AGENDA

MILWAUKIE PLANNING COMMISSION
Tuesday, March 22, 2016, 6:30 PM

MILWAUKIE CITY HALL
10722 SE MAIN STREET

1.0 Call to Order - Procedural Matters

2.0 Planning Commission Minutes – Motion Needed

- 2.1 July 14, 2015
- 2.2 July 28, 2015 Joint Session
- 2.3 July 28, 2015

3.0 Information Items

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

5.0 Public Hearings – Public hearings will follow the procedure listed on reverse

5.1 Summary: Shelter and Office
Applicant/Owner: Stephen McMurtry, Northwest Housing Alternatives
Address: 2316 SE Willard St
File: CSU-2015-008, CU-2015-002, TFR-2015-001
Staff: Keith Liden

6.0 Worksession Items

7.0 Planning Department Other Business/Updates

8.0 Planning Commission Discussion Items – This is an opportunity for comment or discussion for items not on the agenda.

9.0 Forecast for Future Meetings:

April 12, 2016	1. Public Hearing: MLP-2015-004/VR-2016-001 55th Ave Partition
April 26, 2016	1. TBD

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 speak at this meeting, please fill out a yellow card and give to planning staff. Please turn off all personal communication devices during meeting. For background information on agenda items, call the Planning Department at 503-786-7600 or email planning@ci.milwaukie.or.us. Thank You.

2. **PLANNING COMMISSION MINUTES.** Approved PC Minutes can be found on the City website at www.cityofmilwaukie.org

3. **CITY COUNCIL MINUTES** City Council Minutes can be found on the City website at www.cityofmilwaukie.org

4. **FORECAST FOR FUTURE MEETING.** These items are tentatively scheduled, but may be rescheduled prior to the meeting date. Please contact staff with any questions you may have.

5. **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 come to the front podium, state his or her name and address for the record, and remain at the podium until the Chairperson has asked if there are any questions from the Commissioners.

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.

The City of Milwaukie will make reasonable accommodation for people with disabilities. Please notify us no less than five (5) business days prior to the meeting.

Milwaukie Planning Commission:

Sine Adams, Chair
Shaun Lowcock, Vice Chair
Shane Abma
Shannah Anderson
Adam Argo
Scott Barbur
Greg Hemer

Planning Department Staff:

Denny Egner, Planning Director
Keith Liden, Planning Consultant
Brett Kelver, Associate Planner
Vera Kolias, Associate Planner
Alicia Martin, Administrative Specialist II

CITY OF MILWAUKIE
PLANNING COMMISSION
MINUTES
Milwaukie City Hall
10722 SE Main Street
TUESDAY, July 14, 2015
6:30 PM

COMMISSIONERS PRESENT
Shaun Lowcock, Vice Chair
Shane Abma
Shannah Anderson
Scott Barbur
Greg Hemer

STAFF PRESENT
Denny Egner, Planning Director
Vera Kolias, Associate Planner
Dan Olsen, City Attorney

COMMISSIONERS ABSENT
Sine Bone, Chair

1.0 Call to Order – Procedural Matters*
Commissioner Hemer, as pro tem Chair, called the meeting to order at 6:35 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.*

2.0 Planning Commission Minutes – None

3.0 Information Items

Denny Egner, Planning Director, introduced the new Planning Commissioner, Shane Abma.

Commissioner Abma introduced himself and gave a brief professional history.

Mr. Egner also noted that on July 22nd there would be two presentations by Joe Minicozzi who was a downtown economic development expert. The Commission was invited to attend.

4.0 Audience Participation –This is an opportunity for the public to comment on any item not on the agenda. There was none.

5.0 Public Hearings
5.1 Summary: Moving Forward Milwaukie Central Milwaukie Plan and Code Amendments #5
Applicant: City of Milwaukie
File: CPA-2015-001, ZA-2015-001
Staff: Vera Kolias and Denny Egner

Commissioner Hemer called the continued hearing to order and read the conduct of legislative hearing format into the record.

Vice Chair Lowcock arrived.

Vera Kolias, Associate Planner, presented the staff report via PowerPoint. She reviewed the background, goals, and hearings schedule of the project. This was intended to be the final amendment package hearing.

Ms. Kolias summarized the revisions to the amendments based on direction from the Commission regarding flex space development standards, preliminary circulation plans, and design standards. She reviewed staff recommendations, the decision-making options, and the next steps with City Council.

Commissioner Anderson requested that incentivizing green building be included in the Fundamental Concept #2 on page 26 of the Central Milwaukie Land Use and Transportation Plan.

Commissioner Hemer called for public testimony.

