2		2.9	0.1	2.7	3.0		9.7	2.6		3.5	0.2	
Delay (s)		54.8	28.9	54.6	55.0		59.0	20.5		55.0	23.0	
Level of Service		D	C	D	D		E	C		E	C	
Approach Delay (s)		37.8			54.8			27.1			27.3	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	41	17	1786	56	0	810
Future Volume (vph)	41	17	1786	56	0	810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	43	18	1860	58	0	844
RTOR Reduction (vph)	0	17	1	0	0	0
Lane Group Flow (vph)	43	1	1917	0	0	844
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	7.4	7.4	103.6			103.6
Effective Green, g (s)	7.4	7.4	103.6			103.6
Actuated g/C Ratio	0.06	0.06	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	102	89	3038			2996
v/s Ratio Prot	c0.03		c0.54			0.24
v/s Ratio Perm		0.00				
v/c Ratio	0.42	0.01	0.63			0.28
Uniform Delay, d1	54.2	52.9	2.5			1.5
Progression Factor	1.00	1.00	0.84			0.62
Incremental Delay, d2	2.8	0.1	0.6			0.2
Delay (s)	57.0	52.9	2.7			1.1
Level of Service	E	D	A			A
Approach Delay (s)	55.8		2.7			1.1
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	41	17	1786	56	0	810
Future Volume (veh/h)	41	17	1786	56	0	810
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	43	18	1860	58	0	844
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	62	56	3124	97	0	3105
Arrive On Green	0.04	0.04	1.00	1.00	0.00	0.89
Sat Flow, veh/h	1682	1497	3612	109	0	3681
Grp Volume(v), veh/h	43	18	935	983	0	844
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1850	0	1749
Q Serve(g_s), s	3.0	1.4	0.0	0.0	0.0	4.3
Cycle Q Clear(g_c), s	3.0	1.4	0.0	0.0	0.0	4.3
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	62	56	1578	1643	0	3105
V/C Ratio(X)	0.69	0.32	0.59	0.60	0.00	0.27
Avail Cap(c_a), veh/h	262	233	1578	1643	0	3105
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.56	0.56	0.00	0.93
Uniform Delay (d), s/veh	57.1	56.3	0.0	0.0	0.0	1.0
Incr Delay (d2), s/veh	12.6	3.3	0.9	0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.6	0.4	0.4	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.7	59.6	0.9	0.9	0.0	1.2
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	61		1918			844
Approach Delay, s/veh	66.7		0.9			1.2
Approach LOS	E		A			A

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		111.0				111.0	9.0
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		92.3				92.3	18.7
Max Q Clear Time (g_c+I1), s		2.0				6.3	5.0
Green Ext Time (p_c), s		33.8				7.5	0.1

Intersection Summary	
HCM 6th Ctrl Delay	2.4
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	86	0	70	0	1797	133	77	758	0
Future Volume (vph)	2	2	0	86	0	70	0	1797	133	77	758	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3499		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.05	1.00	
Satd. Flow (perm)		1056		1314		1482		3499		92	3438	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	2	0	90	0	73	0	1872	139	80	790	0
RTOR Reduction (vph)	0	0	0	0	0	65	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	90	0	8	0	2007	0	80	790	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		13.3		13.3		13.3		87.5		97.7	97.7	
Effective Green, g (s)		13.3		13.3		13.3		87.5		97.7	97.7	
Actuated g/C Ratio		0.11		0.11		0.11		0.73		0.81	0.81	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		117		145		164		2551		152	2799	
v/s Ratio Prot								c0.57		c0.02	0.23	
v/s Ratio Perm		0.00		c0.07		0.01				0.40		
v/c Ratio		0.03		0.62		0.05		0.79		0.53	0.28	
Uniform Delay, d1		47.6		50.9		47.7		10.3		17.9	2.7	
Progression Factor		1.00		1.00		1.00		1.00		2.05	0.70	
Incremental Delay, d2		0.1		8.0		0.1		2.5		3.2	0.2	
Delay (s)		47.7		58.9		47.8		12.9		40.0	2.1	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		47.7			54.0			12.9			5.6	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	32	153	24	12	127	19	19	20	10	7	11	22
Future Vol, veh/h	32	153	24	12	127	19	19	20	10	7	11	22
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	36	174	27	14	144	22	22	23	11	8	13	25
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	9.7	9	8.5	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	39%	17%	0%	8%	17%
Vol Thru, %	41%	83%	0%	80%	27%
Vol Right, %	20%	0%	100%	12%	55%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	185	24	158	40
LT Vol	19	32	0	12	7
Through Vol	20	153	0	127	11
RT Vol	10	0	24	19	22
Lane Flow Rate	56	210	27	180	45
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.078	0.3	0.033	0.228	0.06
Departure Headway (Hd)	5.012	5.129	4.339	4.573	4.778
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	714	702	825	785	749
Service Time	3.046	2.855	2.065	2.601	2.814
HCM Lane V/C Ratio	0.078	0.299	0.033	0.229	0.06
HCM Control Delay	8.5	10	7.2	9	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	1.3	0.1	0.9	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	14	126	43	9	107	17	40	41	21	9	15	14
Future Volume (vph)	14	126	43	9	107	17	40	41	21	9	15	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.98			0.97			0.95	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1684			1796			1706			1451	
Flt Permitted		0.97			0.97			0.86			0.91	
Satd. Flow (perm)		1631			1741			1488			1332	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	17	150	51	11	127	20	48	49	25	11	18	17
RTOR Reduction (vph)	0	22	0	0	11	0	0	18	0	0	12	0
Lane Group Flow (vph)	0	196	0	0	147	0	0	104	0	0	34	0
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.2			8.2			7.2			7.2	
Effective Green, g (s)		8.2			8.2			7.2			7.2	
Actuated g/C Ratio		0.34			0.34			0.30			0.30	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		548			585			439			393	
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.08			c0.07			0.03	
v/c Ratio		0.36			0.25			0.24			0.09	
Uniform Delay, d1		6.1			5.9			6.5			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			0.2			0.3			0.1	
Delay (s)		6.5			6.1			6.8			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.5			6.1			6.8			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	24.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	14	126	43	9	107	17	40	41	21	9	15	14
Future Volume (veh/h)	14	126	43	9	107	17	40	41	21	9	15	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.93	0.94		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	17	150	51	11	127	20	48	49	25	11	18	17
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	161	395	126	158	491	73	324	284	109	219	243	174
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	55	1205	385	47	1499	224	409	834	320	158	713	511
Grp Volume(v), veh/h	218	0	0	158	0	0	122	0	0	46	0	0
Grp Sat Flow(s),veh/h/ln	1645	0	0	1770	0	0	1563	0	0	1383	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.7	0.0	0.0	1.8	0.0	0.0	1.3	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.08		0.23	0.07		0.13	0.39		0.20	0.24		0.37
Lane Grp Cap(c), veh/h	682	0	0	722	0	0	717	0	0	635	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.22	0.00	0.00	0.17	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	1728	0	0	1845	0	0	1556	0	0	1376	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	0.0	0.0	6.7	0.0	0.0	6.3	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.0	0.0	6.9	0.0	0.0	6.4	0.0	0.0	6.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		218			158			122			46	
Approach Delay, s/veh		7.3			6.9			6.4			6.1	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.7		13.4		13.7		13.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.3		4.7		2.6		3.8				
Green Ext Time (p_c), s		0.6		1.3		0.2		0.9				

Intersection Summary	
HCM 6th Ctrl Delay	6.9
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	5	3	165	1	1
Future Vol, veh/h	209	5	3	165	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	227	5	3	179	1	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	232	0	326	116
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1333	-	643	914
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	917	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1333	-	642	914
Mov Cap-2 Maneuver	-	-	-	-	642	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	915	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	754	-	-	1333	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9.8	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	50	374	148	26	27	237	742	103	84	1596	12
Future Volume (vph)	23	50	374	148	26	27	237	742	103	84	1596	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1852	1581	1681	1659		1787	3493		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1852	1581	1681	1659		1787	3493		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	25	54	402	159	28	29	255	798	111	90	1716	13
RTOR Reduction (vph)	0	0	52	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	79	350	110	94	0	255	902	0	90	1728	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.2	35.0	13.1	13.1		25.8	68.4		11.3	53.9	
Effective Green, g (s)		9.2	35.0	13.1	13.1		25.8	68.4		11.3	53.9	
Actuated g/C Ratio		0.08	0.29	0.11	0.11		0.22	0.57		0.09	0.45	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		141	461	183	181		384	1991		168	1603	
v/s Ratio Prot		0.04	c0.16	c0.07	0.06		0.14	0.26		0.05	c0.48	
v/s Ratio Perm			0.06									
v/c Ratio		0.56	0.76	0.60	0.52		0.66	0.45		0.54	1.08	
Uniform Delay, d1		53.4	38.7	51.0	50.5		43.1	15.0		51.8	33.0	
Progression Factor		1.00	1.00	1.00	1.00		1.09	0.83		1.00	1.00	
Incremental Delay, d2		5.0	7.0	5.5	2.7		4.1	0.7		3.3	46.8	
Delay (s)		58.5	45.7	56.4	53.2		51.2	13.2		55.1	79.9	
Level of Service		E	D	E	D		D	B		E	E	
Approach Delay (s)		47.8			54.8			21.5			78.7	
Approach LOS		D			D			C			E	

Intersection Summary

HCM 2000 Control Delay	55.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	26	967	50	0	2176
Future Volume (vph)	55	26	967	50	0	2176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1514	3507			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1514	3507			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	27	1018	53	0	2291
RTOR Reduction (vph)	0	25	2	0	0	0
Lane Group Flow (vph)	58	2	1069	0	0	2291
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.2	8.2	102.8			102.8
Effective Green, g (s)	8.2	8.2	102.8			102.8
Actuated g/C Ratio	0.07	0.07	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	118	103	3004			3061
v/s Ratio Prot	c0.03		0.30			c0.64
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.02	0.36			0.75
Uniform Delay, d1	53.9	52.1	1.8			3.4
Progression Factor	1.00	1.00	0.27			1.02
Incremental Delay, d2	3.2	0.1	0.3			0.5
Delay (s)	57.1	52.2	0.8			4.0
Level of Service	E	D	A			A
Approach Delay (s)	55.5		0.8			4.0
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	26	967	50	0	2176
Future Volume (veh/h)	55	26	967	50	0	2176
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	58	27	1018	53	0	2291
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	83	74	3011	157	0	3143
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.88
Sat Flow, veh/h	1753	1560	3525	179	0	3770
Grp Volume(v), veh/h	58	27	527	544	0	2291
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1833	0	1791
Q Serve(g_s), s	3.9	2.0	0.0	0.0	0.0	26.1
Cycle Q Clear(g_c), s	3.9	2.0	0.0	0.0	0.0	26.1
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	83	74	1559	1609	0	3143
V/C Ratio(X)	0.70	0.36	0.34	0.34	0.00	0.73
Avail Cap(c_a), veh/h	263	234	1559	1609	0	3143
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.89	0.89	0.00	0.12
Uniform Delay (d), s/veh	56.3	55.4	0.0	0.0	0.0	2.5
Incr Delay (d2), s/veh	10.0	3.0	0.5	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.9	0.2	0.2	0.0	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	66.3	58.4	0.5	0.5	0.0	2.7
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	85		1071			2291
Approach Delay, s/veh	63.8		0.5			2.7
Approach LOS	E		A			A

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		109.8				109.8	10.2
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		93.0				93.0	18.0
Max Q Clear Time (g_c+I1), s		2.0				28.1	5.9
Green Ext Time (p_c), s		9.5				43.0	0.1

Intersection Summary		
HCM 6th Ctrl Delay		3.5
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	0	133	0	45	0	993	100	74	2137	0
Future Volume (vph)	1	1	0	133	0	45	0	993	100	74	2137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3452		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.20	1.00	
Satd. Flow (perm)		1850		1357		1528		3452		372	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	140	0	47	0	1045	105	78	2249	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	6	0	0	0	0
Lane Group Flow (vph)	0	2	0	140	0	7	0	1144	0	78	2249	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		16.7		16.7		16.7		85.0		94.3	94.3	
Effective Green, g (s)		16.7		16.7		16.7		85.0		94.3	94.3	
Actuated g/C Ratio		0.14		0.14		0.14		0.71		0.79	0.79	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		257		188		212		2445		348	2808	
v/s Ratio Prot								0.33		0.01	c0.63	
v/s Ratio Perm		0.00		c0.10		0.00				0.17		
v/c Ratio		0.01		0.74		0.03		0.47		0.22	0.80	
Uniform Delay, d1		44.5		49.6		44.7		7.6		4.5	7.4	
Progression Factor		1.00		1.00		1.00		1.00		1.17	0.73	
Incremental Delay, d2		0.0		14.8		0.1		0.6		0.2	1.7	
Delay (s)		44.5		64.4		44.7		8.3		5.4	7.2	
Level of Service		D		E		D		A		A	A	
Approach Delay (s)		44.5			59.4			8.3			7.1	
Approach LOS		D			E			A			A	

Intersection Summary

HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	37	116	37	16	124	20	30	29	15	30	26	36
Future Vol, veh/h	37	116	37	16	124	20	30	29	15	30	26	36
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	40	125	40	17	133	22	32	31	16	32	28	39
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	9.3	9.1	8.6	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	41%	24%	0%	10%	33%
Vol Thru, %	39%	76%	0%	78%	28%
Vol Right, %	20%	0%	100%	12%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	153	37	160	92
LT Vol	30	37	0	16	30
Through Vol	29	116	0	124	26
RT Vol	15	0	37	20	36
Lane Flow Rate	80	165	40	172	99
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.109	0.242	0.049	0.225	0.132
Departure Headway (Hd)	4.931	5.294	4.468	4.718	4.795
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	725	678	799	759	746
Service Time	2.977	3.034	2.208	2.759	2.838
HCM Lane V/C Ratio	0.11	0.243	0.05	0.227	0.133
HCM Control Delay	8.6	9.7	7.4	9.1	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.9	0.2	0.9	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	18	96	44	10	98	24	31	24	8	12	31	28
Future Volume (vph)	18	96	44	10	98	24	31	24	8	12	31	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.98			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1687			1800			1779			1576	
Flt Permitted		0.95			0.96			0.81			0.93	
Satd. Flow (perm)		1608			1741			1479			1486	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	19	102	47	11	104	26	33	26	9	13	33	30
RTOR Reduction (vph)	0	29	0	0	16	0	0	6	0	0	22	0
Lane Group Flow (vph)	0	139	0	0	125	0	0	62	0	0	54	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.2			7.2			6.4			6.4	
Effective Green, g (s)		7.2			7.2			6.4			6.4	
Actuated g/C Ratio		0.32			0.32			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		512			554			418			420	
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.07			c0.04			0.04	
v/c Ratio		0.27			0.22			0.15			0.13	
Uniform Delay, d1		5.7			5.7			6.1			6.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.2			0.2			0.1	
Delay (s)		6.0			5.9			6.2			6.2	
Level of Service		A			A			A			A	
Approach Delay (s)		6.0			5.9			6.2			6.2	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	22.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	96	44	10	98	24	31	24	8	12	31	28
Future Volume (veh/h)	18	96	44	10	98	24	31	24	8	12	31	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	19	102	47	11	104	26	33	26	9	13	33	30
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	207	272	116	193	344	82	426	285	72	227	279	206
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	102	1082	460	68	1369	325	540	834	210	107	818	603
Grp Volume(v), veh/h	168	0	0	141	0	0	68	0	0	76	0	0
Grp Sat Flow(s),veh/h/ln	1643	0	0	1762	0	0	1584	0	0	1528	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	1.8	0.0	0.0	1.4	0.0	0.0	0.6	0.0	0.0	0.7	0.0	0.0
Prop In Lane	0.11		0.28	0.08		0.18	0.49		0.13	0.17		0.39
Lane Grp Cap(c), veh/h	594	0	0	618	0	0	783	0	0	713	0	0
V/C Ratio(X)	0.28	0.00	0.00	0.23	0.00	0.00	0.09	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	2114	0	0	2255	0	0	1932	0	0	1840	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.7	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	0.0	0.0	6.9	0.0	0.0	5.0	0.0	0.0	5.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		168			141			68			76	
Approach Delay, s/veh		7.1			6.9			5.0			5.1	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.1		12.1		10.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		2.6		3.8		2.7		3.4				
Green Ext Time (p_c), s		0.3		1.0		0.4		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	187	1	1	190	5	3
Future Vol, veh/h	187	1	1	190	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	203	1	1	207	5	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	204	0	310	102
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	106	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1365	-	658	933
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1365	-	657	933
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	906	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	739	-	-	1365	-
HCM Lane V/C Ratio	0.012	-	-	0.001	-
HCM Control Delay (s)	9.9	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	70	176	80	55	24	323	1434	98	93	588	11
Future Volume (vph)	22	70	176	80	55	24	323	1434	98	93	588	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3497		1736	3461	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3497		1736	3461	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	74	185	84	58	25	340	1509	103	98	619	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1608	0	98	630	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	67.0		12.0	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	67.0		12.0	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1952		173	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.46		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.82		0.57	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	21.7		51.5	24.1	
Progression Factor		1.00	1.00	1.00	1.00		1.10	0.91		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.4	3.2		4.2	0.2	
Delay (s)		55.0	28.2	54.4	55.1		58.8	23.0		55.7	24.3	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.2			28.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	19	1832	58	0	838
Future Volume (vph)	43	19	1832	58	0	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	45	20	1908	60	0	873
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	45	1	1967	0	0	873
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	7.6	7.6	103.4			103.4
Effective Green, g (s)	7.6	7.6	103.4			103.4
Actuated g/C Ratio	0.06	0.06	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	104	92	3033			2990
v/s Ratio Prot	c0.03		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.43	0.01	0.65			0.29
Uniform Delay, d1	54.1	52.7	2.6			1.5
Progression Factor	1.00	1.00	0.75			0.63
Incremental Delay, d2	2.9	0.1	0.6			0.2
Delay (s)	57.0	52.7	2.6			1.2
Level of Service	E	D	A			A
Approach Delay (s)	55.7		2.6			1.2
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	43	19	1832	58	0	838		
Future Volume (veh/h)	43	19	1832	58	0	838		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841		
Adj Flow Rate, veh/h	45	20	1908	60	0	873		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	9	9	2	2	0	4		
Cap, veh/h	65	58	3117	97	0	3099		
Arrive On Green	0.04	0.04	1.00	1.00	0.00	0.89		
Sat Flow, veh/h	1682	1497	3611	110	0	3681		
Grp Volume(v), veh/h	45	20	959	1009	0	873		
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1850	0	1749		
Q Serve(g_s), s	3.2	1.6	0.0	0.0	0.0	4.5		
Cycle Q Clear(g_c), s	3.2	1.6	0.0	0.0	0.0	4.5		
Prop In Lane	1.00	1.00		0.06	0.00			
Lane Grp Cap(c), veh/h	65	58	1574	1640	0	3099		
V/C Ratio(X)	0.69	0.34	0.61	0.62	0.00	0.28		
Avail Cap(c_a), veh/h	262	233	1574	1640	0	3099		
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.49	0.49	0.00	0.92		
Uniform Delay (d), s/veh	56.9	56.2	0.0	0.0	0.0	1.0		
Incr Delay (d2), s/veh	12.0	3.5	0.9	0.9	0.0	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.6	0.7	0.4	0.4	0.0	0.6		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	69.0	59.6	0.9	0.9	0.0	1.2		
LnGrp LOS	E	E	A	A	A	A		
Approach Vol, veh/h	65		1968			873		
Approach Delay, s/veh	66.1		0.9			1.2		
Approach LOS	E		A			A		
Timer - Assigned Phs		2				6	8	
Phs Duration (G+Y+Rc), s		110.8				110.8	9.2	
Change Period (Y+Rc), s		4.5				4.5	4.5	
Max Green Setting (Gmax), s		92.3				92.3	18.7	
Max Q Clear Time (g_c+I1), s		2.0				6.5	5.2	
Green Ext Time (p_c), s		36.3				7.9	0.1	