Daniel Heffernan, representative of the Murphy site property owners, 2525 NE Halsey St Portland, noted his appreciation for the Commission's time and consideration of his comments and input. Regarding access to the site from 32nd Ave, he felt it was important to emphasize safe bike and pedestrian ingress and egress into the site from the east. However, the Transportation System Plan (TSP) only identified one project for a bikeway through the site from 29th Ave to the north to 31st Ave to the south. His concern was that by creating a bikeway through the site would create an attractive nuisance with regard to crossings on Harrison St at 31st Ave. The safer option would be to allow for crossing on Harrison St at 32nd Ave.

Mr. Egner responded to Mr. Heffernan's comments, specifically that the concept of the north-south bikeway connection through the site was the most direct route and when it was constructed, the intersection at Harrison St would need to be carefully planned with regard to the railroad crossing, etc.

Ms. Kolias noted that there was language in the TSP that allowed for flexibility for the proposed projects.

Mr. Egner proposed to change the name and description for Project AU in the TSP to reflect a crossing at Harrison St between Campbell St and 32nd Ave, from 31st Ave, in order to build in more flexibility.

Commissioner Hemer closed public testimony.

Planning Commission Deliberation:

Commissioner Anderson reiterated her request to include green building incentives in the Central Milwaukie Land Use and Transportation Plan.

- **Ms. Kolias** noted that those incentives were captured in the proposed Zoning Code. She would include the same language under the Development Standards section of Fundamental Concept #2.

Commissioner Hemer was not in favor of a bicycle pathway through the Murphy site; however, due to the amount of public input and involvement done on the TSP, he was not in favor of changing it without further public input. Changing the project description to allow for more

flexibility, as well as allowing for Type II Preliminary Circulation Plan process to address access issues, seemed to be the best solution.

The Commission discussed how to best address the issue of the proposed bikeway concept. They agreed to allow for the issue to be vetted at the time of development, which would include the Preliminary Circulation Plan.

It was moved by Vice Chair Lowcock and seconded by Commissioner Anderson to recommend approval to City Council of CPA-2015-001, ZA-2015-001 for Central Milwaukie Plan and Code Amendments with the recommended amendments to the findings and conditions of approval as discussed. The motion passed unanimously

6.0 Worksession Items

6.1 Summary: APA Ethics for Planning Commissioners Video
Staff: Denny Egner

Mr. Egner suggested that this item be postponed in order for Chair Bone to be able to participate. **The Commission** agreed.

7.0 Planning Department Other Business/Updates

8.0 Planning Commission Discussion Items

Commissioner Hemer noted the 50th Commemoration Vietnam Memorial Wall event was occurring from July 23-26 at Milwaukie High School.

9.0 Forecast for Future Meetings:

July 28, 2015	1. Public Hearing: WG-2015-001 Riverway Ln Addition 2. Joint session with City Council: Land Use Training
August 11, 2015	1. Public Hearing: CPA-2015-002 3 Parks Master Plans 2. Worksession: MFM Neighborhood Main Streets Code Amendments #1 *tentative*

Meeting adjourned at approximately 8:47 p.m.

Respectfully submitted,

Alicia Martin, Administrative Specialist II

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Shaun Lowcock, Vice Chair

CITY OF MILWAUKIE
PLANNING COMMISSION and CITY COUNCIL JOINT SESSION
MINUTES
Milwaukie City Hall
10722 SE Main Street
TUESDAY, July 28, 2015
6:30 PM

COMMISSIONERS PRESENT
Sine Bone, Chair
Shaun Lowcock, Vice Chair
Shane Abma
Shannah Anderson
Scott Barbur
Greg Hemer

STAFF PRESENT
Li Alligood, Senior Planner
Vera Kolias, Associate Planner

CITY COUNCILORS PRESENT
Mark Gamba, Mayor
Lisa Batey
Scott Churchill
Wilda Parks

1.0 Call to Order – Planning Commission and City Council

Mayor Gamba and Chair Bone 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.*

2.0 Introductions

3.0 Joint Session

3.1 Summary: Land Use Training
Staff: Tim Ramis, City Attorney

Tim Ramis, City Attorney, reviewed key legal points on land use and legislative cases for the Council and Commission:

- When the Council or Commission conducts a land use proceeding, they are presiding over a conflict resolution process.
- It is important to evaluate the type of role the members are playing for different types of applications: acting as a judge and applying law for quasi-judicial applications, or acting as a legislator and creating policy for legislative applications.
- When acting legislatively, ex parte or bias does not apply. However, neither is permissible when applying law based on criteria (quasi-judicial).
- **Mr. Ramis** described what constitutes ex parte contacts and potential or actual bias. If there are questions, members are encouraged to contact the City Attorney or the Oregon Government Ethics Commission. He went on to express the following points:
  - If a decision benefits a group of similarly-situated people to that of a Commission or Council member, it is important to take care in that decision because the outcome of the challenges to that type of argument have varied.
  - Declaration of potential ex parte contacts or conflicts need to be done at the beginning of each quasi-judicial hearing.
- In a quasi-judicial hearing, the criteria are the only basis for the decision regardless of

opinion. If the criteria are undesirable, members can propose to change the law at a later time.

- Findings are necessary to have the decision in writing and to allow for the process to be open and transparent for the record. Explanation of interpretation of the code is also necessary in the findings in order to potentially defend the decision in the case of ambiguous code language.
- Conditions need to be an extension of the criteria. Oftentimes it is discovered through the hearing process that additional conditions need to be drafted.
    - Conditions that involve dedication of land or extensive construction of infrastructure are treated differently, i.e. exactions. Local government is limited in the exactions that can be taken under the principle of rough proportionality, i.e. conditioned only to the extent that the condition is proportional to the impact of the project.
- It is important to keep the public hearing portion of the process separate from the deliberation portion.
- Quasi-judicial cases require a decision within 120 days ("the clock"), although it can be waived by the applicant. In order to allow for time for any additional information and subsequent responses, it is helpful to set up a schedule for such steps rather than continuing the hearing. If the applicant asks for more time, the clock can be suspended.
- Roles in the process:
    - The City Attorney's role is to advise on rules and answer questions about process but cannot advise on substantive or decision matters.
    - The role of staff is to guide the process and to give their best professional opinion, based on the facts as they know them at the time of the application, on the analysis of the proposal and what the outcome should be. Staff reports present staff's best analysis of the case and may not agree with the preferred approach of the Commission or Council members. However, the members will have more evidence based on the public hearings.
    - The applicant's role is to advocate for their project and provide the best evidence.
    - Opponents have the same obligation for evidence.
    - The Planning Commission handles the initial hearing, presentations, testimony, and decision.
    - The City Council is presented with a case that already has an established record, although new arguments can be raised, interpretations can be made, etc.

Mr. Ramis answered questions from the Council and Commission.

The Council and Commission discussed various topics.

4.0 Adjournment

Meeting adjourned at approximately 7:33 p.m.

Respectfully submitted,

Alicia Martin, Administrative Specialist II

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Sine Bone, Chair

CITY OF MILWAUKIE
PLANNING COMMISSION
MINUTES
Milwaukie City Hall
10722 SE Main Street
TUESDAY, July 28, 2015
8:00 PM

COMMISSIONERS PRESENT
Sine Bone, Chair
Shaun Lowcock, Vice Chair
Shane Abma
Shannah Anderson
Scott Barbur
Greg Hemer

STAFF PRESENT
Li Alligood, Senior Planner
Vera Kolias, Associate Planner

1.0 Call to Order – Procedural Matters*
Chair Bone called the meeting to order at 8:00 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.*

2.0 Planning Commission Minutes

3.0 Information Items
There were no information items.

4.0 Audience Participation –This is an opportunity for the public to comment on any item not on the agenda. There was none.

5.0 Public Hearings
5.1 Summary: Riverway Ln Addition
Applicant/Owner: Carter Case/Linsey Pullan
Address: 10545 SE Riverway Ln
File: WG-2015-001
Staff: Vera Kolias

Chair Bone called the hearing to order and read the conduct of quasi-judicial hearing format into the record.

Vera Kolias, Associate Planner, presented the staff report via PowerPoint. She noted the location, orientation, and background regarding the setback variance received in 2014 for the same addition. The key question for the Commission was whether the proposed project was consistent with the objectives and policies of the Willamette Greenway overlay. Due to the location of the subject property and its lack of any direct access or visibility to the river, the project would have little to no impact on the river. She reviewed the staff recommendation for approval and the decision-making options.

Ms. Kolias further explained that this application was not included in the original variance application as the applicant wanted to ensure the variance approval prior to submitting this application.

Chair Bone called for public testimony.

Gary Klein, 10795 SE Riverway Ln, was a neighbor of the applicant and a member of the Historic Milwaukie Neighborhood District Association Land Use Committee, and was in support of the application.

Chair Bone closed public testimony.

Planning Commission deliberation.

Commission Lowcock noted that, since a similar, related application had been seen by the Commission previously, he was in favor of approval. The Commission agreed.

It was moved by Commissioner Hemer and seconded by Vice Chair Lowcock to approve WG-2015-001 for 10545 SE Riverway Ln addition with the findings and conditions as presented. The motion passed unanimously.

6.0 Worksession Items

7.0 Planning Department Other Business/Updates

Li Alligood, Senior Planner, noted there was a new GIS Coordinator for the City.

8.0 Planning Commission Discussion Items

Commissioner Hemer thanked the City for the Vietnam Memorial Wall celebration, and noted the opening of the Portland-Milwaukie Light Rail Orange Line celebration was occurring on September 12, 2015.

Commissioner Abma asked about a comment from Mayor Gamba at the joint session regarding the Code, and if it was being updated or had been updated recently.