Intersection Summary	
HCM 6th Ctrl Delay	2.4
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	103	0	93	0	1823	143	92	774	0
Future Volume (vph)	2	2	0	103	0	93	0	1823	143	92	774	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.04	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		81	3438	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	2	0	107	0	97	0	1899	149	96	806	0
RTOR Reduction (vph)	0	0	0	0	0	85	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	107	0	12	0	2044	0	96	806	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		14.4		14.4		14.4		84.9		96.6	96.6	
Effective Green, g (s)		14.4		14.4		14.4		84.9		96.6	96.6	
Actuated g/C Ratio		0.12		0.12		0.12		0.71		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		126		157		177		2473		163	2767	
v/s Ratio Prot								c0.58		c0.04	0.23	
v/s Ratio Perm		0.00		c0.08		0.01				0.44		
v/c Ratio		0.03		0.68		0.07		0.83		0.59	0.29	
Uniform Delay, d1		46.6		50.6		46.8		12.4		27.0	3.0	
Progression Factor		1.00		1.00		1.00		1.00		1.51	0.62	
Incremental Delay, d2		0.1		11.5		0.2		3.3		5.2	0.3	
Delay (s)		46.7		62.1		47.0		15.7		46.0	2.1	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.7			54.9			15.7			6.8	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	35	170	29	13	163	20	23	24	10	8	12	23
Future Vol, veh/h	35	170	29	13	163	20	23	24	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	40	193	33	15	185	23	26	27	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	10.2	9.6	8.8	8.4
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	40%	17%	0%	7%	19%
Vol Thru, %	42%	83%	0%	83%	28%
Vol Right, %	18%	0%	100%	10%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	205	29	196	43
LT Vol	23	35	0	13	8
Through Vol	24	170	0	163	12
RT Vol	10	0	29	20	23
Lane Flow Rate	65	233	33	223	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.094	0.337	0.04	0.288	0.068
Departure Headway (Hd)	5.206	5.208	4.418	4.66	4.975
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	686	690	809	771	717
Service Time	3.255	2.944	2.154	2.697	3.025
HCM Lane V/C Ratio	0.095	0.338	0.041	0.289	0.068
HCM Control Delay	8.8	10.6	7.3	9.6	8.4
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	1.5	0.1	1.2	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	15	142	49	10	116	19	43	46	22	9	17	15
Future Volume (vph)	15	142	49	10	116	19	43	46	22	9	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.98			0.97			0.95	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1683			1794			1709			1452	
Flt Permitted		0.97			0.97			0.86			0.91	
Satd. Flow (perm)		1634			1738			1492			1339	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	18	169	58	12	138	23	51	55	26	11	20	18
RTOR Reduction (vph)	0	22	0	0	10	0	0	18	0	0	13	0
Lane Group Flow (vph)	0	223	0	0	163	0	0	114	0	0	36	0
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.7			8.7			7.4			7.4	
Effective Green, g (s)		8.7			8.7			7.4			7.4	
Actuated g/C Ratio		0.35			0.35			0.29			0.29	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		566			602			439			394	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.09			c0.08			0.03	
v/c Ratio		0.39			0.27			0.26			0.09	
Uniform Delay, d1		6.2			5.9			6.8			6.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.2			0.3			0.1	
Delay (s)		6.7			6.2			7.1			6.5	
Level of Service		A			A			A			A	
Approach Delay (s)		6.7			6.2			7.1			6.5	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	25.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	15	142	49	10	116	19	43	46	22	9	17	15
Future Volume (veh/h)	15	142	49	10	116	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	169	58	12	138	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	157	408	132	155	504	80	314	289	104	207	247	171
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	51	1205	390	46	1486	235	399	860	309	143	735	510
Grp Volume(v), veh/h	245	0	0	173	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1645	0	0	1767	0	0	1568	0	0	1389	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.1	0.0	0.0	1.9	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.24	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	697	0	0	738	0	0	707	0	0	625	0	0
V/C Ratio(X)	0.35	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1693	0	0	1803	0	0	1527	0	0	1350	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.6	0.0	0.0	6.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		245			173			132			49	
Approach Delay, s/veh		7.4			6.8			6.7			6.4	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		13.9		13.8		13.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.1		2.6		3.9				
Green Ext Time (p_c), s		0.7		1.5		0.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	234	5	3	206	1	1
Future Vol, veh/h	234	5	3	206	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	5	3	224	1	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	259	0	375	130
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	118	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1303	-	599	896
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1303	-	597	896
Mov Cap-2 Maneuver	-	-	-	-	597	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	891	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	717	-	-	1303	-
HCM Lane V/C Ratio	0.003	-	-	0.003	-
HCM Control Delay (s)	10	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	769	107	87	1642	14
Future Volume (vph)	25	53	396	154	29	28	257	769	107	87	1642	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3493		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3493		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	827	115	94	1766	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	935	0	94	1780	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1967		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.15	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.6		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.12	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	75.2	
Delay (s)		59.3	46.6	56.2	53.5		52.4	14.0		55.4	109.2	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			22.7			106.5	
Approach LOS		D			D			C			F	

Intersection Summary

HCM 2000 Control Delay	69.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	29	1005	52	0	2237
Future Volume (vph)	57	29	1005	52	0	2237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1514	3507			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1514	3507			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	31	1058	55	0	2355
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	60	2	1111	0	0	2355
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.3	8.3	102.7			102.7
Effective Green, g (s)	8.3	8.3	102.7			102.7
Actuated g/C Ratio	0.07	0.07	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	120	104	3001			3058
v/s Ratio Prot	c0.03		0.32			c0.66
v/s Ratio Perm		0.00				
v/c Ratio	0.50	0.02	0.37			0.77
Uniform Delay, d1	53.8	52.1	1.8			3.7
Progression Factor	1.00	1.00	0.19			1.12
Incremental Delay, d2	3.3	0.1	0.3			0.2
Delay (s)	57.1	52.1	0.7			4.3
Level of Service	E	D	A			A
Approach Delay (s)	55.4		0.7			4.3
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (veh/h)	57	29	1005	52	0	2237	
Future Volume (veh/h)	57	29	1005	52	0	2237	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No		No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	0	1885	
Adj Flow Rate, veh/h	60	31	1058	55	0	2355	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	4	4	2	2	0	1	
Cap, veh/h	86	77	3006	156	0	3137	
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.88	
Sat Flow, veh/h	1753	1560	3525	178	0	3770	
Grp Volume(v), veh/h	60	31	548	565	0	2355	
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1833	0	1791	
Q Serve(g_s), s	4.0	2.3	0.0	0.0	0.0	28.6	
Cycle Q Clear(g_c), s	4.0	2.3	0.0	0.0	0.0	28.6	
Prop In Lane	1.00	1.00		0.10	0.00		
Lane Grp Cap(c), veh/h	86	77	1556	1606	0	3137	
V/C Ratio(X)	0.70	0.40	0.35	0.35	0.00	0.75	
Avail Cap(c_a), veh/h	263	234	1556	1606	0	3137	
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00	
Upstream Filter(I)	1.00	1.00	0.87	0.87	0.00	0.09	
Uniform Delay (d), s/veh	56.2	55.3	0.0	0.0	0.0	2.7	
Incr Delay (d2), s/veh	9.7	3.4	0.5	0.5	0.0	0.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.0	1.0	0.2	0.2	0.0	4.4	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	65.8	58.7	0.5	0.5	0.0	2.9	
LnGrp LOS	E	E	A	A	A	A	
Approach Vol, veh/h	91		1113			2355	
Approach Delay, s/veh	63.4		0.5			2.9	
Approach LOS	E		A			A	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		109.6				109.6	10.4
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		93.0				93.0	18.0
Max Q Clear Time (g_c+I1), s		2.0				30.6	6.0
Green Ext Time (p_c), s		10.1				43.7	0.2

Intersection Summary		
HCM 6th Ctrl Delay		3.7
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	0	150	0	67	0	1012	121	104	2171	0
Future Volume (vph)	1	1	0	150	0	67	0	1012	121	104	2171	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.98		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3443		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.18	1.00	
Satd. Flow (perm)		1850		1357		1528		3443		341	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	158	0	71	0	1065	127	109	2285	0
RTOR Reduction (vph)	0	0	0	0	0	61	0	7	0	0	0	0
Lane Group Flow (vph)	0	2	0	158	0	10	0	1185	0	109	2285	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		17.7		17.7		17.7		82.1		93.3	93.3	
Effective Green, g (s)		17.7		17.7		17.7		82.1		93.3	93.3	
Actuated g/C Ratio		0.15		0.15		0.15		0.68		0.78	0.78	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		272		200		225		2355		345	2778	
v/s Ratio Prot								0.34		0.02	c0.64	
v/s Ratio Perm		0.00		c0.12		0.01				0.23		
v/c Ratio		0.01		0.79		0.05		0.50		0.32	0.82	
Uniform Delay, d1		43.7		49.4		43.9		9.1		5.4	8.2	
Progression Factor		1.00		1.00		1.00		1.00		1.28	0.84	
Incremental Delay, d2		0.0		18.8		0.1		0.8		0.3	1.9	
Delay (s)		43.7		68.2		44.0		9.9		7.3	8.8	
Level of Service		D		E		D		A		A	A	
Approach Delay (s)		43.7			60.7			9.9			8.7	
Approach LOS		D			E			A			A	

Intersection Summary

HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	39	158	44	17	154	22	37	32	17	31	30	38
Future Vol, veh/h	39	158	44	17	154	22	37	32	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	42	170	47	18	166	24	40	34	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	10.1	9.8	9.1	9
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	43%	20%	0%	9%	31%
Vol Thru, %	37%	80%	0%	80%	30%
Vol Right, %	20%	0%	100%	11%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	86	197	44	193	99
LT Vol	37	39	0	17	31
Through Vol	32	158	0	154	30
RT Vol	17	0	44	22	38
Lane Flow Rate	92	212	47	208	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.133	0.316	0.06	0.28	0.149
Departure Headway (Hd)	5.181	5.377	4.573	4.861	5.044
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	687	665	778	735	706
Service Time	3.251	3.137	2.332	2.923	3.112
HCM Lane V/C Ratio	0.134	0.319	0.06	0.283	0.15
HCM Control Delay	9.1	10.6	7.6	9.8	9
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.5	1.4	0.2	1.1	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	19	109	49	10	114	26	37	27	9	13	36	29
Future Volume (vph)	19	109	49	10	114	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.98			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1688			1804			1778			1583	
Flt Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1611			1750			1462			1491	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	116	52	11	121	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	16	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	160	0	0	144	0	0	71	0	0	61	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5			6.6			6.6	
Effective Green, g (s)		7.5			7.5			6.6			6.6	
Actuated g/C Ratio		0.32			0.32			0.29			0.29	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		523			568			417			426	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.08			c0.05			0.04	
v/c Ratio		0.31			0.25			0.17			0.14	
Uniform Delay, d1		5.8			5.7			6.2			6.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.2			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	23.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	19	109	49	10	114	26	37	27	9	13	36	29
Future Volume (veh/h)	19	109	49	10	114	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	116	52	11	121	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	203	283	117	187	361	80	432	274	68	225	290	195
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	95	1096	455	59	1400	310	562	808	202	108	854	573
Grp Volume(v), veh/h	188	0	0	160	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1645	0	0	1769	0	0	1572	0	0	1535	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.6	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.11		0.28	0.07		0.17	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	603	0	0	628	0	0	775	0	0	709	0	0
V/C Ratio(X)	0.31	0.00	0.00	0.25	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2166	0	0	2318	0	0	1836	0	0	1763	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		188			160			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.2	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.3		12.1		10.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.6				
Green Ext Time (p_c), s		0.4		1.1		0.4		0.9				
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	238	1	1	229	5	3
Future Vol, veh/h	238	1	1	229	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	259	1	1	249	5	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	260	0	387	130
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1302	-	589	896
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	885	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1302	-	588	896
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	1302	-
HCM Lane V/C Ratio	0.013	-	-	0.001	-
HCM Control Delay (s)	10.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Future Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3498		1736	3461	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3498		1736	3461	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	74	185	84	58	25	340	1528	103	98	624	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1627	0	98	635	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1950		175	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.47		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.83		0.56	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	22.0		51.4	24.2	
Progression Factor		1.00	1.00	1.00	1.00		1.10	0.92		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.4	3.4		4.1	0.2	
Delay (s)		55.0	28.2	54.4	55.1		58.4	23.7		55.5	24.4	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.7			28.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	19	1850	58	0	843
Future Volume (vph)	43	19	1850	58	0	843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	45	20	1927	60	0	878
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	45	1	1986	0	0	878
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	7.6	7.6	103.4			103.4
Effective Green, g (s)	7.6	7.6	103.4			103.4
Actuated g/C Ratio	0.06	0.06	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	104	92	3033			2990
v/s Ratio Prot	c0.03		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.43	0.01	0.65			0.29
Uniform Delay, d1	54.1	52.7	2.6			1.5
Progression Factor	1.00	1.00	0.71			0.62
Incremental Delay, d2	2.9	0.1	0.6			0.2
Delay (s)	57.0	52.7	2.5			1.2
Level of Service	E	D	A			A
Approach Delay (s)	55.7		2.5			1.2
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	3.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	19	1850	58	0	843
Future Volume (veh/h)	43	19	1850	58	0	843
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	45	20	1927	60	0	878
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	65	58	3118	97	0	3099
Arrive On Green	0.04	0.04	1.00	1.00	0.00	0.89
Sat Flow, veh/h	1682	1497	3612	109	0	3681
Grp Volume(v), veh/h	45	20	968	1019	0	878
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1851	0	1749
Q Serve(g_s), s	3.2	1.6	0.0	0.0	0.0	4.6
Cycle Q Clear(g_c), s	3.2	1.6	0.0	0.0	0.0	4.6
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	65	58	1574	1640	0	3099
V/C Ratio(X)	0.69	0.34	0.61	0.62	0.00	0.28
Avail Cap(c_a), veh/h	262	233	1574	1640	0	3099
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.47	0.47	0.00	0.92
Uniform Delay (d), s/veh	56.9	56.2	0.0	0.0	0.0	1.0
Incr Delay (d2), s/veh	12.0	3.5	0.9	0.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.7	0.4	0.4	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.0	59.6	0.9	0.8	0.0	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	65		1987			878
Approach Delay, s/veh	66.1		0.8			1.3
Approach LOS	E		A			A

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		110.8				110.8	9.2
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		92.3				92.3	18.7
Max Q Clear Time (g_c+I1), s		2.0				6.6	5.2
Green Ext Time (p_c), s		37.3				8.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	2.4
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	117	0	111	0	1823	146	97	774	0
Future Volume (vph)	2	2	0	117	0	111	0	1823	146	97	774	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.05	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		82	3438	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	2	0	122	0	116	0	1899	152	101	806	0
RTOR Reduction (vph)	0	0	0	0	0	101	0	5	0	0	0	0
Lane Group Flow (vph)	0	4	0	122	0	15	0	2046	0	101	806	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		15.2		15.2		15.2		83.9		95.8	95.8	
Effective Green, g (s)		15.2		15.2		15.2		83.9		95.8	95.8	
Actuated g/C Ratio		0.13		0.13		0.13		0.70		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		133		166		187		2444		166	2744	
v/s Ratio Prot								c0.59		c0.04	0.23	
v/s Ratio Perm		0.00		c0.09		0.01				0.45		
v/c Ratio		0.03		0.73		0.08		0.84		0.61	0.29	
Uniform Delay, d1		45.9		50.5		46.2		13.1		28.6	3.2	
Progression Factor		1.00		1.00		1.00		1.00		1.47	0.61	
Incremental Delay, d2		0.1		15.5		0.2		3.6		6.0	0.3	
Delay (s)		46.0		65.9		46.4		16.7		48.0	2.2	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.0			56.4			16.7			7.3	
Approach LOS		D			E			B			A	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	35	180	34	13	165	20	24	24	10	8	12	23
Future Vol, veh/h	35	180	34	13	165	20	24	24	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	40	205	39	15	188	23	27	27	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	10.3	9.7	8.9	8.4
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	41%	16%	0%	7%	19%
Vol Thru, %	41%	84%	0%	83%	28%
Vol Right, %	17%	0%	100%	10%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	215	34	198	43
LT Vol	24	35	0	13	8
Through Vol	24	180	0	165	12
RT Vol	10	0	34	20	23
Lane Flow Rate	66	244	39	225	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.096	0.354	0.048	0.293	0.068
Departure Headway (Hd)	5.255	5.213	4.427	4.685	5.021
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	680	689	807	765	710
Service Time	3.306	2.948	2.162	2.721	3.076
HCM Lane V/C Ratio	0.097	0.354	0.048	0.294	0.069
HCM Control Delay	8.9	10.8	7.4	9.7	8.4
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	1.6	0.2	1.2	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.98			0.97			0.95	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1687			1795			1708			1452	
Flt Permitted		0.97			0.97			0.86			0.91	
Satd. Flow (perm)		1640			1738			1491			1339	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	18	181	58	12	140	23	51	55	26	11	20	18
RTOR Reduction (vph)	0	20	0	0	10	0	0	18	0	0	13	0
Lane Group Flow (vph)	0	237	0	0	165	0	0	114	0	0	36	0
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9			7.4			7.4	
Effective Green, g (s)		8.9			8.9			7.4			7.4	
Actuated g/C Ratio		0.35			0.35			0.29			0.29	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		576			611			436			391	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.09			c0.08			0.03	
v/c Ratio		0.41			0.27			0.26			0.09	
Uniform Delay, d1		6.2			5.9			6.9			6.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.2			0.3			0.1	
Delay (s)		6.7			6.1			7.2			6.6	
Level of Service		A			A			A			A	
Approach Delay (s)		6.7			6.1			7.2			6.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	25.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	181	58	12	140	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	155	423	128	153	512	80	312	287	103	206	245	170
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	49	1230	373	45	1490	232	399	860	309	143	735	510
Grp Volume(v), veh/h	257	0	0	175	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1652	0	0	1768	0	0	1568	0	0	1388	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.23	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	706	0	0	745	0	0	702	0	0	621	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1685	0	0	1787	0	0	1513	0	0	1338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.8	0.0	0.0	6.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			175			132			49	
Approach Delay, s/veh		7.4			6.8			6.8			6.5	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		14.1		13.8		14.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.3		2.6		4.0				
Green Ext Time (p_c), s		0.7		1.6		0.2		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	7.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	233	14	6	206	33	16
Future Vol, veh/h	233	14	6	206	33	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	15	7	224	36	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	268	0	387	134
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	126	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1293	-	589	890
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	585	890
Mov Cap-2 Maneuver	-	-	-	-	585	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	881	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	659	-	-	1293	-
HCM Lane V/C Ratio	0.081	-	-	0.005	-
HCM Control Delay (s)	10.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Future Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3494		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3494		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	841	115	94	1788	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	949	0	94	1802	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1968		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.16	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.7		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.15	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	81.1	
Delay (s)		59.3	46.6	56.2	53.5		53.5	14.2		55.4	115.1	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			23.0			112.1	
Approach LOS		D			D			C			F	

Intersection Summary

HCM 2000 Control Delay	72.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	29	1018	52	0	2258
Future Volume (vph)	57	29	1018	52	0	2258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1514	3508			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1514	3508			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	31	1072	55	0	2377
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	60	2	1125	0	0	2377
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.3	8.3	102.7			102.7
Effective Green, g (s)	8.3	8.3	102.7			102.7
Actuated g/C Ratio	0.07	0.07	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	120	104	3002			3058
v/s Ratio Prot	c0.03		0.32			c0.67
v/s Ratio Perm		0.00				
v/c Ratio	0.50	0.02	0.37			0.78
Uniform Delay, d1	53.8	52.1	1.8			3.7
Progression Factor	1.00	1.00	0.19			1.16
Incremental Delay, d2	3.3	0.1	0.3			0.2
Delay (s)	57.1	52.1	0.7			4.5
Level of Service	E	D	A			A
Approach Delay (s)	55.4		0.7			4.5
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	29	1018	52	0	2258
Future Volume (veh/h)	57	29	1018	52	0	2258
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	60	31	1072	55	0	2377
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	86	77	3008	154	0	3137
Arrive On Green	0.05	0.05	0.88	0.88	0.00	0.88
Sat Flow, veh/h	1753	1560	3528	176	0	3770
Grp Volume(v), veh/h	60	31	554	573	0	2377
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1834	0	1791
Q Serve(g_s), s	4.0	2.3	6.8	6.8	0.0	29.4
Cycle Q Clear(g_c), s	4.0	2.3	6.8	6.8	0.0	29.4
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	86	77	1556	1606	0	3137
V/C Ratio(X)	0.70	0.40	0.36	0.36	0.00	0.76
Avail Cap(c_a), veh/h	263	234	1556	1606	0	3137
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	0.00	0.09
Uniform Delay (d), s/veh	56.2	55.3	1.3	1.3	0.0	2.7
Incr Delay (d2), s/veh	9.7	3.4	0.5	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.0	1.2	1.3	0.0	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	65.8	58.7	1.9	1.9	0.0	2.9
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	91		1127			2377
Approach Delay, s/veh	63.4		1.9			2.9
Approach LOS	E		A			A

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		109.6				109.6	10.4
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		93.0				93.0	18.0
Max Q Clear Time (g_c+I1), s		8.8				31.4	6.0
Green Ext Time (p_c), s		10.3				43.9	0.2