- **Ms. Alligood** responded that since 2009, major work has been done on the Code with regard to land use review procedures, nonconforming use and variance procedures, code reformatting, residential design standards, and manufacturing zone standards. However, conditional uses and community service uses still needed to be looked at. The Moving Forward Milwaukie Downtown Code Amendments were currently in the public hearing phase with City Council. She noted the direction to staff from Council.

9.0 Forecast for Future Meetings:

August 11, 2015	1. Public Hearing: CPA-2015-002 3 Parks Master Plans
	2. Worksession: MFM Neighborhood Main Streets #2
August 25, 2015	1. TBD

Meeting adjourned at approximately 8:28 p.m.

Respectfully submitted,

Alicia Martin, Administrative Specialist II

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Sine Bone, Chair

MILWAUKIE
Dogwood City of the West

To: **Planning Commission**

Through: **Dennis Egner, Planning Director**

From: **Keith Liden, Consulting Planner**

Date: **March 15, 2016, for March 22, 2016 Public Hearing**

Subject: **File:** CSU-2015-008 / CU-2015-002 / TFR-2015-001

Applicant: Stephen McMurtry, Northwest Housing Alternatives

Owner(s): Northwest Housing Alternatives

Address: 2316 SE Willard; Multiple tax lots at the NW corner of 23rd Ave and Lake Rd

Legal Description (Map & Tax Lot): TLID 11E36BC0 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, & 6900

NDA: Historic Milwaukie

ACTION REQUESTED

Approve the application and adopt the recommended Findings of Approval found in Attachment 1. Approval of this application would result in an approval of a Community Service Use (CSU-2015-008) for a residential shelter to provide temporary housing for up to 8 families and a Conditional Use (CU-2015-002) for a 12,500 square-foot office in the R-2 Zone. These two applications require a Type III review by the Planning Commission. In addition, a Transportation Facilities Review (TFR-2015-001) is necessary to evaluate potential transportation impacts associated with the development.

The site plan and development concept include a proposal for 28 multi-family units, which are not part of this application before the Planning Commission. The multi-family project is a permitted use in the R-2 Zone and will be reviewed separately through a Type I development review process at a later date.

BACKGROUND INFORMATION

The applicant proposes to completely redevelop the entire property, which consists of 10 parcels totaling approximately 1.7 acres. Northwest Housing Alternatives (NHA) ultimately intends to construct a shelter to provide temporary housing for up to 8 families, a 12,500

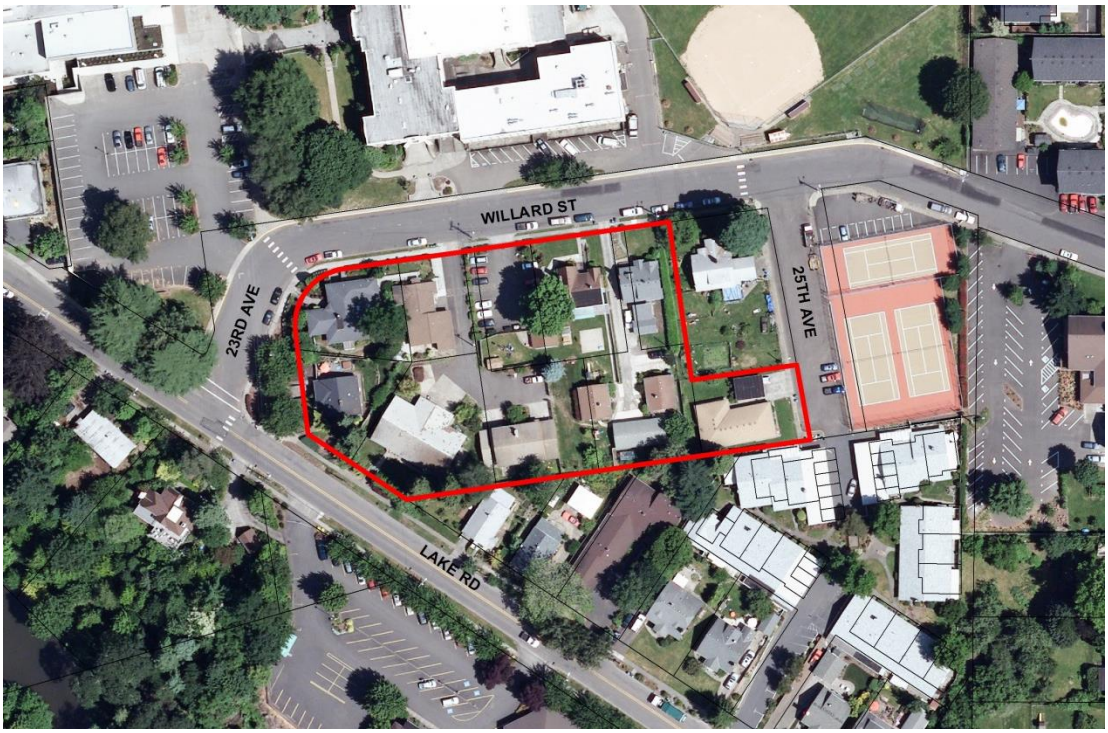
square-foot office for their operation, and 28-unit multi-family units to provide additional housing capacity. This Type III application covers the first two aspects of the redevelopment plan. The applicant proposes to submit a Type I development review application separately for the multi-family units at a later date. The location of the multi-family units are shown in the application plans to provide a clear picture of what the applicant intends to develop.

Nine of the subject properties (1.7 acres) are owned by NHA, and one property (TL 6000 at 0.1 acre) is under contract to be purchased by NHA. The NHA property has been in use as the Annie Ross House (an emergency family shelter) and NHA offices since 1988. Between 1988 and today, NHA has purchased additional properties adjacent to the Annie Ross House and NHA offices and rents those properties to residential tenants. Prior to its use as the Annie Ross House and NHA offices, it was owned by the North Clackamas School District and used as offices, classrooms, and other school-related uses.

A. Site and Vicinity

The site is located at the northeast corner of 23rd Avenue and Lake Road, and contains 10 parcels with the following addresses: 2302, 2316, 2328, 2342, 2400, 2404, & 2416 SE Willard; 11465 SE 23rd Ave; 11481 SE 25th Ave; and an unaddressed property on SE Willard (TLID 11E36BC06200). The NHA property contains 11 buildings, including: 10 dwelling units (6 single-family dwellings and two duplexes); 5 "shelter rooms," located in the Annie Ross House; and a 5,365 square-foot office facility. The site is bounded by SE Lake Road, an arterial, along with SE 23rd Avenue, SE 25th Avenue, and SE Willard Street, which are all local streets. Current driveway accesses to the site are on SE 25th Avenue and SE Willard Street. An aerial photo of the site and immediately adjacent development is shown in Figure 1.

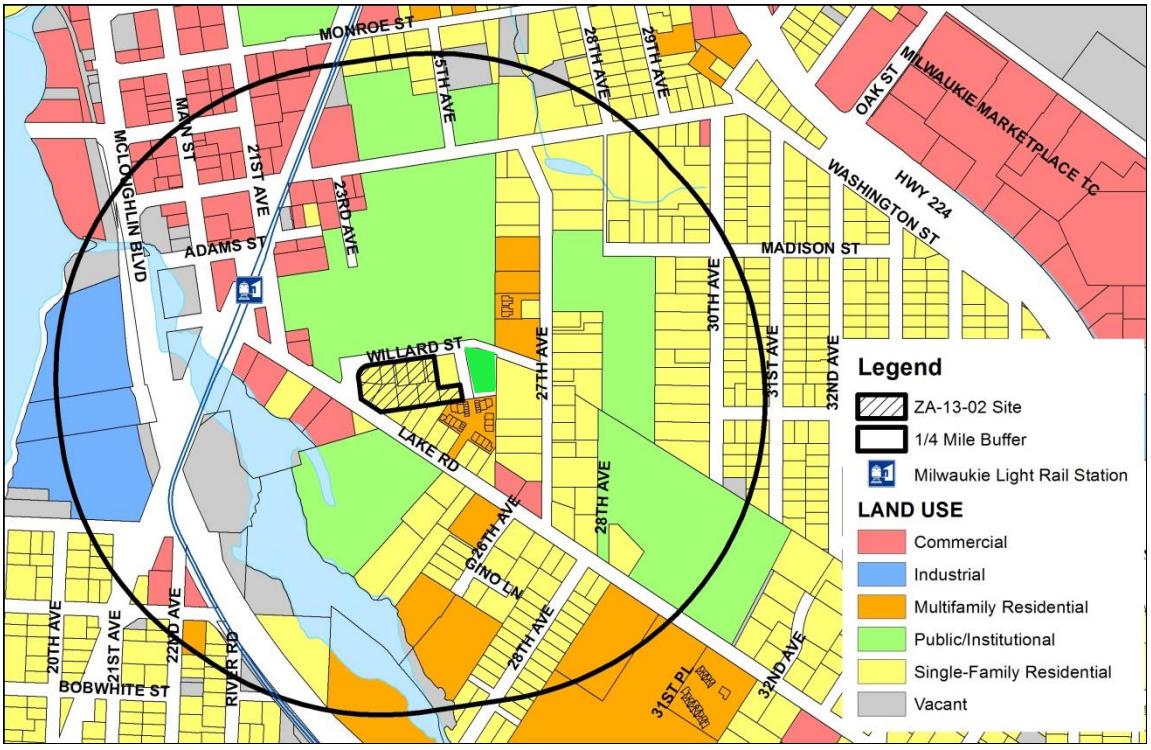
Figure 1. Aerial Photo



As shown in Figure 2, the land uses and development adjacent to the site are mixed and include institutional (schools, churches), multi-family residential (apartments and

condominiums), single-family residential (single-family and duplex dwellings) and office buildings (both purpose-built and converted dwellings). The surrounding properties range from small single-family lots to multiple-acre school and church grounds. The existing residential density of the area ranges from 0 to 37 dwelling units per acre.[1]

Figure 2. Existing Uses within 1/4 Mile of the Site



Source: Metro RLIS

The site is also located about 650 feet, or 1/8 mile, from the MAX light rail station. As has happened near other light rail stations, uses in the area are likely to intensify now that light rail service has begun. In addition, several property owners in the area have indicated interest in new development or redevelopment in the station area.