Intersection Summary							
HCM 6th Ctrl Delay			4.1				
HCM 6th LOS			A				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	0	160	0	80	0	1012	137	125	2171	0
Future Volume (vph)	1	1	0	160	0	80	0	1012	137	125	2171	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.98		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3436		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.17	1.00	
Satd. Flow (perm)		1850		1357		1528		3436		325	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	168	0	84	0	1065	144	132	2285	0
RTOR Reduction (vph)	0	0	0	0	0	71	0	8	0	0	0	0
Lane Group Flow (vph)	0	2	0	168	0	13	0	1201	0	132	2285	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		18.6		18.6		18.6		80.2		92.4	92.4	
Effective Green, g (s)		18.6		18.6		18.6		80.2		92.4	92.4	
Actuated g/C Ratio		0.16		0.16		0.16		0.67		0.77	0.77	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		286		210		236		2296		344	2751	
v/s Ratio Prot								0.35		0.02	c0.64	
v/s Ratio Perm		0.00		c0.12		0.01				0.27		
v/c Ratio		0.01		0.80		0.06		0.52		0.38	0.83	
Uniform Delay, d1		42.9		48.9		43.2		10.1		6.3	8.8	
Progression Factor		1.00		1.00		1.00		1.00		1.34	0.93	
Incremental Delay, d2		0.0		19.2		0.1		0.9		0.5	2.0	
Delay (s)		42.9		68.1		43.3		11.0		8.8	10.2	
Level of Service		D		E		D		B		A	B	
Approach Delay (s)		42.9			59.8			11.0			10.1	
Approach LOS		D			E			B			B	

Intersection Summary

HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	39	164	47	17	165	22	43	32	17	31	30	38
Future Vol, veh/h	39	164	47	17	165	22	43	32	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	42	176	51	18	177	24	46	34	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	10.2	10.1	9.2	9.1
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	47%	19%	0%	8%	31%
Vol Thru, %	35%	81%	0%	81%	30%
Vol Right, %	18%	0%	100%	11%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	203	47	204	99
LT Vol	43	39	0	17	31
Through Vol	32	164	0	165	30
RT Vol	17	0	47	22	38
Lane Flow Rate	99	218	51	219	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.144	0.328	0.065	0.298	0.151
Departure Headway (Hd)	5.249	5.409	4.607	4.898	5.107
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	677	661	771	728	696
Service Time	3.329	3.175	2.372	2.967	3.186
HCM Lane V/C Ratio	0.146	0.33	0.066	0.301	0.152
HCM Control Delay	9.2	10.8	7.7	10.1	9.1
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	1.4	0.2	1.2	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.98			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1691			1808			1778			1582	
Flt Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1614			1757			1462			1491	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	122	52	11	133	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	15	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	166	0	0	157	0	0	71	0	0	61	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			6.6			6.6	
Effective Green, g (s)		7.6			7.6			6.6			6.6	
Actuated g/C Ratio		0.33			0.33			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		528			575			415			424	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.09			c0.05			0.04	
v/c Ratio		0.32			0.27			0.17			0.14	
Uniform Delay, d1		5.8			5.8			6.2			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	23.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	122	52	11	133	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	200	292	116	185	374	76	430	273	68	224	289	194
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	91	1116	442	54	1432	289	563	808	201	108	854	573
Grp Volume(v), veh/h	194	0	0	172	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	0	1776	0	0	1572	0	0	1535	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.10		0.27	0.06		0.16	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	608	0	0	635	0	0	772	0	0	706	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.27	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2158	0	0	2314	0	0	1825	0	0	1753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		194			172			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.4		12.1		10.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.7				
Green Ext Time (p_c), s		0.4		1.2		0.4		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	236	40	19	227	30	14
Future Vol, veh/h	236	40	19	227	30	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	257	43	21	247	33	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	445	150
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	166	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1258	-	542	870
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1258	-	532	870
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	830	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	607	-	-	1258	-
HCM Lane V/C Ratio	0.079	-	-	0.016	-
HCM Control Delay (s)	11.4	-	-	7.9	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Future Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3498		1736	3461	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3498		1736	3461	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	74	185	84	58	25	340	1528	103	98	624	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1627	0	98	635	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1950		175	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.47		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.83		0.56	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	22.0		51.4	24.2	
Progression Factor		1.00	1.00	1.00	1.00		1.12	0.91		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.3	3.4		4.1	0.2	
Delay (s)		55.0	28.2	54.4	55.1		59.2	23.5		55.5	24.4	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.6			28.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	19	1850	58	0	843
Future Volume (vph)	57	19	1850	58	0	843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	59	20	1927	60	0	878
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	59	1	1986	0	0	878
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.5	8.5	102.5			102.5
Effective Green, g (s)	8.5	8.5	102.5			102.5
Actuated g/C Ratio	0.07	0.07	0.85			0.85
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	117	103	3006			2964
v/s Ratio Prot	c0.04		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.50	0.01	0.66			0.30
Uniform Delay, d1	53.7	51.9	2.9			1.7
Progression Factor	1.00	1.00	0.59			0.60
Incremental Delay, d2	3.4	0.1	0.7			0.2
Delay (s)	57.1	51.9	2.4			1.3
Level of Service	E	D	A			A
Approach Delay (s)	55.8		2.4			1.3
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	57	19	1850	58	0	843		
Future Volume (veh/h)	57	19	1850	58	0	843		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841		
Adj Flow Rate, veh/h	59	20	1927	60	0	878		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	9	9	2	2	0	4		
Cap, veh/h	82	73	3084	96	0	3065		
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.88		
Sat Flow, veh/h	1682	1497	3612	109	0	3681		
Grp Volume(v), veh/h	59	20	968	1019	0	878		
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1851	0	1749		
Q Serve(g_s), s	4.1	1.5	0.0	0.0	0.0	5.0		
Cycle Q Clear(g_c), s	4.1	1.5	0.0	0.0	0.0	5.0		
Prop In Lane	1.00	1.00		0.06	0.00			
Lane Grp Cap(c), veh/h	82	73	1557	1622	0	3065		
V/C Ratio(X)	0.72	0.28	0.62	0.63	0.00	0.29		
Avail Cap(c_a), veh/h	262	233	1557	1622	0	3065		
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.48	0.48	0.00	0.92		
Uniform Delay (d), s/veh	56.3	55.1	0.0	0.0	0.0	1.2		
Incr Delay (d2), s/veh	11.3	2.0	0.9	0.9	0.0	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.0	0.6	0.4	0.4	0.0	0.8		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	67.6	57.1	0.9	0.9	0.0	1.4		
LnGrp LOS	E	E	A	A	A	A		
Approach Vol, veh/h	79		1987			878		
Approach Delay, s/veh	65.0		0.9			1.4		
Approach LOS	E		A			A		
Timer - Assigned Phs		2				6	8	
Phs Duration (G+Y+Rc), s		109.7				109.7	10.3	
Change Period (Y+Rc), s		4.5				4.5	4.5	
Max Green Setting (Gmax), s		92.3				92.3	18.7	
Max Q Clear Time (g_c+I1), s		2.0				7.0	6.1	
Green Ext Time (p_c), s		37.3				8.0	0.1	
Intersection Summary								
HCM 6th Ctrl Delay			2.8					
HCM 6th LOS			A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	103	0	92	0	1823	146	97	788	0
Future Volume (vph)	2	2	0	103	0	92	0	1823	146	97	788	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.04	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		81	3438	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	2	0	107	0	96	0	1899	152	101	821	0
RTOR Reduction (vph)	0	0	0	0	0	84	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	107	0	12	0	2047	0	101	821	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		14.4		14.4		14.4		84.6		96.6	96.6	
Effective Green, g (s)		14.4		14.4		14.4		84.6		96.6	96.6	
Actuated g/C Ratio		0.12		0.12		0.12		0.70		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		126		157		177		2464		167	2767	
v/s Ratio Prot								c0.59		c0.04	0.24	
v/s Ratio Perm		0.00		c0.08		0.01				0.45		
v/c Ratio		0.03		0.68		0.07		0.83		0.60	0.30	
Uniform Delay, d1		46.6		50.6		46.8		12.6		28.4	3.0	
Progression Factor		1.00		1.00		1.00		1.00		1.44	0.57	
Incremental Delay, d2		0.1		11.5		0.2		3.4		5.9	0.3	
Delay (s)		46.7		62.1		47.0		16.0		46.8	2.0	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.7			55.0			16.0			6.9	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	68	180	34	12	165	20	24	24	10	8	12	23
Future Vol, veh/h	68	180	34	12	165	20	24	24	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	77	205	39	14	188	23	27	27	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	11.2	9.8	9	8.6
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	41%	27%	0%	6%	19%
Vol Thru, %	41%	73%	0%	84%	28%
Vol Right, %	17%	0%	100%	10%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	248	34	197	43
LT Vol	24	68	0	12	8
Through Vol	24	180	0	165	12
RT Vol	10	0	34	20	23
Lane Flow Rate	66	282	39	224	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.098	0.413	0.048	0.294	0.07
Departure Headway (Hd)	5.353	5.271	4.43	4.734	5.121
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	666	682	806	757	695
Service Time	3.412	3.013	2.171	2.779	3.182
HCM Lane V/C Ratio	0.099	0.413	0.048	0.296	0.071
HCM Control Delay	9	11.7	7.4	9.8	8.6
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	2	0.2	1.2	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.98			0.97			0.95	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1687			1795			1708			1452	
Flt Permitted		0.97			0.97			0.86			0.91	
Satd. Flow (perm)		1640			1738			1491			1339	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	18	181	58	12	140	23	51	55	26	11	20	18
RTOR Reduction (vph)	0	20	0	0	10	0	0	18	0	0	13	0
Lane Group Flow (vph)	0	237	0	0	165	0	0	114	0	0	36	0
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9			7.4			7.4	
Effective Green, g (s)		8.9			8.9			7.4			7.4	
Actuated g/C Ratio		0.35			0.35			0.29			0.29	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		576			611			436			391	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.09			c0.08			0.03	
v/c Ratio		0.41			0.27			0.26			0.09	
Uniform Delay, d1		6.2			5.9			6.9			6.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.2			0.3			0.1	
Delay (s)		6.7			6.1			7.2			6.6	
Level of Service		A			A			A			A	
Approach Delay (s)		6.7			6.1			7.2			6.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	25.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	181	58	12	140	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	155	423	128	153	512	80	312	287	103	206	245	170
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	49	1230	373	45	1490	232	399	860	309	143	735	510
Grp Volume(v), veh/h	257	0	0	175	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1652	0	0	1768	0	0	1568	0	0	1388	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.23	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	706	0	0	745	0	0	702	0	0	621	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1685	0	0	1787	0	0	1513	0	0	1338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.8	0.0	0.0	6.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			175			132			49	
Approach Delay, s/veh		7.4			6.8			6.8			6.5	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		14.1		13.8		14.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.3		2.6		4.0				
Green Ext Time (p_c), s		0.7		1.6		0.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	233	14	6	206	0	49
Future Vol, veh/h	233	14	6	206	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	15	7	224	0	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	268	0	-	134
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	1293	-	0	890
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	-	890
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	890	-	-	1293	-
HCM Lane V/C Ratio	0.06	-	-	0.005	-
HCM Control Delay (s)	9.3	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Future Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3494		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3494		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	841	115	94	1788	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	949	0	94	1802	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1968		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.16	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.7		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.14	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	81.1	
Delay (s)		59.3	46.6	56.2	53.5		53.2	14.2		55.4	115.1	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			23.0			112.1	
Approach LOS		D			D			C			F	

Intersection Summary

HCM 2000 Control Delay	72.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	29	1018	52	0	2258
Future Volume (vph)	69	29	1018	52	0	2258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1515	3508			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1515	3508			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	73	31	1072	55	0	2377
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	73	2	1125	0	0	2377
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	9.1	9.1	101.9			101.9
Effective Green, g (s)	9.1	9.1	101.9			101.9
Actuated g/C Ratio	0.08	0.08	0.85			0.85
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	131	114	2978			3034
v/s Ratio Prot	c0.04		0.32			c0.67
v/s Ratio Perm		0.00				
v/c Ratio	0.56	0.02	0.38			0.78
Uniform Delay, d1	53.5	51.3	2.0			4.1
Progression Factor	1.00	1.00	0.15			1.06
Incremental Delay, d2	5.1	0.1	0.3			0.2
Delay (s)	58.6	51.4	0.6			4.5
Level of Service	E	D	A			A
Approach Delay (s)	56.4		0.6			4.5
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	69	29	1018	52	0	2258		
Future Volume (veh/h)	69	29	1018	52	0	2258		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	0	1885		
Adj Flow Rate, veh/h	73	31	1072	55	0	2377		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	4	4	2	2	0	1		
Cap, veh/h	100	89	2980	153	0	3108		
Arrive On Green	0.06	0.06	1.00	1.00	0.00	0.87		
Sat Flow, veh/h	1753	1560	3528	176	0	3770		
Grp Volume(v), veh/h	73	31	554	573	0	2377		
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1834	0	1791		
Q Serve(g_s), s	4.9	2.3	0.0	0.0	0.0	31.3		
Cycle Q Clear(g_c), s	4.9	2.3	0.0	0.0	0.0	31.3		
Prop In Lane	1.00	1.00		0.10	0.00			
Lane Grp Cap(c), veh/h	100	89	1542	1591	0	3108		
V/C Ratio(X)	0.73	0.35	0.36	0.36	0.00	0.76		
Avail Cap(c_a), veh/h	263	234	1542	1591	0	3108		
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.86	0.86	0.00	0.09		
Uniform Delay (d), s/veh	55.6	54.4	0.0	0.0	0.0	3.1		
Incr Delay (d2), s/veh	9.6	2.3	0.6	0.5	0.0	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.5	1.0	0.2	0.2	0.0	5.5		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	65.2	56.7	0.6	0.5	0.0	3.3		
LnGrp LOS	E	E	A	A	A	A		
Approach Vol, veh/h	104		1127			2377		
Approach Delay, s/veh	62.7		0.6			3.3		
Approach LOS	E		A			A		
Timer - Assigned Phs		2				6	8	
Phs Duration (G+Y+Rc), s		108.6				108.6	11.4	
Change Period (Y+Rc), s		4.5				4.5	4.5	
Max Green Setting (Gmax), s		93.0				93.0	18.0	
Max Q Clear Time (g_c+I1), s		2.0				33.3	6.9	
Green Ext Time (p_c), s		10.3				43.0	0.2	
Intersection Summary								
HCM 6th Ctrl Delay			4.1					
HCM 6th LOS			A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	0	148	0	64	0	1012	137	125	2183	0
Future Volume (vph)	1	1	0	148	0	64	0	1012	137	125	2183	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.98		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3436		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.18	1.00	
Satd. Flow (perm)		1850		1357		1528		3436		330	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	156	0	67	0	1065	144	132	2298	0
RTOR Reduction (vph)	0	0	0	0	0	57	0	8	0	0	0	0
Lane Group Flow (vph)	0	2	0	156	0	10	0	1201	0	132	2298	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		17.6		17.6		17.6		81.3		93.4	93.4	
Effective Green, g (s)		17.6		17.6		17.6		81.3		93.4	93.4	
Actuated g/C Ratio		0.15		0.15		0.15		0.68		0.78	0.78	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		271		199		224		2327		349	2781	
v/s Ratio Prot								0.35		0.02	c0.64	
v/s Ratio Perm		0.00		c0.11		0.01				0.27		
v/c Ratio		0.01		0.78		0.04		0.52		0.38	0.83	
Uniform Delay, d1		43.7		49.4		44.0		9.6		5.9	8.3	
Progression Factor		1.00		1.00		1.00		1.00		1.33	0.92	
Incremental Delay, d2		0.0		18.0		0.1		0.8		0.4	1.9	
Delay (s)		43.7		67.4		44.1		10.4		8.2	9.5	
Level of Service		D		E		D		B		A	A	
Approach Delay (s)		43.7			60.4			10.4			9.4	
Approach LOS		D			E			B			A	

Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	67	164	47	17	165	22	43	32	17	31	30	38
Future Vol, veh/h	67	164	47	17	165	22	43	32	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	72	176	51	18	177	24	46	34	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	10.9	10.2	9.4	9.2
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	47%	29%	0%	8%	31%
Vol Thru, %	35%	71%	0%	81%	30%
Vol Right, %	18%	0%	100%	11%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	231	47	204	99
LT Vol	43	67	0	17	31
Through Vol	32	164	0	165	30
RT Vol	17	0	47	22	38
Lane Flow Rate	99	248	51	219	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.147	0.377	0.065	0.302	0.154
Departure Headway (Hd)	5.337	5.468	4.617	4.949	5.195
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	665	653	769	719	683
Service Time	3.425	3.24	2.388	3.024	3.281
HCM Lane V/C Ratio	0.149	0.38	0.066	0.305	0.155
HCM Control Delay	9.4	11.6	7.7	10.2	9.2
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	1.8	0.2	1.3	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.98			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1691			1808			1778			1582	
Flt Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1614			1757			1462			1491	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	122	52	11	133	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	15	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	166	0	0	157	0	0	71	0	0	61	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			6.6			6.6	
Effective Green, g (s)		7.6			7.6			6.6			6.6	
Actuated g/C Ratio		0.33			0.33			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		528			575			415			424	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.09			c0.05			0.04	
v/c Ratio		0.32			0.27			0.17			0.14	
Uniform Delay, d1		5.8			5.8			6.2			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	23.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	122	52	11	133	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	200	292	116	185	374	76	430	273	68	224	289	194
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	91	1116	442	54	1432	289	563	808	201	108	854	573
Grp Volume(v), veh/h	194	0	0	172	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	0	1776	0	0	1572	0	0	1535	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.10		0.27	0.06		0.16	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	608	0	0	635	0	0	772	0	0	706	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.27	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2158	0	0	2314	0	0	1825	0	0	1753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		194			172			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.4		12.1		10.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.7				
Green Ext Time (p_c), s		0.4		1.2		0.4		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	234	42	17	229	0	44
Future Vol, veh/h	234	42	17	229	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	46	18	249	0	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	-	150
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	1258	-	0	870
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1258	-	-	870
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	870	-	-	1258	-
HCM Lane V/C Ratio	0.055	-	-	0.015	-
HCM Control Delay (s)	9.4	-	-	7.9	0.1
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Future Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3498		1736	3461	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3498		1736	3461	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	74	185	84	58	25	340	1528	103	98	624	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1627	0	98	635	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1950		175	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.47		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.83		0.56	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	22.0		51.4	24.2	
Progression Factor		1.00	1.00	1.00	1.00		1.11	0.91		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.3	3.4		4.1	0.2	
Delay (s)		55.0	28.2	54.4	55.1		59.1	23.5		55.5	24.4	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.6			28.5	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	19	1850	58	0	843
Future Volume (vph)	63	19	1850	58	0	843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	20	1927	60	0	878
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	66	1	1986	0	0	878
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.9	8.9	102.1			102.1
Effective Green, g (s)	8.9	8.9	102.1			102.1
Actuated g/C Ratio	0.07	0.07	0.85			0.85
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	122	107	2994			2953
v/s Ratio Prot	c0.04		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.54	0.01	0.66			0.30
Uniform Delay, d1	53.6	51.5	3.1			1.8
Progression Factor	1.00	1.00	0.57			0.59
Incremental Delay, d2	4.8	0.1	0.7			0.2
Delay (s)	58.4	51.5	2.4			1.3
Level of Service	E	D	A			A
Approach Delay (s)	56.8		2.4			1.3
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	63	19	1850	58	0	843		
Future Volume (veh/h)	63	19	1850	58	0	843		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841		
Adj Flow Rate, veh/h	66	20	1927	60	0	878		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	9	9	2	2	0	4		
Cap, veh/h	90	80	3067	95	0	3049		
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.87		
Sat Flow, veh/h	1682	1497	3612	109	0	3681		
Grp Volume(v), veh/h	66	20	968	1019	0	878		
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1851	0	1749		
Q Serve(g_s), s	4.6	1.5	0.0	0.0	0.0	5.2		
Cycle Q Clear(g_c), s	4.6	1.5	0.0	0.0	0.0	5.2		
Prop In Lane	1.00	1.00		0.06	0.00			
Lane Grp Cap(c), veh/h	90	80	1549	1613	0	3049		
V/C Ratio(X)	0.74	0.25	0.62	0.63	0.00	0.29		
Avail Cap(c_a), veh/h	262	233	1549	1613	0	3049		
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.48	0.48	0.00	0.92		
Uniform Delay (d), s/veh	56.0	54.5	0.0	0.0	0.0	1.3		
Incr Delay (d2), s/veh	11.1	1.6	0.9	0.9	0.0	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.3	0.6	0.4	0.4	0.0	0.9		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	67.0	56.1	0.9	0.9	0.0	1.5		
LnGrp LOS	E	E	A	A	A	A		
Approach Vol, veh/h	86		1987			878		
Approach Delay, s/veh	64.5		0.9			1.5		
Approach LOS	E		A			A		
Timer - Assigned Phs		2				6	8	
Phs Duration (G+Y+Rc), s		109.1				109.1	10.9	
Change Period (Y+Rc), s		4.5				4.5	4.5	
Max Green Setting (Gmax), s		92.3				92.3	18.7	
Max Q Clear Time (g_c+I1), s		2.0				7.2	6.6	
Green Ext Time (p_c), s		37.3				8.0	0.1	
Intersection Summary								
HCM 6th Ctrl Delay			3.0					
HCM 6th LOS			A					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	103	0	92	0	1823	146	103	788	0
Future Volume (vph)	2	2	0	103	0	92	0	1823	146	103	788	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.04	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		81	3438	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	2	0	107	0	96	0	1899	152	107	821	0
RTOR Reduction (vph)	0	0	0	0	0	84	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	107	0	12	0	2047	0	107	821	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		14.4		14.4		14.4		84.4		96.6	96.6	
Effective Green, g (s)		14.4		14.4		14.4		84.4		96.6	96.6	
Actuated g/C Ratio		0.12		0.12		0.12		0.70		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		126		157		177		2458		170	2767	
v/s Ratio Prot								c0.59		c0.04	0.24	
v/s Ratio Perm		0.00		c0.08		0.01				0.46		
v/c Ratio		0.03		0.68		0.07		0.83		0.63	0.30	
Uniform Delay, d1		46.6		50.6		46.8		12.7		29.9	3.0	
Progression Factor		1.00		1.00		1.00		1.00		1.38	0.58	
Incremental Delay, d2		0.1		11.5		0.2		3.5		6.9	0.3	
Delay (s)		46.7		62.1		47.0		16.2		48.3	2.0	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.7			55.0			16.2			7.3	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	68	180	34	13	160	25	23	25	10	8	12	23
Future Vol, veh/h	68	180	34	13	160	25	23	25	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	77	205	39	15	182	28	26	28	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	11.2	9.7	9	8.6
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	40%	27%	0%	7%	19%
Vol Thru, %	43%	73%	0%	81%	28%
Vol Right, %	17%	0%	100%	13%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	248	34	198	43
LT Vol	23	68	0	13	8
Through Vol	25	180	0	160	12
RT Vol	10	0	34	25	23
Lane Flow Rate	66	282	39	225	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.098	0.413	0.048	0.295	0.07
Departure Headway (Hd)	5.351	5.272	4.43	4.72	5.123
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	666	682	806	758	695
Service Time	3.41	3.014	2.172	2.765	3.183
HCM Lane V/C Ratio	0.099	0.413	0.048	0.297	0.071
HCM Control Delay	9	11.7	7.4	9.7	8.6
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	2	0.2	1.2	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.97			0.98			0.97			0.95	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1687			1795			1708			1452	
Flt Permitted		0.97			0.97			0.86			0.91	
Satd. Flow (perm)		1640			1738			1491			1339	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	18	181	58	12	140	23	51	55	26	11	20	18
RTOR Reduction (vph)	0	20	0	0	10	0	0	18	0	0	13	0
Lane Group Flow (vph)	0	237	0	0	165	0	0	114	0	0	36	0
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9			7.4			7.4	
Effective Green, g (s)		8.9			8.9			7.4			7.4	
Actuated g/C Ratio		0.35			0.35			0.29			0.29	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		576			611			436			391	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.09			c0.08			0.03	
v/c Ratio		0.41			0.27			0.26			0.09	
Uniform Delay, d1		6.2			5.9			6.9			6.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.2			0.3			0.1	
Delay (s)		6.7			6.1			7.2			6.6	
Level of Service		A			A			A			A	
Approach Delay (s)		6.7			6.1			7.2			6.6	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	25.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	181	58	12	140	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	155	423	128	153	512	80	312	287	103	206	245	170
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	49	1230	373	45	1490	232	399	860	309	143	735	510
Grp Volume(v), veh/h	257	0	0	175	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1652	0	0	1768	0	0	1568	0	0	1388	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.23	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	706	0	0	745	0	0	702	0	0	621	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1685	0	0	1787	0	0	1513	0	0	1338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.8	0.0	0.0	6.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			175			132			49	
Approach Delay, s/veh		7.4			6.8			6.8			6.5	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		14.1		13.8		14.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.3		2.6		4.0				
Green Ext Time (p_c), s		0.7		1.6		0.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	233	20	0	206	0	49
Future Vol, veh/h	233	20	0	206	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	22	0	224	0	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	138
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	885
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	885
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	885	-	-	-
HCM Lane V/C Ratio	0.06	-	-	-
HCM Control Delay (s)	9.3	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Future Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3494		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3494		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	841	115	94	1788	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	949	0	94	1802	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1968		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.16	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.7		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.14	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	81.1	
Delay (s)		59.3	46.6	56.2	53.5		53.3	14.1		55.4	115.1	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			22.9			112.1	
Approach LOS		D			D			C			F	