B. Zoning Designation

R-2 Residential

C. Comprehensive Plan Designation

C/HD Mixed Use

D. Land Use History

- **August 27, 1985:** CS-85-02, Planning Commission denial of a Community Service Overlay for the operation of an emergency/temporary shelter for homeless families and individuals at 2316 and 2400 SE Willard Street. The denial was based on the

[1] The property at 11850 SE 26th Ave is developed at 37 dwelling units per acre.

Commission's interpretation of the Neighborhood Element of the Chapter 4 of the Comprehensive Plan.

- **October 15, 1985**: AP-CS-85-02, Council approval of Community Service Overlay for the shelter, including a condition of approval that allowed for reconsideration of the approval within one year, with the option of rescinding or restoring the approval.
- **January 13, 1987:** AP-CS-85-02, Planning Commission recommended and Council approved an increase in occupancy of the shelter from 13 to 17 people.
- **October 18, 1988:** AP-CS-85-02, Council adopted an additional condition of approval requiring that a professional staff person be on site at the shelter 24 hours per day, and setting a 6-month review date for April 4, 1989.
- **March 4, 1989**: AP-CS-85-02, Council reviewed the conditions of approval.
- **April 4, 1989**: AP-CS-85-02, Council conducted a 6-month status review of the Annie Ross House.
- **October 3, 1989:** AP-CS-85-02, Council conducted a 1-year review of the Annie Ross House for compliance of conditions of approval and found it compliant, and it directed staff to prepare 6-month and 1-year status reports regarding ongoing compliance with the conditions of approval.
- **April 17, 1990**: AP-CS-85-02, Council conducted a 1.5 year review of the Annie Ross House for compliance with conditions of approval and adopted additional conditions of approval related to replacement of damaged fencing, relocation of the outdoor smoking area, and continued communication with neighbors.
- **September 23, 2010:** CSU-10-09, minor modification of the Annie Ross House approval to permit replacement of an existing detached garage at the Annie Ross House (2400 SE Willard St.) with a pavilion, replacement of existing fencing, construction of a play structure, and installation of a new light in the parking area.
- **May 20, 2014:** ZA-13-02, Council denied a Zoning Map Amendment to rezone the property from R-2 to R-1-B. On appeal, the Council voted to overturn the Planning Commission's March 25, 2014 approval of the zone change.

E. Proposal

The applicant is seeking Community Service Use, Conditional Use, and Transportation Facility Review approvals. Pages 1 and 2 of the application narrative provide a summary description of the proposal, which includes completely redeveloping the entire site with:

1. A shelter designed to provide temporary housing for up to 8 families. This building would be located in the center of the site (see Sheets 1.4 Site Plan, 2.2 Shelter Floor Plans, and 3.1 Exterior Elevations).
2. A 12,500 square-foot office building located on Willard Street and 23rd Street (see Sheets 1.4 Site Plan, 2.2 Shelter Floor Plans, and 3.1 Exterior Elevations, 2.0 and 2.1 Office Floor Plans, and 3.0 Office Exterior Elevations).

Although the application materials include some information regarding three multi-family buildings, they are shown on the plans only to illustrate how the applicant intends to fully redevelop the site. The applicant proposes to submit a separate Type I Development Review application for the multi-family buildings at a later date.

KEY ISSUES

Summary

Staff has identified the following key issues 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. Does the CSU application to provide a residential shelter for up to 8 families satisfy the approval criteria in MMC 19.904.4 for community service uses?

B. Does the CU application to construct a 12,500 square-foot professional office building to accommodate the NHA operation satisfy the approval criteria in MMC 19.905.4 for conditional uses?

C. Will the development be able to provide sufficient parking to support the shelter, office, and multi-family units (subject to a separate Type I development review approval)?

D. Will the proposed office and shelter uses provide sufficient landscaping and buffering with adjacent properties?

E. Are the existing transportation facilities sufficient to support the proposed development?

Discussion

A. Does the shelter satisfy the approval criteria in MMC 19.904.4 for community service uses?

This code section, which applies to the proposed shelter, contains a wide range of criteria, which are generally focused on ensuring availability of adequate transportation facilities, public utilities and services, and compatibility with surrounding uses.