Intersection Summary

HCM 2000 Control Delay	72.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	86	29	1018	52	0	2258
Future Volume (vph)	86	29	1018	52	0	2258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1516	3508			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1516	3508			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	31	1072	55	0	2377
RTOR Reduction (vph)	0	28	2	0	0	0
Lane Group Flow (vph)	91	3	1125	0	0	2377
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	11.6	11.6	99.4			99.4
Effective Green, g (s)	11.6	11.6	99.4			99.4
Actuated g/C Ratio	0.10	0.10	0.83			0.83
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	167	146	2905			2960
v/s Ratio Prot	c0.05		0.32			c0.67
v/s Ratio Perm		0.00				
v/c Ratio	0.54	0.02	0.39			0.80
Uniform Delay, d1	51.7	49.1	2.6			5.3
Progression Factor	1.00	1.00	0.17			0.96
Incremental Delay, d2	3.6	0.1	0.3			0.2
Delay (s)	55.3	49.1	0.8			5.3
Level of Service	E	D	A			A
Approach Delay (s)	53.7		0.8			5.3
Approach LOS	D		A			A

Intersection Summary

HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	86	29	1018	52	0	2258		
Future Volume (veh/h)	86	29	1018	52	0	2258		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	0	1885		
Adj Flow Rate, veh/h	91	31	1072	55	0	2377		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	4	4	2	2	0	1		
Cap, veh/h	120	106	2943	151	0	3069		
Arrive On Green	0.07	0.07	0.86	0.86	0.00	0.86		
Sat Flow, veh/h	1753	1560	3528	176	0	3770		
Grp Volume(v), veh/h	91	31	554	573	0	2377		
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1834	0	1791		
Q Serve(g_s), s	6.1	2.3	7.8	7.8	0.0	33.9		
Cycle Q Clear(g_c), s	6.1	2.3	7.8	7.8	0.0	33.9		
Prop In Lane	1.00	1.00		0.10	0.00			
Lane Grp Cap(c), veh/h	120	106	1522	1571	0	3069		
V/C Ratio(X)	0.76	0.29	0.36	0.36	0.00	0.77		
Avail Cap(c_a), veh/h	263	234	1522	1571	0	3069		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.85	0.85	0.00	0.09		
Uniform Delay (d), s/veh	55.0	53.2	1.8	1.8	0.0	3.7		
Incr Delay (d2), s/veh	9.5	1.5	0.6	0.6	0.0	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.0	0.9	1.8	1.8	0.0	6.7		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	64.5	54.7	2.4	2.3	0.0	3.8		
LnGrp LOS	E	D	A	A	A	A		
Approach Vol, veh/h	122		1127			2377		
Approach Delay, s/veh	62.0		2.4			3.8		
Approach LOS	E		A			A		
Timer - Assigned Phs		2				6	8	
Phs Duration (G+Y+Rc), s		107.3				107.3	12.7	
Change Period (Y+Rc), s		4.5				4.5	4.5	
Max Green Setting (Gmax), s		93.0				93.0	18.0	
Max Q Clear Time (g_c+I1), s		9.8				35.9	8.1	
Green Ext Time (p_c), s		10.3				41.6	0.2	

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	0	148	0	64	0	1012	137	142	2183	0
Future Volume (vph)	1	1	0	148	0	64	0	1012	137	142	2183	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.98		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3436		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.17	1.00	
Satd. Flow (perm)		1850		1357		1528		3436		328	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	1	0	156	0	67	0	1065	144	149	2298	0
RTOR Reduction (vph)	0	0	0	0	0	57	0	8	0	0	0	0
Lane Group Flow (vph)	0	2	0	156	0	10	0	1201	0	149	2298	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		17.6		17.6		17.6		80.9		93.4	93.4	
Effective Green, g (s)		17.6		17.6		17.6		80.9		93.4	93.4	
Actuated g/C Ratio		0.15		0.15		0.15		0.67		0.78	0.78	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		271		199		224		2316		352	2781	
v/s Ratio Prot								0.35		0.03	c0.64	
v/s Ratio Perm		0.00		c0.11		0.01				0.30		
v/c Ratio		0.01		0.78		0.04		0.52		0.42	0.83	
Uniform Delay, d1		43.7		49.4		44.0		9.8		6.1	8.3	
Progression Factor		1.00		1.00		1.00		1.00		1.33	0.89	
Incremental Delay, d2		0.0		18.0		0.1		0.8		0.5	1.8	
Delay (s)		43.7		67.4		44.1		10.6		8.6	9.1	
Level of Service		D		E		D		B		A	A	
Approach Delay (s)		43.7			60.4			10.6			9.1	
Approach LOS		D			E			B			A	

Intersection Summary

HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↔			↔			↔	
Traffic Vol, veh/h	67	164	47	17	154	33	37	38	17	31	30	38
Future Vol, veh/h	67	164	47	17	154	33	37	38	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	72	176	51	18	166	35	40	41	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	10.9	10.1	9.3	9.2
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	40%	29%	0%	8%	31%
Vol Thru, %	41%	71%	0%	75%	30%
Vol Right, %	18%	0%	100%	16%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	231	47	204	99
LT Vol	37	67	0	17	31
Through Vol	38	164	0	154	30
RT Vol	17	0	47	33	38
Lane Flow Rate	99	248	51	219	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.146	0.377	0.065	0.299	0.153
Departure Headway (Hd)	5.32	5.465	4.613	4.914	5.19
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	668	653	770	726	684
Service Time	3.405	3.234	2.382	2.987	3.275
HCM Lane V/C Ratio	0.148	0.38	0.066	0.302	0.155
HCM Control Delay	9.3	11.5	7.7	10.1	9.2
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	1.8	0.2	1.3	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.96			0.98			0.98			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1691			1808			1778			1582	
Flt Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1614			1757			1462			1491	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	122	52	11	133	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	15	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	166	0	0	157	0	0	71	0	0	61	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			6.6			6.6	
Effective Green, g (s)		7.6			7.6			6.6			6.6	
Actuated g/C Ratio		0.33			0.33			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		528			575			415			424	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.09			c0.05			0.04	
v/c Ratio		0.32			0.27			0.17			0.14	
Uniform Delay, d1		5.8			5.8			6.2			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	23.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	122	52	11	133	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	200	292	116	185	374	76	430	273	68	224	289	194
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	91	1116	442	54	1432	289	563	808	201	108	854	573
Grp Volume(v), veh/h	194	0	0	172	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	0	1776	0	0	1572	0	0	1535	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.10		0.27	0.06		0.16	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	608	0	0	635	0	0	772	0	0	706	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.27	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2158	0	0	2314	0	0	1825	0	0	1753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		194			172			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.4		12.1		10.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.7				
Green Ext Time (p_c), s		0.4		1.2		0.4		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

Intersection						
Int Delay, s/veh	0.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Traffic Vol, veh/h	234	59	0	229	0	44
Future Vol, veh/h	234	59	0	229	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	64	0	249	0	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	159
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	858
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	858
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	858	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	9.4	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

2. SE Monroe Street at OR-99E

Intersection v/c
APM Section 13.4.4: Critical Intersection v/c ratio
Method: Determine Critical Movements in HCM 2000 reports
HCM 6th reports, detemine adjusted and sat flow rates
Adjust Flow/Sat Flow
Sum up Crit Movement Flow Rates
Xc of intersection = sum(crit.move. Flow rates*(C/(C-L))

AM Peak Hour												
			Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
	Critcial Movement		NBTh+RT	WBL	NBTh+RT	WBL	NBTh+RT	WBL	Sum			
Existing			1918	43	3721	1682	0.515453	0.025565	0.541018	120	9	0.585
Background			1968	45	3721	1682	0.52889	0.026754	0.555644	120	9	0.601
Buildout (Full-Movement)	NBTh+RT	WBL	1987	45	3721	1682	0.533996	0.026754	0.56075	120	9	0.606
Buildout (No Left-Out)			1987	59	3721	1682	0.533996	0.035077	0.569074	120	9	0.615
Buildout (RIRO)			1987	66	3721	1682	0.533996	0.039239	0.573235	120	9	0.62

2. SE Monroe Street at OR-99E

Intersection v/c
APM Section 13.4.4: Critical Intersection v/c ratio
Method: Determine Critical Movements in HCM 2000 reports
HCM 6th reports, detemine adjusted and sat flow rates
Adjust Flow/Sat Flow
Sum up Crit Movement Flow Rates
Xc of intersection = sum(crit.move. Flow rates*(C/(C-L))

PM Peak Hour												
			Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
	Critcial Movement		SBTh	WBL	SBTh	WBL	SBTh	WBL	Sum			
Existing			2291	58	3770	1753	0.607692	0.033086	0.640778	120	9	0.693
Background			2355	60	3770	1753	0.624668	0.034227	0.658895	120	9	0.712
Buildout (Full-Movement)	SBTh	WBL	2377	60	3770	1753	0.630504	0.034227	0.664731	120	9	0.719
Buildout (No Left-Out)			2377	73	3770	1753	0.630504	0.041643	0.672147	120	9	0.727
Buildout (RIRO)			2377	91	3770	1753	0.630504	0.051911	0.682415	120	9	0.738

5. SE Washington Street at SE 21st Avenue

Intersection v/c
APM Section 13.4.4: Critical Intersection v/c ratio
Method: Determine Critical Movements in HCM 2000 reports
HCM 6th reports, detemine adjusted and sat flow rates
Adjust Flow/Sat Flow
Sum up Crit Movement Flow Rates
Xc of intersection = sum(crit.move. Flow rates*(C/(C-L))

AM Peak Hour												
	Critcial Movement		Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
			EB	NB	EB	NB	EB	NB	Sum			
Existing			218	122	1645	1563	0.132523	0.078055	0.210578	60	9	0.248
Background			245	132	1646	1568	0.148846	0.084184	0.233029	60	9	0.274
Buildout (Full-Movement)	EB	NB	257	132	1652	1568	0.155569	0.084184	0.239753	60	9	0.282
Buildout (No Left-Out)			257	132	1652	1568	0.155569	0.084184	0.239753	60	9	0.282
Buildout (RIRO)			257	132	1652	1568	0.155569	0.084184	0.239753	60	9	0.282

5. SE Washington Street at SE 21st Avenue

Intersection v/c
APM Section 13.4.4: Critical Intersection v/c ratio
Method: Determine Critical Movements in HCM 2000 reports
HCM 6th reports, detemine adjusted and sat flow rates
Adjust Flow/Sat Flow
Sum up Crit Movement Flow Rates
Xc of intersection = sum(crit.move. Flow rates*(C/(C-L))

PM Peak Hour												
			Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
	Critcial Movement		EB	NB	EB	NB	EB	NB	Sum			
Existing			168	68	1644	1584	0.10219	0.042929	0.145119	60	9	0.171
Background			188	78	1646	1572	0.114216	0.049618	0.163835	60	9	0.193
Buildout (Full-Movement)	EB	NB	194	78	1649	1572	0.117647	0.049618	0.167265	60	9	0.197
Buildout (No Left-Out)			194	78	1649	1572	0.117647	0.049618	0.167265	60	9	0.197
Buildout (RIRO)			194	78	1649	1572	0.117647	0.049618	0.167265	60	9	0.197

Intersection: 6: Site Access & SE Washington Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	32	62
Average Queue (ft)	2	29
95th Queue (ft)	15	55
Link Distance (ft)	1092	353
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 6: Site Access & SE Washington Street

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (ft)	2	2	44	59
Average Queue (ft)	0	0	5	28
95th Queue (ft)	2	2	26	53
Link Distance (ft)	551	551	1097	353
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 6: Site Access & SE Washington Street

Movement	WB	NB
Directions Served	LT	R
Maximum Queue (ft)	32	50
Average Queue (ft)	2	25
95th Queue (ft)	15	47
Link Distance (ft)	1083	352
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 6: Site Access & SE Washington Street

Movement	EB	WB	NB
Directions Served	TR	LT	R
Maximum Queue (ft)	2	45	58
Average Queue (ft)	0	5	25
95th Queue (ft)	2	25	50
Link Distance (ft)	567	1093	352
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 6: Site Access & SE Washington Street

Movement	NB
Directions Served	R
Maximum Queue (ft)	59
Average Queue (ft)	26
95th Queue (ft)	50
Link Distance (ft)	352
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Intersection: 6: Site Access & SE Washington Street

Movement	NB
Directions Served	R
Maximum Queue (ft)	54
Average Queue (ft)	23
95th Queue (ft)	49
Link Distance (ft)	352
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

JONES ARCHITECTURE

MEMORANDUM

PROJECT 17-021 COHO POINT

SUBJECT Transportation Demand Management Program

DATE AUGUST 25, 2021

RECIPIENTS Brett Kelver, City of Milwaukie

BlackRock Development & Real Estate, LLC commits to actively implement a more comprehensive parking management plan for the Coho Point site upon project completion. This would provide a much higher level of control and management of the parking supply and support the staffs concerns about the limited provided parking spaces available on site for tenant use.

Parking Management Plan

The following strategies will be implemented within the context of a site-oriented parking management plan. These strategies are both common and successfully deployed in similar residential formats.

1. Property management will target lease marketing to emphasize car-free/low auto use living to long-term tenant units at the Coho Point site.

2. All tenants will sign within their tenant lease agreements that they accept and will adhere to on-site parking rules of use as a condition of residency. Include in the rental agreement that there is no guarantee of on-street parking or neighborhood parking. Violations of the parking agreement is grounds for penalty or termination.

3. All tenants will register their vehicle license plate number(s) with property management, creating a database from which management can identify authorized vehicles parking on-site, as well as respond to any complaints of site vehicles parking off-site. Residents and Employees of the ground story retail will participate in an annual transportation survey to monitor transportation and driving habits.

4. Property management will routinely monitor parking stall usage in the garage by license plate. This assures compliance and will also result in issuing notice to vehicles not properly identified (e.g., abandoned vehicles, commercial vehicles using the lot during the day, etc.). Unauthorized vehicles will be (a) notified and (b) towed if abuse of site reoccurs.

5. Appropriately placed signs located on site to communicate the site is available only to authorized users.

6. Placing a sign on the building, and in communications materials that directs any questions or issues related to parking to a phone number that rings directly to property management. This will ensure timely response to issues and concerns.

7. Number all stalls on the lot to support allocation strategy.

8. Allocate no more than one parking space to any unit.

9. *Financial incentives to be provided for one annual TriMet pass per dwelling unit that does not have a designated parking space.

10. *Car share/Ride share incentives and pickup/dropoff areas will be given. Property Management will coordinate with Zipcar, GetAround, Uber, Lyft or other car sharing/Ride Sharing companies to provide or *incentivize tenants to utilize car-sharing.

11. The project is providing secure and ample amount of bike parking spaces and can *subsidize bicycle maintenance for tenants.

12. *Rent reduction incentives to be given to tenants that do not have a car.

13. *Bike Share/E-Scooter memberships or ride credits can be provided to tenants that do not have a vehicle.

14. Unbundle Parking from units and charge market-rate price to residents for parking spaces.

15. Since the project is located within close proximity to multiple bus lines as well as the Max Line, information will be distributed on site regarding transportation information and options for residents. Transit Tracker monitor can be installed in the residential lobby with information about upcoming buses, trains, etc.

16. Improvements will be made to the surrounding public Right-of-way including new sidewalks and a pedestrian path will make the area more accessible and walkable.

These are simple strategies and easy to enforce and monitor; and they are in use in many other venues. The fact that parking becomes a legally binding condition of residency is a strong and compelling lever to influence compliance.
**Financial Incentives and/or subsidies can not be combined, only one per authorized tenant can be used.*

2. Parking space and aisle dimensions. Parking spaces and aisles must meet the minimum dimensions contained in Table 266-4. For stacked parking areas, see Section 33.266.140 below.

3. Parking for disabled persons. The Bureau of Development Services regulates the following disabled person parking standards and access standards through the Oregon Structural Specialty Code.
   - Dimensions of disabled person parking spaces and access aisles;
   - The minimum number of disabled person parking spaces required;
   - Location of disabled person parking spaces and circulation routes,
   - Curb cuts and ramps including slope, width and location;
   - Signage and pavement markings.

4. A portion of a standard parking space may be landscaped instead of paved, as follows:
   a. As shown in Figure 266-3, up to 2 feet of the front of the space as measured from a line parallel to the direction of the bumper of a vehicle using the space may be landscaped area;
   b. Landscaping must be ground cover plants; and
   c. The portion of the 2-foot wide area described in 4.a that is landscaped counts toward parking lot interior landscaping requirements and toward any overall site landscaping requirements. However, the landscaped area does not count toward perimeter landscaping requirements.

Table 266-4
Minimum Parking Space and Aisle Dimensions [1,2]

Angle (A)	Width (B)	Curb Length (C)	1 Way Aisle Width (D)	2 Way Aisle Width (D)	Stall Depth (E)
0° (Parallel)	8 ft.	22 ft. 6 in.	12 ft.	20 ft.	8 ft.
30°	8 ft. 6 in.	17 ft.	12 ft.	20 ft.	15 ft.
45°	8 ft. 6 in.	12 ft.	12 ft.	20 ft.	17 ft.
60°	8 ft. 6 in.	9 ft. 9 in.	16 ft.	20 ft.	17 ft. 6 in.
90°	8 ft. 6 in.	8 ft. 6 in.	20 ft.	20 ft.	16 ft.

Notes:
[1] See Figure 266-4.
[2] See Section 33.266.130.F.3 for information on parking spaces for the disabled.

23.54.030 - Parking space and access standards

All parking spaces provided, whether required by Section 23.54.015 or not, and required barrier-free parking, shall meet the standards of this Section 23.54.030.

A. Parking space dimensions

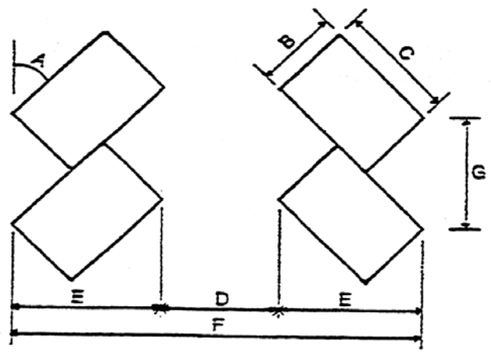
1. "Large vehicle" means the minimum size of a large vehicle parking space shall be 8.5 feet in width and 19 feet in length.
2. "Medium vehicle" means the minimum size of a medium vehicle parking space shall be 8 feet in width and 16 feet in length.
3. "Small vehicle" means the minimum size of a small vehicle parking space shall be 7.5 feet in width and 15 feet in length.
4. "Barrier-free parking" means a parking space meeting the following standards:
   a. Parking spaces shall not be less than 8 feet in width and shall have an adjacent access aisle not less than 5 feet in width. Van-accessible parking spaces shall have an adjacent access aisle not less than 8 feet in width. Where two adjacent spaces are provided, the access aisle may be shared between the two spaces. Boundaries of access aisles shall be marked so that aisles will not be used as parking space.
   b. A minimum length of 19 feet or when more than one barrier-free parking space is provided, at least one shall have a minimum length of 19 feet, and other spaces may be the lengths of small, medium, or large spaces in approximate proportion to the number of each size space provided on the lot.
5. "Tandem parking" means a parking space equal to the width and 2 times the length of the vehicle size standards in subsections 23.54.030.A.1, 23.54.030.A.2, and 23.54.030.A.3 for the size of the vehicle to be accommodated.
6. Columns or other structural elements may encroach into the parking space a maximum of 6 inches on a side, except in the area for car door opening, 5 feet from the longitudinal centerline or 4 feet from the transverse centerline of a parking space (see Exhibit A for 23.54.030). No wall, post, guardrail, or other obstruction, or lot line, is permitted within the area for car door opening.
7. If the parking space is next to a lot line and the parking space is parallel to the lot line, the minimum width of the space is 9 feet.

A Parking Angle	B Stall Width	C Stall Length	D Aisle Width [1]	E Curb Depth Per Car	F Unit Width [3]	G Curb Length Per Car
0°	7.5	18.0	10.0	7.5	25.0	18.0
	8.0	20.0	10.0	8.0	26.0	20.0
	8.5	24.0	12.0	8.5	29.0	24.0
45°	7.5	15.0	11.0	15.91	42.82	10.61
	8.0	16.0	13.0	16.97	46.90	11.3
	8.5	19.0	13.0	19.44	51.88	12.02
60°	7.5	15.0	13.0	16.74	46.48	8.66
	8.0	16.0	15.0	17.86	50.72	9.24
	8.5	19.0	17.5	20.70	58.90	9.82
75°	7.5	15.0	16.5	16.43	49.36	7.76
	8.0	16.0	18.5	17.52	53.54	8.25
	8.5	19.0	20.0	20.55	61.10 [2]	8.80
90°	7.5	15.0	20.0	15.0	50.0	7.5
	8.0	16.0	22.0	16.0	54.0	8.0
	8.5	19.0 [2]	24.0 [2]	19.0	62.0 [3]	8.5

[1] Required aisle width is for one-way traffic only. If two-way traffic is proposed, then the minimum aisle width shall be 20 feet or greater.

[2] When lot width is less than 43 feet, 40 feet may be substituted for a two-way aisle and a single row of cars at 90° to the aisle, provided that the minimum width of the parking stalls shall be 9½ feet.

[3] 60 feet may be substituted for required unit width on lots where the available width is in 60-foot whole multiples, provided that the minimum width of the parking stalls shall be 9½ feet.



The following equations may be used to compute dimensions for parking angles other than those provided in the chart above:

$E = C \sin A + B \cos A$

$G = B / \sin A$

NOTE: Aisle widths shall be provided as required for the next greater parking angle shown in the chart above.

Exhibit C for 23.54.030: Parking Aisle Dimensions

2. Minimum aisle widths shall be provided for the largest vehicles served by the aisle.
3. Turning and maneuvering areas shall be located on private property, except that alleys may be credited as aisle space.
4. Aisle slope shall not exceed 17 percent provided that the Director may permit a greater slope if the criteria in subsections 23.54.030.D.3.a, 23.54.030.D.3.b, and 23.54.030.D.3.c are met.

LEED v4.1 Residential: Multifamily

Project Checklist

Project Name: CoHo Point
Date: 13-Apr-21

Y	?	N			
1			Credit	Integrative Process	1

Y	?	N	Location and Transportation		15
			Credit	LEED for Neighborhood Development Location	15
	2		Credit	Sensitive Land Protection	2
			Credit	High Priority Site	1
			Credit	Surrounding Density and Diverse Uses	5
			Credit	Access to Quality Transit	3
			Credit	Bicycle Facilities	1
			Credit	Reduced Parking Footprint	1
			Credit	Electric Vehicles	2

Y	?	N	Sustainable Sites		9
Y			Prereq	Construction Activity Pollution Prevention	Required
	1		Credit	Site Assessment	1
	1		Credit	Protect or Restore Habitat	1
	1		Credit	Open Space	1
1			Credit	Rainwater Management	3
	1		Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1

Y	?	N	Water Efficiency		12
Y			Prereq	Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2	6	2	Credit	Water Use Reduction	10
2			Credit	Water Metering	2

Y	?	N	Energy and Atmosphere		34
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
2	4		Credit	Enhanced Commissioning	6
4	10	4	Credit	Optimize Energy Performance	18
1			Credit	Whole Building Energy Monitoring and Reporting	1
			Credit	Grid Harmonization	2
1	4		Credit	Renewable Energy	5
	1		Credit	Enhanced Refrigerant Management	1
1			Credit	Domestic Hot Water Pipe Insulation	1

Y	?	N	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
3	2		Credit	Building Life-Cycle Impact Reduction	5
4	2		Credit	Environmentally Preferable Products	6
2			Credit	Construction and Demolition Waste Management	2

Y	?	N	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Combustion Venting	Required
Y			Prereq	Garage Pollutant Protection	Required
Y			Prereq	Radon-Resistant Construction	Required
Y			Prereq	Interior Moisture Management	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
Y			Prereq	Compartmentalization	Required
1			Credit	Enhanced Compartmentalization	1
1			Credit	No Environmental Tobacco Smoke	1
2	2		Credit	Enhanced Indoor Air Quality Strategies	4
4			Credit	Low-Emitting Materials	4
2			Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1			Credit	Daylight and Quality Views	1
1	1		Credit	Acoustic Performance	2

Y	?	N	Innovation		6
5			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

Y	?	N	Regional Priority		4
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1

44	39	6	TOTALS	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

CITY OF MILWAUKIE ATTACHMENT 3 Exhibit K
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: 20-0011PA

This report is provided as a follow-up to the meeting that was held on 12/17/2020 at 10:00 AM

The Milwaukie Municipal Code is available here: www.qcode.us/codes/milwaukie/

APPLICANT AND PROJECT INFORMATION

Applicant:	Sienna Shiga	**Applicant Role:** Architect
Applicant Address:	120 NW 9th Ave, Suite 210, Portland, OR 97209	
Company:	Jones Architecture	
Project Name:	Coho Point	
Project Address:	11103 SE Main St	**Zone:** Downtown Mixed Use (DMU)
Project Description:	Construct a new 6-story mixed use building including space for commercial retail, restaurant, and multifamily uses, with structured parking. Project scope includes mitigation for natural resource and floodplain disturbance, as well as a new pedestrian/bicycle path.	
Current Use:	Vacant	
Applicants Present:	Sienna Shiga, Kathy Johnson, Ryan Scalan (Jones Architecture); John Van Staveren, Mike See (Pacific Habitat Services); Korey Derrick (DOWL); Angela Creais (Blackrock Development)	
Staff Present:	Brett Kelver, Vera Kolias, Laura Weigel (Planning Dept.); Alison Wicks, Leila Aman (Community Development Dept.); Steve Adams, Dalton Vodden (Engineering Dept.); Samantha Vandagriff (Building Dept.); Jere Sonne (Public Works); Matt Amos (Clackamas Fire District #1)	

PLANNING COMMENTS

Zoning Compliance (MMC Title 19)

☒	**Use Standards (e.g., residential, commercial, accessory)**	As per Milwaukie Municipal Code (MMC) Section 19.304. in the Downtown Mixed Use (DMU) zone, multifamily residential, commercial retail, and eating/drinking establishment uses are allowed outright, subject to specific limitations. Along Main Street south of Scott Street, residential dwellings are allowed only on the second floor or above (not on the ground floor); 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. Eating/drinking establishments and retail-oriented sales are limited to 20,000 sq ft in floor area per use on the ground floor.
☒	**Dimensional Standards**	MMC Table 19.304.4 establishes the various dimensional standards for the DMU zone. Key relevant standards include the following: • Floor area ratio (FAR) = maximum is 4:1, with a bonus available related to structured parking

		• Building height = maximum is 3 stories or 45 ft, with height bonuses available for up to 2 more stories (up to 69 ft total) • Flexible ground-floor space is required along the Main Street frontage • Setbacks/build-to lines = for block faces on Washington Street, Main Street, and Adams Street, a minimum of 75% of the first floor must be built with a zero setback, with the remaining 25% set back no more than 20 ft from the property line; any setback area along these block faces must provide usable open space, such as a public plaza or pedestrian amenities • Frontage occupancy requirement = at least 90% of the Main Street frontage and at least 75% of the Washington Street frontage must be occupied by a building(s) Please address each of the applicable standards – table format is acceptable. For building height bonuses, please be specific about the green building program proposed (see discussion below for MMC 19.510).
Land Use Review Process		
☒	**Applications Needed**	Step 1: Downtown Design Review; Willamette Greenway Review; Natural Resources Review; Transportation Facilities Review (TFR), including Traffic Impact Study (TIS) process; Variances (including for height); Parking Quantity Modification; Replat to consolidate lots Step 2: Final Plat and Development Review during permitting for each phase/building
☒	**Fees**	• Type III = $2,000 per application • Type II = $1,000 • Type I = $200 Note: For multiple applications, there is a 25% discount offered for each application fee beyond the most expensive one. For technical review of Natural Resource applications, a $3,000 deposit is required to cover the cost of peer review by the City's on-call consultant. For technical review of a TIS, a $1,500 deposit is required to cover the cost of preparation of a scope of work, followed by a $2,500 deposit for review of the TIS itself. In both cases, the applicant is responsible for the final actual cost of the peer review, though the City will endeavor to have the consultant work within the initial deposit amount.
☒	**Review Type**	• Downtown Design Review = Type III ($2,000) • Willamette Greenway = Type III ($1,500 w/ discount) • Natural Resources Review = Type III ($1,500 w/ discount) • Variance = Type III ($1,500 w/ discount—up to 3 variance requests per application) • Transportation Facilities Review = Type II ($750 w/ discount) • Parking Quantity Modification = Type II ($750 w/ discount) • Replat = Type II, downgraded to Type I ($150 w/ discount) • Final Plat = Type I ($200 for separate Step 2 submittal) • Development Review = Type I ($150 w/ discount, if submitted with Final Plat)
Overlay Zones (MMC 19.400)		
☒	**Willamette Greenway (MMC 19.401)**	The western half of the site falls within the Willamette Greenway overlay, so that portion of the site is subject to MMC 19.402; practically speaking, it may be difficult to address the Willamette Greenway provisions for the eastern portion of the site, which is between Main Street and the overlay boundary. Land use actions and development within the Willamette Greenway overlay zone are conditional uses and so are subject to the provisions of MMC 19.905. Note that a conditional use permit will be provided upon approval and must be recorded with Clackamas County. In addition to the approval criteria for conditional uses that must be addressed (MMC 19.905.4.A), the Willamette Greenway criteria established in MMC 19.401.6 must also be addressed.

☒	**Natural Resources (MMC 19.402)**	The proposal would result in permanent disturbance of significant areas of designated Water Quality Resource (WQR) and Habitat Conservation Area (HCA), which requires review under the applicable provisions of MMC 19.402. The process for discretionary review is established in MMC 19.402.12 and requires a technical report prepared by a qualified professional to provide an impact evaluation, alternatives analysis, and recommendation for mitigation of the proposed disturbance. For permanent impacts, the code allows off-site mitigation of HCA disturbance but requires a variance for off-site mitigation of WQR impacts. The Natural Resource review will follow a discretionary process, with the approval criteria being to demonstrate how the project avoids impacts where possible, minimizes impacts where unavoidable, and adequately mitigates for all impacts. There is no specific mitigation formula or ratio in the code, though some recently approved mitigation efforts have aimed at a ratio of 1.5:1 (area of mitigation to area of disturbance). The code's general recommendation for mitigation is related to the condition of the WQR area (Good, Marginal, or Poor—see MMC Table 19.402.11.C) and focuses on restoration with native species to provide significant vegetated cover and more than 50% tree canopy coverage.
Site Improvements/Site Context		
☐	**Landscaping Requirements**	There are no specific landscaping requirements for the DMU zone.
☒	**Onsite Pedestrian/Bike Improvements (MMC 19.504, 19.606, and 19.609)**	For multifamily dwellings, MMC 19.609 requires a minimum of 1 bike parking space per unit. When at least 10 bike spaces are required, or when 10% or more of vehicle parking is covered, then a minimum of 50% of the bike parking provided must also be covered or enclosed (in lockers or a secure room). Bicycle parking spaces must be at least 2 ft wide by 6 ft long, with a 5-ft-wide access aisle. For covered spaces, there must be at least 7 ft of overhead clearance. Bike racks must be securely anchored and designed to allow the frame and at least 1 wheel to be locked to the rack using a high-security, U-shaped shackle lock.
☐	**Connectivity to surrounding properties**	
☐	**Circulation**	
☒	**Green Building Standards (MMC 19.510)**	This section details the approved programs and requirements when seeking a height bonus through green building design. In the application narrative, please be specific about the program proposed.
☒	**Downtown Design Review (MMC 19.907) and Downtown Design Standards (MMC 19.508)**	As new development downtown, the project is subject to Downtown Design Review and the procedures of MMC 19.907. If the project can meet all of the applicable design standards established in MMC 19.508, the design review portion of the project will be subject to the more clear and objective Type II review process as part of the overall Type III land use review. The seven design elements, each with specific design standards, are Building Façade Details, Corners, Weather Protection, Exterior Building Materials, Windows and Doors, Roofs and Rooftop Equipment, and Open Space/Plazas. Please provide information for whether or how the proposal meets each design standard. If the project is unable to meet one or more of the design standards, it will be subject to the more discretionary review provided by the larger Type III process and will need to address any of the downtown design guidelines (currently provided in a separate document adopted into the code by reference) that are applicable to the design standard(s) not being met. The Type III downtown design review process involves a design review meeting with the Design and Landmarks Committee (DLC) as per the procedures outlined in MMC 19.1011. A design review meeting with the DLC will be scheduled at the earliest possible opportunity so that the DLC can make an official recommendation to the Planning Commission, although it may be necessary for the applicant to agree to extend the 120-day deadline for arriving at a final local decision (including time for a local appeal).

		It appears that the proposal will not comply with the required 6-ft step back for the portions of the building above the base maximum height. If so, Type III downtown design review will be required, with the focus of the application on that and any other unmet design standards and the applicable design guidelines.
Parking Standards (MMC 19.600)		
☐	**Residential Off-Street Parking Requirements**	
☒	**Multi-Family/Commercial Parking Requirements**	Off-street parking requirements apply to the multifamily units only (1 space/dwelling unit), not to the commercial uses. Application materials should clearly indicate the calculations for the number of proposed parking spaces and the use of any by-right reductions (up to 30% of the minimum required number) identified in MMC 19.605.3. Any proposed modifications to the required parking quantity would be addressed with a Type II parking modification per MMC 19.605.2. Please review the documentation requirements and approval criteria to ensure that the narrative includes all necessary information. Requirements for structured parking are provided in MMC 19.611. As per MMC 19.611.2, the space and drive aisle dimensions may be reduced if the applicant can demonstrate that parking and maneuvering can still be safely accommodated for standard passenger vehicles.
Approval Criteria (MMC 19.900)		
☒	**Conditional Use (MMC 19.905)**	Willamette Greenway review is a conditional use subject to the approval criteria in MMC 19.905.4.
☒	**Development Review (MMC 19.906)**	Development review (Type I) will be required in conjunction with the building permit process for the project, to confirm compliance with the code and the land use approval. Approval criteria for development review are provided in MMC 19.906.4.
☒	**Downtown Design Review (MMC 19.907)**	The approval criteria for downtown design review are provided in MMC 19.907.5.
☒	**Variance (MMC 19.911)**	It appears that variances will be required for at least two elements of the project: building height and off-site mitigation of WQR disturbance. Both variance requests require Type III review; up to 3 variance requests can be included in a single variance application (for that single application fee). MMC 19.911.4.B establishes approval criteria for Type III variances in general. The applicant may choose to use either the broadly applicable Discretionary Relief criteria or the more narrowly focused Economic Hardship criteria, though please note that the Economic Hardship criteria are quite stringent. MMC 19.911.6 establishes specific approval criteria for a Building Height Variance in the DMU. Please pay careful attention the approval criteria in this section, noting that the variance request would be for 4 ft (69 ft with 2 bonuses is allowed by right – 73 ft height is proposed).
Land Division (MMC Title 17)		
☒	**Preliminary Plat Requirements**	The project site includes several different tax lots that are comprised of still-existing underlying lots from the original Milwaukie subdivision platted in 1865. The lots will need to be consolidated prior to the completion of construction, which will be processed as a partition replat. According to MMC Table 17.12.020, the Type II review process would be required (as the original subdivision was not decided by the Planning Commission and the procedure would consolidate lots instead of parcels), but since the number of lots would be reduced the procedure could be downgraded to the Type I process.