Transportation Facilities

The site is virtually surrounded by public streets including SE 23rd Avenue, SE Willard Street, SE 25th Avenue, and SE Lake Road. The first three are local streets and SE Lake Road is classified as an arterial street. As directed by the city, the applicant provided a Transportation Impact Study (TIS) prepared by Kittleson and Assoc. The study was reviewed by the city staff and the city's consulting traffic engineer, DKS, and found to be complete in its analysis. The study concluded that no measurable traffic impacts would result, and the Level of Service (LOS) for nearby intersections would remain at "C" or better. This exceeds the city's minimum threshold of LOS "D."

The Engineering Director did determine that although the property frontages are improved with curbs and sidewalks, they did not meet current city standards. In addition, SE Lake Road, due to its arterial classification, requires an additional right-of-way dedication of 6.5 feet. As conditioned, the applicant will be providing street frontage improvements that will be compliant with current city and ADA standards. The frontage improvements, along with existing off-site sidewalks in the vicinity, will provide excellent access to transit. TriMet bus route #32 has a bus stop on the SE Lake Road frontage, and a station for the MAX Orange Line is located approximately 650 feet to the north on SE Main Street.

Public Utilities and Services

The property is currently developed and benefits from existing public utilities and services. A review conducted by the Director of Engineering determined that with the exception of stormwater, existing utilities are adequate to serve the site. The method for properly accommodating stormwater coming from the site was evaluated by the applicant's consulting civil engineer, KPFF. The Director of Engineering has reviewed and concurs with the Preliminary Stormwater Drainage Report submitted by KPFF. Conditions of approval will ensure that appropriate stormwater facilities will be provided to serve the development.

Compatibility with Surrounding Uses

Achieving compatibility between adjacent land uses is a fundamental function of the CSU approval criteria. Building heights, setbacks, type and duration of land use activities, potential noise, exterior lighting, landscaping, and buffering are all expected to lead to a compatible relationship between uses. As noted in the application narrative, the surrounding area contains a mix of land uses including Milwaukie High School on the north side of SE 23rd Avenue and SE Willard Street, downtown Milwaukie only a short distance to the northwest, Milwaukie Presbyterian Church on the southwest side of SE Lake Road, and multi-family and single family residences to the east and south.

The shelter building is proposed to be less than the maximum allowable building height, and all building setback requirements of the R-2 Zone can be met. As a CSU, the shelter has an additional setback requirement related to the building height. With a maximum height of 28 feet, it is required to have a minimum setback equal to two-thirds of the building height or 19 feet. The shelter exceeds this setback standard. In addition, the shelter and office building will have the proposed multi-family buildings generally located between them and the adjoining residential properties. As noted above, the three proposed multi-family buildings will be subject to a separate Type I development review application to evaluate compliance with code requirements.

The shelter will have limited hours for outside activity with an evening curfew. With its central location on the site, it will not be particularly visible from any vantage point beyond the site boundary. There are no activities or outdoor equipment proposed that would generate and significant noise.

Compatibility issues pertaining to the parking lot are reviewed in section D. below.

B. Does the office building satisfy the approval criteria in MMC 19.905.4 for conditional uses?

This code section, which applies to the proposed office building, contains seven basic criteria, which are generally focused on site suitability for the proposed use, compatibility with surrounding uses, mitigation of potential impacts, compliance with applicable development standards, consistency with relevant Comprehensive Plan policies, and the availability of adequate transportation facilities, public utilities and services. For this application, these criteria focus on three fundamental issues – site suitability, compatibility with surrounding uses, and mitigation of potential impacts.

Site Suitability

The office building is proposed to replace the existing office buildings. As noted in the findings (Attachment 1), the building will be able to easily satisfy the applicable dimensional and development standards of the R-2 Zone. The office will be located across

the street from the high school and will be a significant distance from any adjoining residential properties. The only aspect of the office use that will be near residential use will be the parking lot, which will serve all three proposed uses – shelter, office, and multi-family units. Suitability and compatibility issues pertaining to the parking lot are covered below.

Compatibility with Surrounding Uses

The office is proposed to have weekday hours between 8:30 a.m. and 5:00 p.m., which are expected to be very compatible with the residential neighbors. The closest land use to the office will be the high school, and the proposed NHA shelter and multi-family buildings. Adjoining residential properties will be well buffered from this building and its entries. Similar to the shelter, there are no activities or outdoor equipment proposed that would generate and significant noise.

Mitigation of Potential Impacts

The major potential impacts identified for the office pertain to the parking lot and transportation system. The parking lot will be shared with the shelter and multi-family units, include landscaping, buffering, and exterior lighting. The analysis of transportation impacts also considered all of the proposed uses for the site. The parking lot is addressed in section D below and the transportation issues in section E.