		MMC Section 17.16.050 provides application requirements and procedures for replats and points to the requirements for preliminary plats (MMC 17.16.060), including a reference to the City's preliminary plat checklist. The checklist outlines the specific pieces of information that must be shown on the plat, based on the provisions for preliminary plat established in MMC Chapter 17.20. MMC Section 17.12.030 establishes approval criteria for replats. The application must include a narrative description demonstrating that the proposal meets all applicable code requirements and design standards, and it must meet the following criteria: (1) compliance with Title 17 and Title 19; (2) the boundary change will allow reasonable development of the affected lots and will not create the need for a variance; and (3) the boundary change will not reduce residential density below minimum density requirements of the zoning district.
☒	**Final Plat Requirements (See Engineering Section of this Report)**	MMC Section 17.16.070 provides application requirements and procedures for final plats, with a reference to the City's final plat checklist. The checklist outlines the specific pieces of information that must be shown on the plat, based on the provisions for final plat established in MMC Chapter 17.24. MMC Section 17.12.050 establishes the following approval criteria for final plats: (1) Compliance with the preliminary plat approved by the approval authority, with all conditions of approval satisfied. (2) The preliminary plat approval has not lapsed. (3) The streets and roads for public use are dedicated without reservation or restriction other than revisionary rights upon vacation of any such street or road and easements for public utilities. (4) The plat contains a donation to the public of all common improvements, including streets, roads, parks, sewage disposal, and water supply systems. (5) All common improvements required as conditions of approval have been described and referenced on the plat, and where appropriate, instruments to be recorded have been submitted. (6) The plat complies with the Zoning Ordinance and other applicable ordinances and regulations. (7) Submission of signed deeds when access control strips are shown on the plat. (8) The plat contains an affidavit by the land surveyor who surveyed that the land represented on the plat was correctly surveyed and marked with proper monuments as provided by ORS Chapter 92.060. The plat must indicate the initial point of the survey and give the dimensions and kind of such monument and its reference to some corner established by the U.S. Survey or giving two or more objects for identifying its location. Note that construction of all required public improvements must be completed, inspected, and accepted by the City prior to the City's sign-off on the final plat, unless an arrangement for bonding or other interim measure is made and agreed upon by the City
Sign Code Compliance (MMC Title 14)		
☒	**Sign Requirements**	MMC 14.16.060 establishes standards for the types of signs that are allowed in downtown zones including the DMU. Please keep these standards in mind when finalizing the building design, to facilitate the obtaining of sign permits by future tenants in the ground-floor spaces.
Noise (MMC Title 16)		
☐	**Noise Mitigation (MMC 16.24)**	

Neighborhood District Associations		
☒	**Historic Milwaukie**	Any City-recognized neighborhood district association whose boundaries include the subject property or are within 300 ft of the subject property will receive a referral and the opportunity to provide comment on the application.
	Island Station	
	Choose an item.	
Other Permits/Registration		
☒	**Business Registration**	Business registration will be required for each commercial tenant in the building.
Additional Planning Notes		
• The applicant mentioned an agreement with the city to provide 40 parking spaces within the development as permit parking for downtown use. This would be appropriate to include in the parking modification application to reduce the minimum number of required spaces.		
ENGINEERING & PUBLIC WORKS COMMENTS		
Public Facility Improvements (MMC 19.700)		
☒	**Applicability (MMC 19.702)**	MMC 19.702 establishes the applicability of the public facility improvements regulations of MMC 19.700, including to new construction and modification and/or expansions of existing structures or uses that produce a projected increase in vehicle trips. The proposed development would result in a significant change in vehicle trips and does therefore trigger the applicability of MMC 19.700.
☒	**Transportation Facilities Review (MMC 19.703)**	As per MMC 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. MMC 19.703.3 establishes the approval criteria for transportation facilities review, including compliance with the procedures, requirements, and standards of MMC 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).
☒	**Transportation Impact Study (MMC 19.704)**	A TIS is required. A scope for the TIS has been prepared. A reserve deposit of $2,500 will be collected for the technical review at TIS submission.
☒	**Agency Notification (MMC 19.707)**	As per the stipulations of MMC 19.707.1, the following agencies will receive notification of the proposed development: Oregon Department of Transportation (ODOT), Metro, Clackamas County, and TriMet.
☒	**Transportation Requirements (MMC 19.708)** **1. General Requirements** **2. Subject to PAR** **3. Sidewalk Requirements** **4. Bicycle Requirements** **5. Pedestrian/Bicycle Path Requirements** **6. Transit Requirements**	1. General Requirements A. Access Management: All development subject to Chapter 19.700 shall comply with access management standards contained in Chapter 12.16. B. Clear Vision: All development subject to Chapter 19.700 shall comply with clear vision standards contained in Chapter 12.24. C. Development in Downtown Zones: The development is located within the 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). Public area requirements are defined as improvements within the public right-of-way and include, but are not limited to,

		sidewalks, bicycle lanes, on-street parking, curb extensions, lighting, street furniture, and landscaping. 2. The fronting portion of Washington is a type M street section: Main Street to McLoughlin Boulevard; Underground all utilities; For Street Furniture, see Section 3.5; At bus stops along transit the Furnishing Zone is reserved for bus shelters and passenger waiting areas; 3. Through pedestrian zone 5.5' width; furnishing zone 4' width. 4. 2 racks per block on Washington, covered racks optional. 5. Design to anticipate a future bicycle path connection adjacent to the site is required through ongoing discussion with City staff. 6. Required improvements may include benches, shelters, bus turnouts, curb extensions, median refuges for pedestrian crossings, public telephones, pedestrian lighting or provision of an easement or dedication of land for transit facilities. Transit facilities shall be designed and improved in accordance with current TriMet standards at the time of development to support transit use.
☒	**Utility Requirements (MMC 19.709)**	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 in the following situations: Exceeds the design capacity of the utility Exceeds Public Works Standards or other generally accepted standards; Creates a potential safety hazard; Creates an ongoing maintenance problem. 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.
Flood Hazard Area (MMC 18)		
☒	**Development Permit (MMC 18.04.100)**	The development parcel is within both special flood hazard areas the City regulates, the FEMA 100-yr Flood Hazard Zone and the Metro 1996 Area of inundation. The proposed development requires a floodplain development permit.
☒	**General Standards (MMC 18.04.150)**	All new construction and substantial improvements shall be constructed with materials, utilize equipment, constructed using methods and practices, and have service facilities designed or otherwise elevated to prevent or resist flooding. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system; New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters; and On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding. No net fill in any floodplain is allowed. Any excavation below bankful stage shall not count toward compensating for fill. The applicant is proposing excavation to balance fill that is not located on the same parcel and is therefore subject to the following: the proposed excavation and fill will not increase flood impacts for properties not intended to be part of this development proposal as determined through hydrologic and hydraulic analysis; the proposed excavation is authorized under applicable municipal code provisions including Section 19.402 Natural Resources; and measures to ensure the continued protection and preservation of the excavated area for providing balanced cut and fill shall be approved by the City. The applicant proposes to balance cut and fill beyond the boundaries of the subject parcel, using the public right-of-way (ROW) in Adams Street as well as the adjacent Dogwood Park site to the south. Although the Adams Street ROW and Dogwood Park are not considered part of the subject parcel, the review and analysis conducted for the proposed balancing, if approvable, will position the City to sign off on necessary Community Acknowledgment Form(s) for FEMA without needing a separate land use review for the balancing activity in the Adams Street ROW and Dogwood Park. The

		applicant will be responsible for demonstrating through a technical report and two sets of calculations that fill is balanced with at least and equal amount of soil material removal in both the FEMA 100-yr floodplain (within its current or a remapped boundary if map revisions are approved by FEMA) and the Metro 1996 area of inundation (as determined by Metro).
☒	**Specific Standards (MMC 18.04.160)**	New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated one (1) foot above base flood elevation. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated one (1) foot above design flood height, or, together with attendant utility and sanitary facilities, shall: Be floodproofed so that below one (1) foot above the design flood height the structure is watertight with walls substantially impermeable to the passage of water; Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and be certified by a registered professional engineer or architect that the design and methods of construction satisfy the standards of this subsection; Nonresidential structures that are elevated, but not floodproofed, must meet the same standards for space below the lowest floor as described in this section; Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level; a building floodproofed to the base flood level will be rated as one (1) foot below. For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding are prohibited or shall be designed to automatically equalize hydrostatic flood forces on exterior walls.
☐	**Floodways (MMC 18.04.170)**	The applicant is not proposing development within the floodway.
Environmental Protection (MMC 16)		
☐	**Weak Foundation Soils (MMC 16.16)**	The proposed development is not located in the City-regulated soil hazard area.
☒	**Erosion Control (MMC 16.28)**	Temporary and permanent measures for all construction projects shall be required to lessen the adverse effects of erosion and sedimentation. The owner or his or her/her agent, contractor, or employee, shall properly install, operate, and maintain both temporary and permanent works as provided in this section or in an approved plan, to protect the environment during the useful life of the project. These erosion control rules apply to all lands within the City of Milwaukie.
☒	**Tree Cutting (MMC 16.32)**	No person will perform major true pruning or remove any tree in the right-of-way or on land owned or maintained by the City without first obtaining a permit issued by the City.
Public Services (MMC 13)		
☒	**Water System (MMC 13.04)**	A system development charge must be paid prior to new connections to City water. Abandoned services must be removed and capped at the main.
☒	**Sewer System (MMC 13.12)**	A system development charge must be paid prior to new connections or impacts due to intensification of use to City sanitary sewer.
☒	**Stormwater Management (MMC 13.14)**	Stormwater mitigation must meet the City's NPDES permit through design of facilities according to the 2016 City of Portland Stormwater Management Manual. A system development charge must be paid prior to building permit issuance.
☒	**System Development Charge (MMC 13.28.040)**	Latest charges are determined by the Master Fee Schedule available here: https://www.milwaukieoregon.gov/finance/fees-charges Additional information regarding system development charges are available here: https://www.milwaukieoregon.gov/building/system-development-charges-sdcs

☒	**Fee in Lieu of Construction (MMC 13.32)**	The City may accept a fee in lieu of construction of required public facility improvements if one or more of the following conditions exist: A. Required improvements are not feasible due to the inability to achieve proper design standards. B. Required improvements would create a safety hazard. C. Required improvements are part of a larger approved capital improvement project that is listed as a funded project in the City's Capital Improvement Program (CIP). D. Required improvements would create a situation that would not comply with City standards without extensive additional offsite improvements. E. Required improvements are less than needed to meet City standards due to the City's inability to require full improvements based on proportionality requirements on the development. This development does not appear to qualify for a fee in lieu of construction.
Public Places (MMC 12)		
☒	**Right of Way Permit (MMC 12.08.020)**	Any construction or impacts to right-of-way requires submission and approval of a right-of-way permit.
☒	**Access Requirements (MMC 12.16.040)**	Spacing between accessways and street intersection is measured between the nearest edge of driveway apron and the nearest face of curb. The development is proposing an accessway on Washington St, which is classified as a collector street. Spacing for accessways on collector streets is 300 feet or beyond the end of queue of traffic during peak hour conditions, whichever is greater. As proposed the applicant does not meet this requirement. In order to locate the accessway on Washington, the applicant will be required to submit a modification of access spacing study prepared and certified by a registered professional traffic engineer in the State of Oregon to include: a. Review of site access spacing and design; b. Evaluation of traffic impacts adjacent to the site within a distance equal to the access spacing distance from the project site; c. Review of all modes of transportation to the site; d. Mitigation measures where access spacing standards are not met that include, but are not limited to, assessment of medians, consolidation of accessways, shared accessways, temporary access, provision of future consolidated accessways, or other measures that would be acceptable to the Engineering Director. A minimum driveway apron width of twenty-four (24) feet and a maximum width of thirty (30) feet must be met by the development.
☒	**Clear Vision (MMC 12.24)**	A clear vision area shall be maintained at all driveways and accessways and on the corners of all property adjacent to an intersection. 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." Modification of this computation may be made by the City Engineer.
Additional Engineering & Public Works Notes		

BUILDING COMMENTS

All drawings must be submitted electronically through 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 . 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 and time lines are not established by Milwaukie. It is our policy to not perform curtesy inspections prior to permit being issued, so please plan accordingly.

Site utilities require a separate plumbing permit. This permit will require plumbing plan review, and need to have a permit issued prior to any inspections being done. The grading plan submitted to the Engineering Department does not cover this review.

If you have any building related questions, please email us at building@milwaukieoregon.gov.

Additional Building Notes

A geotechnical report will be required for this project, and the findings/requirements of the report will need to be documented in the plans.

This project will require fire sprinklers and fire alarms. The inground fire line permit is a separate building permit and will need to be applied for and obtained prior to installation.

If you have specific alternate means and methods (AM&M) requests that you know of, please fill out the attached AM&M form and submit it with your requests.

OTHER FEES

☒	**Construction Excise Tax** Affordable Housing CET – Applies to any project with a construction value of over 100,000.	**Calculation:** Valuation *12% (.12) As per the agreed-upon Disposition and Development Agreement (DDA), the City will support an exemption to the Construction Excise Tax (CET). The project will need to apply for an exemption and must demonstrate compliance with the criteria established in the CET ordinance.
☐	**Metro Excise Tax** Metro – Applies to any project with a construction value of over $100,000.	**Calculation:** Valuation *.12% (.0012)
☐	**School Excise Tax** School CET – Applies to any new square footage.	**Calculation:** Commercial = $0.67 a square foot, Residential = $1.35 a square foot (not including garages)

FIRE DISTRICT COMMENTS

Please see the attached memorandum for fire district comments.

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
- 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

☐	**Boiler Approval (State)**	
☐	**Elevator Approval (State)**	
☐	**Health Department Approval (County)**	

Arts Tax

☐	**Neighborhood Office Permit**	

Other Right-of-Way Permits

☐	**Major:**	
☐	**Minor:**	
☐	**Parklet:**	
☐	**Sidewalk Café:**	
☐	**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

☐	**Enterprise Zone:**	
☐	**Vertical Housing Tax Credit:**	
☐	**New Market Tax Credits:**	
☐	**Housing Resources:**	

This is only preliminary preapplication conference information based 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

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

ENGINEERING DEPARTMENT

Steve Adams	City Engineer	503-786-7605
Dalton Vodden	Associate Engineer	503-786-7617

PLANNING DEPARTMENT

Laura Weigel	Planning Manager	503-786-7654
Vera Kolias	Senior Planner	503-786-7653
Brett Kelver	Associate Planner	503-786-7657
Mary Heberling	Assistant Planner	503-786-7658
Janine Gates	Assistant Planner	503-786-7627

COMMUNITY DEVELOPMENT DEPARTMENT

Leila Aman	Community Development Director	503-786-7616
Alison Wicks	Development Programs Manager	503-786-7661
Christina Fadenrecht	Housing & Econ. Dev. Associate	503-786-7624
Tempest Blanchard	Administrative Specialist II	503-786-7600
Emilie Bushlen	Administrative Specialist II	503-786-7600

CLACKAMAS FIRE DISTRICT

Mike Boumann	Lieutenant Deputy Fire Marshal	503-742-2673
Matt Amos	Fire Inspector	503-742-2660

City of Milwaukie - Building Department

APPLICATION FOR APPROVAL OF ALTERNATIVE TO OR MODIFICATION OF THE 2014 STATE OF OREGON STRUCTURAL SPECIALTY CODE (OSSC)

Date: _____ Permit No. _____

Project Name:_____ Project Address: _____

Owner's Name: _____ Phone: _____

Owner's Address: _____

Applicant's Name: _____ Phone: _____

Applicant's Address: _____

Building Department Contact: _____

NOTE TO APPLICANT: Sections 104.10 and 104.11 of the Oregon Structural Specialty Code grant the Building Official the ability to consider alternatives to or modifications of the Code in unusual cases. It is the policy of this Department that the use be limited, and that individual cases be considered carefully within the context of the requirements of these provisions. Before proceeding with this application it is essential that you read and fully understand the Statement of Policy set forth in the Memorandum attached to this application.

A. Section 104.11: Alternate Materials. Alternate Design and Methods of Construction:

1. Pursuant to Section 104.11 of the Oregon Structural Specialty Code, the undersigned Applicant hereby requests approval of an alternative to Section _____ of the Code, which requires that (cite that portion of the Code from which the Applicant is seeking relief based upon the proposed alternative):

_____
_____
_____
_____
_____
_____
_____

2. The undersigned Applicant proposes the following alternative to Section _____ of the Oregon Structural Specialty Code (provide a detailed description of your proposed alternative):

_____
_____
_____
_____
_____
_____

3. For the following reasons, Applicant believes that the proposed alternative to Section _____ of the Oregon Structural Specialty 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 suitability, strength, effectiveness, fire resistance, durability, safety and sanitation.

_____
_____
_____
_____
_____
_____
_____

B. Section 104.10: Modification (s)

1. Pursuant to Section 104.10 of the Oregon Structural Specialty Code, the undersigned Applicant requests approval of a modification to Section _____ of the Code, which requires that (cite that portion of the Code from which the Applicant is seeking relief based on the proposed modification):

_____
_____
_____
_____
_____
_____
_____

2. The undersigned Applicant states the following reason(s) why strict compliance with Section_____ of the Code is impractical or presents extreme difficulty (provide a detailed, specific statement of the reason for your request):

_____
_____
_____
_____
_____
_____
_____

3. For the following reasons, Applicant believes that the proposed modification to Section _____ of the Oregon Structural Specialty Code meets the intent of the Code, and neither lessens any fire protection requirements of the Code nor compromises the structural integrity of the structure.

_____
_____
_____
_____
_____
_____
_____

Applicant/Owner's Signature Date

APPLICATION DETERMINATION

Upon reasonable consideration the City of Milwaukie Building Department determines that the above application is:

_____ Denied.

_____ Approved Without Conditions.

_____ Approved, Subject to the Following Conditions:

_____
_____
_____
_____
_____
_____
_____
_____

Building Official: _____ Date: _____

APPLICANT'S AGREEMENT TO ABIDE BY CONDITIONS

The undersigned expressly acknowledges and agrees that acceptance of this application and any subsequent issuance of a permit(s) based upon the proposed alternative(s) or modification(s), has been made subject to certain conditions which the Building Department, in its sole discretion, deems necessary. The undersigned agrees to comply strictly with all conditions imposed by the Building Department. With respect to all permit(s) issued based upon any alternative to or modification of the Oregon Structural Specialty Code, the undersigned's failure to comply strictly with all conditions imposed by the Building Department in granting any permit(s) pursuant to this application will render any right to proceed with construction, occupancy or use of any property or premises pursuant to said permit VOID, and will subject the undersigned to immediate revocation of any permit(s) issued in connection with this application. The undersigned and all subsequent owners, occupants or users of these premises claiming any right of occupancy or use of the premises through the undersigned, shall be liable for all costs and expenses, including any reasonable Attorney's Fees and Expert Witness Fees, for enforcement of any condition or term of any permit(s) issued to this application.

The undersigned acknowledges that this agreement does not in any way limit any remedy or right the City may otherwise have with respect to enforcement of any of its Codes or Ordinances.

The undersigned acknowledges that any delay by the City with respect to enforcing strict compliance with any conditions imposed on any permit(s) issued based upon the proposed alternative(s) or modification(s) shall not be deemed to be a waiver and shall not stop or bar the City from enforcing compliance with any conditions, including the City's right to issue, cease and desist orders and/or to seek immediate relief, as appropriate.

AGREED AND ACCEPTED:

Owner's Signature: _____ Date: _____

(if Applicant is not the Owner or the Owner's Architect or Engineer)

Applicant Signature/Title: _____ Date: _____

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: 21/12/2020

Re: 6-Story mixed-use commercial building 11103 SE Main St. 20-011PA

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.

Emergency responder radio coverage must be tested or provided due to the following

1. **Any building with one or more basement or below-grade building levels.**
2. **Any underground building.**
3. **Any building more than five stories in height.**
4. **Any building 50,000 square feet in size or larger.**
5. **Any building that, through performance testing, does not meet the requirement of section 510.**

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.

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.

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.

ATTACHMENT 3 Exhibit L

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

Application for Land Use Action

Master File #: DR-2021-001

Review type*: ☐ I ☐ II ■ III ☐ IV ☐ V

CHECK ALL APPLICATION TYPES THAT APPLY:

- ☐ Amendment to Maps and/or Ordinances:
  - ☐ Comprehensive Plan Text Amendment
  - ☐ Comprehensive Plan Map Amendment
  - ☐ Zoning Text Amendment
  - ☐ Zoning Map Amendment
- ☐ Code Interpretation
- ☐ Community Service Use
- ☐ Conditional Use
- ☐ Development Review
- ☐ Director Determination
- ☒ Downtown Design Review
- ☐ Extension to Expiring Approval
- ☐ Historic Resource:
  - ☐ Alteration
  - ☐ Demolition
  - ☐ Status Designation
  - ☐ Status Deletion
- ☐ Land Division:
  - ☐ Final Plat
  - ☐ Lot Consolidation
  - ☐ Partition
  - ☐ Property Line Adjustment
  - ☐ Replat
  - ☐ Subdivision
- ☐ Miscellaneous:
  - ☐ Barbed Wire Fencing
- ☐ Mixed Use Overlay Review
- ☐ Modification to Existing Approval
- ☒ Natural Resource Review**
- ☐ Nonconforming Use Alteration
- ☐ Parking:
  - ☐ Quantity Determination
  - ☒ Quantity Modification
  - ☐ Shared Parking
  - ☐ Structured Parking
  - ☐ Planned Development
- ☐ Residential Dwelling:
- ☐ Accessory Dwelling Unit
  - ☐ Duplex
  - ☐ Manufactured Dwelling Park
  - ☐ Temporary Dwelling Unit
  - ☐ Sign Review
- ☒ Transportation Facilities Review
- ☒ Variance:
- ☒ Use Exception
  - ☐ Variance
  - ☒ Willamette Greenway Review
- ☐ Other: _____
- ☐ **Use separate application forms for:**

Annexation and/or Boundary Change
- Compensation for Reduction in Property Value (Measure 37)

Daily Display Sign
- Appeal
- Appeal

RESPONSIBLE PARTIES:

APPLICANT (owner or other eligible applicant—see reverse): Coho Point, LLC

Mailing address: 8191 N. Lombard St. Suite #113Portland State/Zip: OR, 97203

Phone(s): (503) 954-2489 Email: angela@urbanlivingpropertymanagement.com

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

APPLICANT'S REPRESENTATIVE (if different than above): Jones Architecture

Mailing address: 120 NW 9th AVE. STE. 210 State/Zip: OR, 97209

Phone(s): (503) 805-2917 Email: sshiga@jonesarc.com

SITE INFORMATION:

Address: 11103 SE Main st Milwaukie, OR 97222 Map & Tax Lot(s): 11E35AD01100

Comprehensive Plan Designation: TC Zoning: DMU Size of property: 42,541 sf

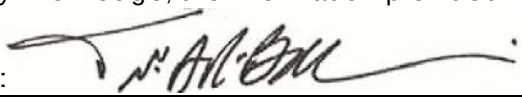
PROPOSAL (describe briefly):

New 6-story mixed use building including commercial space, multifamily use with parking.

Project scope includes nat. resource mitigation, floodplain disturbance, and a new pedestrian path.

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:  Date: 01.27.2021

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.

THIS SECTION FOR OFFICE USE ONLY:

FILE TYPE	FILE NUMBER	AMOUNT (after discount, if any)	PERCENT DISCOUNT	DISCOUNT TYPE	DATE STAMP
Master file	**DR-2021-001**	**$2,000**			**January 28, 2021** (original materials submitted)
Concurrent application files	WG-2021-001	$1,500	25%	Multiple applications	Payments received February 1, 2021 (TIS deposit paid 3/05/21)
	NR-2021-002	$1,500	25%	Multiple applications	
	VR-2021-002	$1,500	25%	Multiple applications	
	P-2021-001	$750	25%	Multiple applications	
	TFR-2021-001	$750	25%	Multiple applications	
		$			
Deposit (NR only)	$3,000			☐ **Deposit Authorization Form received**	
TOTAL AMOUNT RECEIVED: **$11,000**			**RECEIPT #:**		**RCD BY:**

Associated application file #s (appeals, modifications, previous approvals, etc.):

Neighborhood District Association(s): Historic Milwaukie, Island Station

Notes:

MILWAUKIE PLANNING
6101 SE Johnson Creek Blvd
Milwaukie OR 97206
503-786-7630
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 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/

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.
- 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) Sienna Shiga, 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: Sienna Shiga

Date: 01.27.2021

Official Use Only

Date Received (date stamp below):

January 28, 2021
(original submittal date)

Received by: Brett Kelver, Associate Planner

Date: April 19, 2021

Request: Coho Point Transportation Impact Study Review

Reviewer: Reah Flisakowski and Amanda Deering, DKS Associates P14167-017

DKS Associates has reviewed the initial transportation impact analysis (TIA) for the Coho Point Development[1] and an updated report to address reviewer comments[2]. The proposed development is located along SE Washington Street, between OR 99E and SE Main Street in Milwaukie, Oregon. The project would construct a six-story building consisting of 195 apartment units and up to 6,733 square feet of ground floor retail space. The general comments and listing of recommendations are based on review of the updated transportation impact analysis (TIA) materials.

TRANSPORTATION IMPACT ANALYSIS SUMMARY

Key findings from the transportation impact analysis include:

- The proposed project would result in the following estimated increase in motor vehicle trip generation: 58 (11 in/47 out) net weekday AM peak hour vehicle trips and 86 (54 in/32 out) net weekday PM peak hour trips. The daily traffic generation estimate is 1,046 net new trips. The estimates are based on applying ITE trips rates to the proposed 195 residential apartment units (ITE 221) and 6,733 square feet of retail shopping center (ITE 820) and reducing the trips by the existing 7,706 square feet of office (ITE 710) on the site.
- The trip generation estimate was reduced by 10% for the residential portion of the project to account for transit in the area. This rate is consistent with the rate applied for the nearby Axeltree (Project Galaxy) development and is reasonable for the site.
- Traffic operations were analyzed for existing conditions (year 2020) and forecasted conditions in year 2022, when construction of the proposed development is anticipated to be complete. Operations analysis was performed for the AM and PM peak hours at five study intersections.
- Traffic count data was collected on March 5, 2019. During the period, the segment of SE Main Street between SE Adams Street and SE 21st Avenue was closed for construction. The TIA makes note of this occurrence and adjusts the traffic volumes to account for it. Also, the 2019 count data was factored to 2020 volumes by using the same rates use for the background traffic growth for one year.

---

[1] Coho Point Mixed-Use Building – Transportation Impact Analysis, Lancaster Engineering, December 14, 2020.
[2] Coho Point Mixed-Use Building – Transportation Impact Study, Lancaster Mobley, April 9, 2021.

- A background traffic growth rate of 2 percent per year was applied to existing traffic volumes to estimate background traffic volumes for year 2022 traffic operations analysis for non-ODOT facilities. For traffic along OR 99E, 0.70 percent per year growth rate was applied based on data from the ODOT Future Volume Tables.
- Additional trips from the following in-process developments were addressed: Axeltree (Project Galaxy) Mixed-Use Building, Northwest Housing Alternatives, Cereghino Farms, Waverly Woods Apartments, and Monroe Apartments were also included in background growth. Potential in-process trips or travel pattern impacts from construction at Milwaukie High School were also addressed in the text.
- The trip distribution estimate for the site shows 40% of site trips traveling to or from the north via OR 99E and 30% of site trips traveling to or from the south via OR 99E. Another 20% of trips are estimated to travel to/from the east via SE Washington Road. The remaining 10% of trips are estimated to travel to/from SE Lake Road. The locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study intersections were offered as rationale for the trip distribution estimate.
- All study intersections were found to operate at an acceptable level of service through the 2022 AM and PM peak hours with full buildout of the proposed redevelopment. It is appropriate to use HCM 2000 methodologies when HCM 6th methodologies cannot provide capacity results for non-standard intersections. Where not provided by the software, v/c ratios of signalized intersections (for HCM 6th methodologies) were calculated based on guidance in the Analysis Procedures Manual, as appropriate.
- The worst-case traffic operations were reported at the SE Harrison Street/OR 99E intersection during the 2022 PM peak hour (LOS E with 0.96 v/c ratio), which is within minimum acceptable mobility standards identified by ODOT. All study intersections in Milwaukie are estimated to operate at LOS B or better during the peak hours through 2022.
- Proposed site access would be modified by closing the existing access to OR-99E and relocating the existing access along SE Washington Street slightly to the east to serve the proposed residential parking garage. The proposed driveway would not be consistent with City of Milwaukie's 300-foot minimum spacing standard for collector streets given the small block size. An access spacing standard modification will need to be requested.
- Given the limited spacing of the proposed driveway on SE Washington Street from OR 99E and SE Main Street, the study evaluated it with turning-movements restrictions, including full-movement, restricted left-turn out of the site, and right-in/right-out only. The study does not recommend a configuration, but none of the options significantly impact intersection operations. Given the limited spacing between the nearby intersections and high level of roadway connectivity and alternative travel routes nearby, it is recommended that the driveway be limited to right-in, right-out, left-in movements only (left-turn out should be restricted).
- Queuing analysis at the parking garage access indicates that queues entering the garage during the AM and PM peak hour will rarely exceed one car. The typically applied 95th percentile queue

length would be 1 vehicle or less. Delays to traffic as a result of parking garage access are expected to be infrequent.

- The study identifies the adjacent roadways as collectors and notes that they their configurations are consistent with applicable roadway standard cross-sections.
- The study states that 101 vehicle parking spaces are to be provided in the garage for the residential units and 232 bicycle parking spaces will be provided. It proposes that the vehicle trips from retail uses will use the existing street parking.
- The study addresses safe routes to school and discusses pedestrian and bicycle access.
- Transit service quality is high with a nearby MAX stop and several bus route stops in the vicinity.
- No significant safety issues were found from review of the last five years of available collision data at study intersections.

RECOMMENDATIONS

The following recommendations should be considered in developing conditions of approval for the proposed development:

- Minimum AASHTO sight distance requirements should be met at the proposed driveway access. These should be approved by the City Engineer prior to final site plan approval.
- Safety mirrors should be installed at the parking garage entrance so that exiting drivers can see approaching pedestrian traffic around the garage threshold.
- The final site plan should be approved by the City Engineer prior to construction.

ESA
819 SE Morrison Street
Suite 310
Portland, OR 97214
503.274.2010 phone
503.274.2024 fax
www.esassoc.com

draft memorandum

date	September 2, 2021
to	Brett Kelver, AICP (City of Milwaukie)
from	John Vlastelicia
subject	Natural Resource Review for Coho Point Development 11103 SE Main Street City of Milwaukie Land Use File #DR-2021-001

Thank you for asking Environmental Science Associates (ESA) to provide peer review assistance to the City of Milwaukie for the Coho Point Development Project located at 11103 SE Main Street. This memorandum summarizes our review of land use application materials related to Water Quality Resource (WQR) area and Habitat Conservation Area (HCA) 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 Kelver to Sarah Hartung, August 4, 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 Pacific Habitat Services. Please also review the Natural Resources Assessment Report you prepared about the site for the City in 2016.

Response: ESA reviewed project land use application materials made available through the City's Planning Department web site at http://www.milaukieoregon.gov/planning/dr-2021-001. We reviewed the Natural Resource Assessment Report prepared by Pacific Habitat Services (PHS), dated March 22, 2021. In addition, we reviewed the Natural Resources Assessment Report previously prepared for the site by ESA in February 2016. We note that the study area for ESA's 2016 report was limited to the northern portion of the current overall project area (the primary development site – Tax Lots 1100, 1200, 1300, 1301, and 1302, north of the Adams St. right-of-way), while the PHS report addresses that area plus additional areas south, within the SE Adams St. right-of-way and Dogwood Park, where plaza improvements, grading, a retaining wall, and mitigation are proposed.

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 Coho Point site on September 1, 2021, after reviewing the PHS report and with the Existing Conditions figure (Figure 4) from the report in hand. ESA generally observed the site to be as described by PHS in Section 3.1 (Site Conditions) of the report, with a building and parking lot on the northern portion of the site, Dogwood Park in the south, and various types and conditions of riparian vegetation along Kellogg Lake throughout the site. There are two large (20+ inch diameter) sweet gum trees in a landscape island in the parking lot on the northern portion of the site that are not noted in the PHS report, but those trees are outside of WQR and HCA. Our observations related to WQR and HCA conditions are addressed more specifically in the Task 3 responses below.

One general observation and key distinction we noted during the site visit is that the condition of the WQR/HCA on the northern, primary development portion of the site is substantially more impacted by existing development than the WQR/HCA on the areas south, in Dogwood Park. Not only is there less tree cover and more invasive Himalayan blackberry cover in the WQR/HCA vegetation on the northern portion of the site, but a significant portion of the overall WQR area (within 50 feet of top of bank of Kellogg Lake) consists of pavement. The PHS report notes the lower quality WQR plant community on the northern portion of the site, but does not highlight the fact that much of the WQR area in the north is not vegetated at all.

Task 3. Comment on the following aspects of the applicant's natural resource review report:

a. WQR and HCA Boundaries

- **Confirm the applicant's demarcations of the WQR boundary, particularly with respect to steep slopes and the measurement of the vegetated corridor (see Figure 4 in the report), as well as the report's classification of the existing condition of the WQR (i.e., Good, Marginal, or Poor).**

  Response:

  WQR Boundaries: ESA generally concurs with the demarcation of the WQR boundary as mapped on Figure 4 (Existing Conditions) of the PHS report, which shows 1-foot survey contours and shows the WQR boundary as a 50-foot offset from the break in ≥ 25% slope. This is consistent with the methods outlined in MMC Table 19.402.15 for determining WQR location for primary protected water features. We note that it appears the southeastern project area limits extend beyond the topographic survey limits, which may be affecting how the WQR boundary is drawn in that area (sharp jog following the existing railroad bridge over Kellogg Lake), but since the full project area in the south is accounted for as WQR, this detail does not affect the impact analysis.

  The description of the WQR boundary in the PHS report (Section 5.1) states: *The slopes adjacent to the north side of Kellogg Lake are less than 25 percent, and therefore, the associated vegetated corridor in this area is 50 feet wide. The slopes along the eastern portion of Kellogg Lake are greater than 25 percent; therefore, in this area, the width of the vegetated corridor varies between 60 and 100 feet from the ordinary high water line.*

  To clarify, there is only a very small part of the shoreline at SE McLoughlin Blvd on the northwest corner of the site where surveyed slopes are less than 25% adjacent to Kellogg Lake. However, as mapped on Figure 4, the WQR boundary is effectively greater than 50 feet from ordinary high water

(OHW) for the entire Kellogg Lake shoreline in the project area, because of the steep slopes above OHW immediately adjacent to that point in the NW corner where slopes are <25%.

WQR Condition: The PHS report (page 12) identifies two separate plant communities within the vegetated corridor based on the predominance of woody species: *Along the East bank of Kellogg Lake, the plant community is primarily scrub-shrub with few scattered trees in this area [and] is considered to be Class B (marginal condition) in accordance MMC. Further south, tree canopy cover increases south of the proposed development. Since this area exceeds 50% canopy cover it was determined to be in Class A (good condition).* The report describes two vegetation sample points (one for each community) but does not identify on the figures exactly where those points were located.

ESA concurs with the PHS classification of the WQR along Kellogg Lake south of the primary development site as Class A (Good) condition, based on observations of tree canopy coverage greater than 50%.

It is ESA's opinion that the condition of much of the WQR in the northern portion of the project area, within the primary development site, is more appropriately categorized as Class C (Poor). MMC Table 19.402.11.C describes "Poor" condition WQR as that with a combination of trees, shrubs, and ground cover less than 80% present and/or with less than 25% canopy coverage in the vegetated corridor. Pavement occupies a substantial portion (>20%) of the WQR in the northern portion of the project area, north of the SE Adams St. right-of-way, and tree canopy coverage in that area is less than 25%.

While the 'poor' vs. 'marginal' classification helps inform a sense of the existing WQR that will be impacted, the distinction is not significant for this review because the proposed mitigation addresses the MMC Table 19.402.11.C requirements for both conditions, as described later in this memorandum.

- **Review the applicant's detailed verification of the HCA boundary (starting on page 3 of the report and as shown on Figure 4).**

  Response: Page 3 of the PHS report states: "*Because there is discrepancy between the City-mapped HCA, the Applicant proposes to verify HCA on the site using the detailed HCA verification procedures…*"

  The PHS report does not identify specifically what is the "discrepancy" in City-mapped HCA, but it goes on to address the HCA verification procedures from MMC 19.402.15.A.2.b and presents both City-Mapped HCA and Field-Verified HCA on Figure 4. The difference between the two HCA boundary lines is relatively small and does not result in substantially more or less HCA on the site. The PHS report does not describe the 'corrections' to the HCA line (i.e., where the City-mapped boundary is in error), but the report describes data sources and methods used to determine the verified HCA boundary presented on Figure 4, and the verified boundary appears to accurately reflect site conditions.

b. Impacts

- **Consider and comment on the proposal to permanently disturb the majority of the WQR and HCA on the primary development site, with off-site mitigation in the adjacent Adams Street**

right-of-way and Dogwood Park. How will the loss of riparian habitat where the primary site is adjacent to Kellogg Lake/Creek affect the water feature's ecological function?

Response: The PHS report documents a total permanent WQR impact area of 0.31 acres, the majority of which is located north of the SE Adams St. right-of-way. An additional 0.05-acre of HCA adjacent and outside of the WQR, mostly within the SE Adams St. right-of-way, would also be permanently impacted. Permanent WQR impacts do not extend all the way to the Kellogg Lake OHW, but they encompass a proposed pervious plaza that approximates the break in slope above Kellogg Lake and extend landward to the outer edge of the WQR, including the proposed building. Much of the WQR within the identified permanent impact area is already impacted by the existing paved parking lot. The Tree Removal Plan presented on Figure 8 of the PHS report shows only one tree proposed for removal within the permanent impact area of the WQR, with eight additional trees proposed for removal in WQR temporary disturbance areas to the south.

In terms of the ecological functions listed in MMC 19.402.1.C.2:

- The permanent impacts to WQR would reduce the width of the existing vegetated riparian corridor along the north/northeastern portion of the lake (mostly shrubs and groundcover in the permanent impact area), thereby reducing the vegetated corridor's effectiveness at separating the water feature from development.
- Microclimate and shade functions provided by existing vegetation in the permanent impact area will be somewhat reduced by the reduction in vegetation width, although the location of the impact area on the north/northeast side of the lake and the lack of large mature trees within the permanent impact area limit the effect.
- Reduced vegetation within the WQR and HCA in the permanent impact area will reduce the natural ability of those areas to provide water filtration, infiltration, and natural purification functions, although the proposed stormwater management plan for the proposed development would adequately treat stormwater, thus limiting the potential for adverse water quality impacts to the lake. Impacts to bank stabilization and sediment/pollutant control functions should also be limited by the proposed stormwater management approach.
- The proposed development would not substantially affect large wood recruitment potential or natural channel dynamics. Natural channel dynamics of Kellogg Creek/Kellogg Lake have already been modified by surrounding development and the impounding effects of McLoughlin Blvd (Kellogg Dam) immediately downstream.

- **Will the proposed off-site mitigation adequately compensate for detrimental impacts to the ecological function of the disturbed resource areas?**

  Response: There is an apparent discrepancy between the mitigation planting plan/schedule described in the PHS report narrative (text starting on Page 19, including Tables 3-6) and the planting plan/schedule shown on Figures 9 and 9A of the report: the report text describes four planting areas (A-D) totaling 0.53 acres while the figures shows three planting areas (A-C) totaling 0.37 acres. ESA recommends that this apparent difference be clarified by the applicant.

  The presented mitigation is intended to restore temporary impact areas with native vegetation and enhance areas of generally higher-quality WQR than is currently contained in the proposed

permanent impact area, but which could function at a higher level with invasive species removal and additional native plantings. The existing riparian vegetation to be enhanced is mostly off-site but adjacent to the primary development site, along Kellogg Lake within the SE Adams St. right-of-way and Dogwood Park. The proposed enhancement plantings cover an area greater than the combined area of permanent WQR/HCA impact.

Nine trees greater than 2.5-inch caliper will be removed from the WQR and HCA for the project from areas of temporary and permanent disturbance. The restoration/mitigation described in the PHS report text identifies a total of 256 trees and 995 shrubs proposed for planting, along with native seed application.

While ecological functions will be impacted locally in the permanent WQR/HCA impact areas, as described in the response to the previous bullet, it is ESA's opinion that the proposed mitigation can adequately compensate for those impacts.

- **Will the proposed removal of material from within the mitigation area (to compensate for fill placed in the floodplain) result in any detrimental impacts to ecological function that cannot be addressed with the proposed mitigation?**

  Response: To meet balanced cut/fill requirements in the 100-year floodplain, the project proposes excavation along Kellogg Lake that would temporarily disturb areas outside of the permanent WQR/HCA impact areas. The excavation would lower areas along Kellogg Lake between the OHW level and a proposed gabion retaining wall marking the edge of new development. As described in the Floodplain Analysis Report prepared by DOWL, dated August 2021, the excavation would increase inundation frequency of the areas immediately adjacent to the lake below the retaining wall, creating a configuration closer to natural conditions than the current floodplain.

  The excavation area is proposed for restoration planting. The PHS planting plan has identified "wet" area plantings for areas of excavation, with species that can generally tolerate wet conditions (e.g., black cottonwood, Oregon ash, red alder). All proposed excavation is above the OHW level and should not create conditions of excessive inundation for plant survival. The DOWL Floodplain Analysis Report notes that the excavated areas could see some sediment accumulation on the order of up to 6-12 inches. With the proposed monitoring and maintenance program, ESA expects revegetation could be successful in the areas of cut, and we do not foresee the floodplain excavation creating detrimental impacts to ecological function that cannot be addressed with the proposed mitigation.

c. Alternatives Analysis

- **Is the applicant's analysis of alternative scenarios reasonable with respect to each scenario's impacts to the WQR and HCA?**

  Response: The alternatives analysis starting on Page 16 of the PHS report describes why an alternative with no impact to the WQR or HCA is not feasible and why alternatives with less impact than the proposed project are also not feasible. The PHS report supports the alternatives analysis by citing the goals of the City's Housing Needs Analysis (HNA) and the goals of the site's Downtown Mixed Use (DMU) zoning, which encourage development that extends to the property line to maximize use of undeveloped or underdeveloped lots close to public transportation. The conclusion

is that alternative site layouts with less impact to WQR and HCA would not be consistent with the City's goals for housing and the site's zoning.

The use of existing City documents and zoning goals is a reasonable approach for justifying the proposal. The City must still balance housing needs and zoning goals with natural resource protections, but, in ESA's opinion, the baseline justification is reasonable if the adverse impacts to WQR/HCA can be adequately mitigated according to MMC 19.402 standards.

d. Mitigation

- **Review the proposed mitigation plan (Figure 9) and consider the narrative related to the proposed mitigation. Has the applicant accurately described the adverse impacts that will be caused by the proposed development?**

  Response: The PHS report describes existing ecological functions and values of the riparian area on the site, quantities temporary and permanent impacts to WQR and HCA, and acknowledges that the proposal will reduce the amount of WQR and HCA habitat available for wildlife usage. The descriptions of impacts appear to be reasonable and accurate.

  The planting information on Figure 9 (Mitigation Plan) and Figure 9A (Mitigation Plant Schedules) show three planting areas: A, B, and C. Those figures do not appear to match the descriptions of planting provided in the PHS report text starting on Page 19 and including Tables 3 through 6, which identify four planting areas: A, B, C, and D. Planting area D is missing from the figures. This should be corrected.

- **Does the mitigation plan sufficiently address the mitigation requirements established in MMC Table 19.402.11.C for WQR areas and MMC Subsection 19.402.11.D for HCA's?**

  Response: The PHS report explicitly identifies and addresses all relevant mitigation requirements in the above-referenced MMC sections, starting on Page 18. In summary, the proposed mitigation includes: inventory and removal of man-made debris and noxious materials that might be present within the WQR; implementation of a stormwater plan that will meet City requirements for runoff rates and water quality; removal of non-native invasive plants; and the installation of native tree and shrub plantings and application of native seed to cover all bare ground. The proposed mitigation addresses MMC Table 19.402.11.C requirements for permanent WQR impacts on the northern portion of the site, whether the WQR is classified as 'marginal' or 'poor'.

- **Are the numbers, species, and locations of proposed mitigation plantings sufficient and appropriate for the proposed impacts?**

  Response: The species proposed for planting are all native and appear to be appropriate for the planting areas. The mitigation plan includes "wet" planting schedules and "mesic" planting schedules, depending on the area/elevation. The numbers, species, size, diversity, and spacing of the proposed plantings adhere to the requirements of MMC Subsection 19.402.11.D.

  As noted previously, ESA recommends that the applicant update the mitigation plan/schedule figures (Figures 9 and 9A) in the PHS report to ensure consistency with the report text and tables (i.e., add Planting Area D to the figures).

- **Is the proposed mitigation sufficient to reestablish and/or improve the ecological functions and values that will be disturbed and negatively 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, or Degraded.

Response: Ecological functions and values on the primary development site have been impacted by previous development, including the existing paved parking area that encroaches into the WQR. The proposed development would further impact functions and values by introducing a new multi-story building that further encroaches into the WQR. The proposed mitigation would maintain some functions and improve some overall site functions by increasing native plant coverage, tree and shrub numbers, and structural/species diversity. The ecological functions and values listed in MMC 19.401.1.C.2 are addressed in the table below.

Function/Value	Overall Project Effect	Rationale
Vegetated corridors to separate protected water features from development	Unchanged	Vegetated corridor width will be reduced along the north/northeastern shoreline of Kellogg Lake. Vegetated corridor quality and buffering effect will be enhanced over time in the mitigation planting areas to the south, through increased vegetation coverage and species/structure diversity.
Microclimate and shade	Improved	Microclimate and shade functions provided by existing vegetation in the permanent impact area will be somewhat reduced by the reduction in vegetation width, although the location of the impact area on the north/northeast side of the lake, existing pavement, and the lack of large mature trees within the permanent impact area limit the effect. The proposed vegetation enhancement will increase tree and shrub numbers in the mitigation areas, and should positively affect microclimate functions as vegetation matures.
Streamflow moderation and water storage	Improved	The project will balance floodplain fill for the proposed development with an equal volume of floodplain excavation from the site. The excavation along Kellogg Lake, from ~OHW to the proposed gabion wall, will increase the frequency that the floodplain is engaged by flows slightly higher than the 2-year event, providing water storage more frequently than current conditions. The

Function/Value	Overall Project Effect	Rationale
		proposed development will not increase impervious surface of the site.
Water filtration, infiltration, and natural purification	Unchanged	These functions will be reduced in the area where vegetated corridor width is reduced for the proposed development. They may also increase somewhat in areas of the proposed floodplain excavation (more accessible to flood flows) and in areas of the proposed mitigation plantings that will increase ground cover and vegetation diversity.
Bank stabilization and sediment and pollution control	Unchanged	A new gabion retaining wall in the WQR is proposed to accommodate new development and floodplain excavation. The increased accessibility of the floodplain to flood flows in excavation areas may increase sediment retention and pollution control functions in those areas.
Large wood recruitment and retention of natural channel dynamics	Unchanged	The project will not substantially affect large wood recruitment potential or natural channel dynamics, which have already been impacted by site and surrounding development. Large wood source trees are limited in the permanent impact areas. Nine trees are proposed for removal in temporary and permanent disturbance areas. The proposed tree mitigation plantings should increase long-term sources of large wood on those portions of the site.
Organic material sources	Unchanged	Organic material sources will be reduced in the area of the site development where vegetated corridor width will be reduced. Organic material sources may be expected to increase in the mitigation areas of the site, where the proposed plantings should increase vegetation coverage and tree/shrub numbers.

Again, thank you for asking ESA to provide natural resources review assistance for the Coho Point Development Project at 11103 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.

DLC Recommendations from Design Review Meeting
September 7, 2021
(Master File #DR-2021-001—Coho Point redevelopment)

General/Overall

- Recommendation to approve the design review portion of the project. The design is substantially consistent with the purpose statements of the design standards as well as with applicable downtown design guidelines.
- Recommendation to approve the requested building height variance.

Weather Protection

- Recommendation to require some form of weather protection for the bike storage entry at the Washington/McLoughlin corner of the building.

Roofs & Rooftop Equipment

- Suggestion to provide more detail about how rooftop mechanical equipment will be screened.

Other

- Suggestion to provide more detail about the plaza space at the Washington/McLoughlin corner of the building, such as plantings and any street furniture.

MILWAUKIE PLANNING
6101 SE Johnson Creek Blvd
Milwaukie OR 97206
503.786.7600 | 503.786.7630
planning@milwaukieoregon.gov

Downtown Design Review Checklist

Project/Applicant Name: Coho Point redevelopment
Project Address: 11103 SE Main St
Application Submission Date: January 28, 2021
Zoning: DMU
Building Use: Mixed-use development (including 195 multifamily residential units)
Other:
Completed By: Brett Kelver, Senior Planner **on:** August 31, 2021

STANDARDS AND GUIDELINES

	Complies Yes	No	NA
A. Development and Design Standards			
1. Development Standards (Per list of MMC Table 19.304.4)			
a. Permitted Use	☒	☐	☐
b. Minimum Lot Size	☒	☐	☐
c. Minimum Street Frontage	☒	☐	☐
d. Floor Area Ratio	☒	☐	☐
e. Building Height	☐	☒	☐
f. Flexible Ground Floor Space	☒	☐	☐
g. Street Setbacks/Build-to Lines	☐	☒	☐
h. Frontage Occupancy Requirements	☒	☐	☐
i. Primary Entrances	☒	☐	☐
j. Off-street Parking Required	☒	☐	☐
k. Open Space	☒	☐	☐
l. Transition Measures	☐	☐	☒
m. Residential Density Requirements	☐	☐	☒
2. Design Standards (Per list of MMC 19.508)			
a. Building Façade Details	☐	☒	☐
b. Corners	☐	☒	☐
c. Weather Protection	☐	☒	☐
d. Exterior Building Materials	☐	☒	☐
e. Windows and Doors	☐	☒	☐
f. Roofs and Rooftop Equipment	☐	☒	☐
g. Open Space/Plazas	☒	☐	☐
B. Design Guidelines			
1. Milwaukie Character			
a. Reinforce Milwaukie's Sense of Place	☐	☐	☒
b. Integrate the Environment	☒	☐	☐
c. Promote Linkages to Horticultural Heritage	☐	☐	☒
d. Establish or Strengthen Gateways	☐	☐	☒
e. Consider View Opportunities	☒	☐	☐
f. Consider Context	☒	☐	☐
g. Promote Architectural Compatibility	☒	☐	☐
h. Preserve Historic Buildings	☐	☐	☒
i. Use Architectural Contrast Wisely	☒	☐	☐
j. Integrate Art	☐	☐	☒

DOWNTOWN DESIGN REVIEW CHECKLIST

	Complies		
2. Pedestrian Emphasis	**Yes**	**No**	**NA**
a. Reinforce and Enhance the Pedestrian System	☐	☐	☒
b. Define the Pedestrian Environment	☐	☐	☒
c. Protect the Pedestrian from the Elements	☐	☐	☒
d. Provide Places for Stopping and Viewing	☒	☐	☐
e. Create Successful Outdoor Spaces	☐	☐	☒
f. Integrate Barrier-Free Design	☐	☐	☒
3. Architecture			
a. Corner Doors	☒	☐	☐
b. Retail and Commercial Doors	☒	☐	☐
c. Residential Doors	☐	☐	☒
d. Wall Materials	☒	☐	☐
e. Wall Structure	☒	☐	☐
f. Retail Windows	☐	☐	☒
g. Residential Bay Windows	☐	☐	☒
h. Silhouette and Roofline	☒	☐	☐
i. Rooftops	☒	☐	☐
j. Green Architecture	☐	☐	☒
k. Building Security	☐	☐	☒
l. Parking Structures	☐	☐	☒
4. Lighting			
a. Exterior Building Lighting	☐	☐	☒
b. Parking Lot Lighting	☐	☐	☒
c. Landscape Lighting	☐	☐	☒
d. Sign Lighting	☐	☐	☒
5. Signs			
a. Wall Signs	☐	☐	☒
b. Hanging or Projecting Signs	☐	☐	☒
c. Window Signs	☐	☐	☒
d. Awning Signs	☐	☐	☒
e. Information and Guide Signs	☐	☐	☒
f. Kiosks and Monument Signs	☐	☐	☒
g. Temporary Signs	☐	☐	☒

Notes:

Where particular development standards are not met, variances have been applied for and are addressed elsewhere in the general findings.

Where specific design standards are not met, the findings address the purpose statement of that design element as well as the design guidelines deemed by staff to be applicable to that standard.

Note that, although many of the design guidelines are checked as being Not Applicable (NA), that does not mean that the design is not consistent with those guidelines--just that those guidelines were not deemed to be applicable in addressing the specific design standards that are not met.

Brett Kelver

From: Brett Kelver
Sent: Thursday, September 2, 2021 10:25 AM
To: Sandra Jones
Subject: RE: e-mail contact for Coho Point comments

Sandra,

While it's technically possible that some piece of equipment or machinery or material being transported to the Coho Point project might temporarily block the Axletree garage entrance (for a matter of minutes at most during transit), that driveway should not be blocked or closed during construction and should remain available to serve the Axletree building throughout. I double-checked with the Engineering staff, and they expect most construction equipment and materials to access the Coho Point site more from the McLouglin/Washington area than farther east on Washington. But any vehicles or equipment passing east of Main St on Washington should be no different than any other bus or truck passing by on the street.

As for your larger parking concern about visitor parking downtown, I'll include this comment with those going to the Planning Commission for the Sept 28 hearing. It's a good question, and I'm not sure there's a quick or simple response, as it gets to a larger policy concept regarding parking. The City Council adopted a downtown parking management strategy in 2018—you might take a look at it to get a sense of the City's current approach to parking: https://www.milwaukieoregon.gov/sites/default/files/fileattachments/ordinance/93841/r82-2018_with_final_plan_document.pdf. I'll keep your question in mind as I think about how to address the general parking questions in the staff report and/or findings for this application.

BRETT KELVER, AICP
Associate Planner
he • him • his

From: Sandra Jones <[redacted]>
Sent: Wednesday, September 1, 2021 9:37 PM
To: Brett Kelver <KelverB@milwaukieoregon.gov>
Subject: Fwd: e-mail contact for Coho Point comments

This Message originated outside your organization.

Brett,

Thanks for your thorough responses....they are greatly appreciated.

Regarding the questions that you consulted the Engineering Department for, I would like one clarification regarding my ***comment #2*** about use of our ONLY entrance/exit to our Axletree parking garage. I appreciate the traffic studies for "long term" use....but I want to be assured that DURING construction of the new building our entrance/exit to our building will NOT be blocked by equipment etc.

I do have one more concern: Parking for visitors. All of our visitors here at Axletree must use street parking. For our elderly visitors (even if they *have* a disabled permit) and visitors with small children, street parking is very limited and all restricted to 2

hours. We LIVE here in downtown Milwaukie. We should be able to have visitors come and park cars to visit us. Not everyone is capable of using mass transit. What, if anything, does the city consider reasonable for street parking to accommodate visitors of residents who LIVE here in downtown Milwaukie? With the addition of another 190+ unit apartment the street parking will be even more limited and it is already inadequate.

Thanks,

Sandra Jones
11125 SE 21st Avenue, Apartmetn 319
Milwaukie, OR 97222
[redacted]

---------- Forwarded message ---------
From: **Brett Kelver** <KelverB@milwaukieoregon.gov>
Date: Tue, Aug 31, 2021 at 12:18 AM
Subject: e-mail contact for Coho Point comments
To: sandrajones[redacted]>

Sandra,

Thanks for your voice message on Monday evening. It sounds like you have the correct email address for me, so I'm not sure why your attempted message did not go through. I thought I'd try sending you a message directly to see if we can make the connection that way and get the email path straightened out.

If you receive this, please respond (and send your comments). If I don't see something back from you by mid-morning on Tuesday I'll give you a call back to troubleshoot things further.

Sorry for any confusion and frustration—it looks like the email address is correct on the notice form, so I'm not sure what happened but we'll get it figured out!

BRETT KELVER, AICP

Associate Planner

he • him • his

City of Milwaukie

o: 503.786.7657 f: 503.774.8236

6101 SE Johnson Creek Blvd • Milwaukie, OR 97206

Brett Kelver

From: Brett Kelver
Sent: Wednesday, September 1, 2021 9:26 AM
To: Sandra Jones
Subject: RE: e-mail contact for Coho Point comments

Sandra,

Thanks for sending your comments. I'll look for the hard copy you sent via regular mail.

I appreciate your questions, and I checked in with our Engineering Department for answers to several of them. (Our Engineering Department is the entity that deals with issues affecting the public right-of-way and often coordinates with our Public Works department on utility issues as well.) See the responses to your various questions below, in *black italics*.

Your questions are good ones. However, most of them do not directly relate to the items that will be discussed at the September 7 design review meeting. That meeting is focused on the City's Design and Landmarks Committee (DLC) evaluating how well the proposed building meets the relevant standards and guidelines for downtown design. Impacts from construction are more of an operational concern that our Engineering and Public Works departments deal with during that process, and they are not issues that relate directly to the land use review and approval process.

Your concern about impacts to views does relate to one item that the DLC will discuss at the September 7 meeting—the request to exceed the allowed building height by one story (allowing six stories instead of five). I would encourage you to take a look at the DLC staff report and recommended findings, which were just posted yesterday as part of the e-packet for the Sept 7 meeting (https://www.milwaukieoregon.gov/bc-dlc/design-and-landmarks-committee-48). There you can see some discussion of the height variance request and see staff's outline of how we think the proposal meets the approval criteria for the height variance.

The way this particular land use review process works, the DLC is not a final decision-maker, but they will provide a recommendation on the design and height variance to the Planning Commission (PC). The PC will hold a public hearing on September 28, where the whole project will be reviewed against all of the applicable criteria (including natural resource review, Willamette Greenway review, transportation impacts, and development standards in addition to downtown design and the height variance) en route to making a final decision. We will send another public notice in advance of that meeting and you are welcome to provide comments about that as well. When you get that notice, I would encourage you to look at the code online (http://www.qcode.us/codes/milwaukie/) and check out the relevant code sections to see the applicable criteria and focus your comments on them.

There are a lot of land-use-review components to this application, and it is important to understand what the black-and-white standards are that the project has to meet and where there is discretion for the PC in making a decision. For example, the development code sets a three-story height limit for buildings in this part of downtown, but it also allows height bonuses for up to two stories if the project has a residential component and meets some certifiable "green building" standards. So five stories are allowed outright and cannot really be challenged (if the standard is met, the standard is met), but the request to have a sixth story is discretionary and the applicant has to show that the approval criteria are met.

All that said, I will include your comments in the public record and will share them with the DLC and note that we received them at next week's DLC meeting.

BRETT KELVER, AICP

Associate Planner
he • him • his

From: Sandra Jones <[redacted]>
Sent: Tuesday, August 31, 2021 12:36 AM
To: Brett Kelver <KelverB@milwaukieoregon.gov>
Subject: Re: e-mail contact for Coho Point comments

This Message originated outside your organization.

Thanks for your response.

The only thing that I see that is different with your email address is the 2 capitalized letters in your name (although I don't think that matters….but maybe it does for government email addresses?)

Meanwhile, I printed off my email and sent it vis USPS.

My phone number is [redacted].

Here is the copy/ paste of the original email:

> Brett Kelver,
>
> I am a resident of Axletree Apartments (11125 SE 21st Ave). I have some questions/comments about construction of this new 6 story "apartment + plus" building (between Main Street and McLoughlin Blvd, south of Washington Street) which I would like to have addressed at the public meeting on September 7:
>
> .
>
> 1) This will ruin the "view" of the river for at least 50% of our residents here at Axletree....SAD! Residents PAY for the view from these units...which will be lost.
>
> *I can appreciate this issue and concern. To a large degree, that is just part of the nature of buildings in a compact downtown area, especially a downtown that is undergoing some redevelopment and seeing the construction of new buildings. Unfortunately, the Axletree building came before this one and is on the far side of the river, so yes, the views for many Axletree residents will be impacted. It will likely be a year or two before that impact is complete, but it is coming. The same would have been the case if the owners of the site where the (former) Bloom garden supply building (11138 SE Main St) immediately adjacent to Axletree (west side) had been redeveloped first—although the Coho Point building will have a larger impact on the views, it is worth noting that a new multistory building on the Bloom site could mean that residents on the western side of the Axletree building could one day have another new building more immediately outside their windows. My point is that this is a fact of life in a downtown area, where there is no guarantee a view will be preserved next to a developable site. I'm not*

unsympathetic to the frustration that such a change brings to those who were there first; I will point out that the same frustration is there for other properties further east on Washington Street for which the Axletree building became something that blocked their view.

2) What assurance do we have that we will be able to enter and exit the entrance to our secured parking garage during and after construction (mid block, south side of SE Washington St between Main and SE 21st Ave)? Under no circumstances should we be blocked from entering and exiting our garage.

The applicant prepared a traffic impact study for this project, and the City's traffic consultant reviewed the study and confirmed its conclusions. The City Engineer has little to no concern regarding vehicles from the Coho Point project having much impact on the Axletree driveway on Washington Street. The traffic study anticipates an average of 10 eastbound trips and 2 westbound trips per hour on Washington between Main Street and 21st Avenue, for the AM Peak Hour of 7-9 AM. For the PM Peak Hour of 4-6 PM, the traffic study anticipates 6 eastbound trips and 11 westbound trips per hour on Washington Street between Main and 21st. Some 70-75% of vehicle trips arriving to Coho Point are anticipated to use McLoughlin Boulevard to Washington, and some 75-80% of the trips leaving Coho Point are anticipated to use Main Street, to Monroe Street, to McLoughlin.

3) Will the streets and sidewalks around and adjacent to our (Axletree) building be safe and usable during and after construction (not blocked off, not deconstructed)?

No sidewalk around the Axletree building should be impacted by construction of the Coho Point site. Obviously, both Main Street and Washington Street adjacent to the Coho Point site itself will be impacted off and on by construction equipment during construction of the building and construction of the sidewalks adjacent to both of these streets. No pedestrian traffic will be allowed adjacent to the Coho Point building site while it is under construction. While it is too early to have discussed the logistics themselves, in reality the Coho Point construction may quite often need to use the west side parking area on Main Street and the south lane on Washington Street; however, they would need to request and receive a permit through the Engineering Department to occupy the right-of-way in both locations. Typically, we limit occupation of the right-of-way during the AM and PM Peak Hours of traffic. Right-of-way impacts to traffic would be monitored and could be adjusted depending on observations.

4) What assurance do we have that our utilities (water, sewer, garbage, electricity, cable) will not be disrupted or otherwise negatively affected during and beyond construction? (water pressure, water clarity, electricity interruptions, etc.)

With sewer, there will be no impact on any of the other downtown buildings. For water, the City's South Downtown project in 2019 should have extended water lines to the Coho Point site, but the plans and the city's GIS data base are not in agreement; our engineers are looking into what has been installed. We can't speak for electricity, cable, or garbage because the City does not control those; however, it is rare for construction to impact power or telecom service to surrounding businesses, unless an unintended accident should occur.

5) **IMPORTANT:** Will the owners/managers of this building keep the areas around their building and sidewalks CLEAN? There are a number of homeless people who constantly urinate and defecate around the Axletree building and the same will likely occur around this new building.

I will pass your concerns along to the applicant team, as this is an issue for ongoing management by the future owners/operators of the new building.

Thanks.

Sandra Jones

Sent from my iPhone

On Aug 31, 2021, at 12:18 AM, Brett Kelver <KelverB@milwaukieoregon.gov> wrote:

Sandra,

Thanks for your voice message on Monday evening. It sounds like you have the correct email address for me, so I'm not sure why your attempted message did not go through. I thought I'd try sending you a message directly to see if we can make the connection that way and get the email path straightened out.

If you receive this, please respond (and send your comments). If I don't see something back from you by mid-morning on Tuesday I'll give you a call back to troubleshoot things further.

Sorry for any confusion and frustration—it looks like the email address is correct on the notice form, so I'm not sure what happened but we'll get it figured out!

BRETT KELVER, AICP
Associate Planner
he • him • his
City of Milwaukie
o: 503.786.7657 f: 503.774.8236
6101 SE Johnson Creek Blvd • Milwaukie, OR 97206

Disclaimer

The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful.

This email has been scanned for viruses and malware, and may have been automatically archived by **Mimecast Ltd**.

Date: September 13, 2021

To: Brett Kelver, Associate Planner, City of Milwaukie

RE: 11103 SE Main Street, DR-2021-001

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, and there are no site conditions that would prevent the applicant from constructing the proper access. 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 (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.

Alex McGladrey
Clackamas Fire District #1
Deputy Fire Marshal