C. Will sufficient parking be provided?

The parking lot will provide the on-site parking for the three uses proposed for the property (shelter, office, and multi-family). Office and multi-family uses have specified parking standards in MMC 19.600, but a specific standard is not listed for a shelter. The applicant calculated the shelter's parking requirement assuming one space per room – the same standard as multi-family units less than 800 square feet. This yielded a total parking count of 67 spaces. A 25% reduction to 50 spaces is requested as allowed in MMC 19.605.3 B. for locations within 1,000 feet of a light rail station. The request for a 25% reduction is found to be appropriate for several reasons:

- The total parking demand in the Transportation Impact Study (pp. 19-20) is 61 spaces for shelter, office, and 28 multi-family units.
- Once high-capacity transit becomes available (September 2015), commuting behavior does not change immediately, but evolves over time as travel behaviors take greater advantage of transit and as employees and residents change.
- The demand for residential uses (highest in the evening) and office (daytime only) are complementary enabling parking to be shared to a significant degree. The sharing will be enabled with one centralized lot compared to the existing spaces, which are in a variety of locations on the site.
- NHA experience with occupants of the shelter is they have a car 30-40% of the time.
- NHA Experience with multi-family units is about 0.7 vehicles per unit. This lower parking demand is particularly common near high-capacity transit, such as the MAX Orange Line.
- NHA has incentives in place to encourage commuting without a car.
- There are 19 additional spaces along the property frontage that are available for visitors.

D. Will the proposed office and shelter uses provide sufficient landscaping and buffering with adjacent properties?

The primary issues pertaining to the parking lot and general site design involve landscaped area, landscaping and buffering, pedestrian access and circulation, and exterior lighting.

Landscaped Area

MMC 19.606 contains perimeter and interior landscaping requirements for parking lots. The original application was found by the staff to not have sufficient interior landscape area. The applicant has submitted a modified plan (Exhibit F – Sheet 1.4 Site Plan) that provides sufficient landscaped area. With this modification and a corresponding condition of approval will ensure this standard is met.

Landscaping and Buffering

Landscaping and buffering for the entire development will be addressed in two application review phases. The first is this CSU and CU application, which applies to the shelter, office, and parking lot. The second will be the future Type I development review of the three multi-family buildings. The overall landscaped area requirement of 15% is easily satisfied for the entire development. The landscaping associated with the office building and shelter also complies with applicable standards. The parking lot, which will serve all uses on the site, has requirements for both perimeter and interior landscaping. The applicant provided a landscaping concept. Correspondence with the applicant indicates a desire to work with the neighbors to develop a more detailed plan for buffering and fencing. A meeting with the southern neighbors is scheduled for March 16th.

Exterior Lighting

Exterior lighting is proposed for the parking lot and the internal walkways. Existing street lighting is intended to remain without modification. The parking lot will be illuminated with pole-mounted fixtures designed to cast light downward and to minimize any glare onto adjacent properties. The lighting plan suggests that the city standards will be met. To ensure this is the case, a condition of approval is included to more fully evaluate the parking lot lighting and its ability to meet code standards. The remainder of the exterior lighting will be accomplished using illuminated bollards adjacent to the internal sidewalks.

Pedestrian Access and Circulation

The original plan in the application provided suitable pedestrian circulation throughout the site with the exception of the requirement in MMC 19.606.3 D, which requires no off-street parking space to be more than 100 feet from a walkway or building entrance. The eastern parking spaces did not meet this standard. The applicant submitted a revised plan (Exhibit F – Sheet 1.4 Site Plan) showing walkways that comply with this standard.

E. **Are the existing transportation facilities sufficient to support the proposed development?**

The applicant was required to submit a Transportation Impact Study (TIS), which was reviewed by the city's consulting traffic engineer, DKS, and the city staff. The TIS was found to be complete. The TIS found that acceptable Level of Service (LOS) performance would result with the proposed NHA development, which exceeds the city's minimum LOS performance standards.

The Director of Engineering did find that several pedestrian-related improvements are necessary on the perimeter of the site. These are required as conditions of approval.

Neighborhood Comments

Ray Bryan of the Historic Milwaukie Neighborhood District Association (NDA) raised a number of concerns about the application pertaining to the traffic study, parking, and other impacts.

He had two questions, which have been addressed by city staff:

Ray Bryan comment #1: "When I inspect the traffic analysis on page 6 the 'right turn only sign' is not shown at intersection #6, Willard and 27th Ave. What else has been left out and overlooked when something so evident is not included?"

Response: *The only signs represented at each of the intersections are stop signs and traffic signals. If the question is regarding the fact that the directional arrows in the diagram for this intersection seem to indicate that a left turn movement is permissible at this intersection, that arrow represents the fact that the count data captured left turns being made at this intersection, though they are not technically allowed.*

As far as the completeness of the data, our Traffic Engineering Consultant, DKS, reviewed the study and made no comment regarding missing/unaccounted-for data.

Ray Bryan comment #2: "An entrance to the parking lot is being made on 25th Ave. I do not recall the impacts to 25th being addressed. I would appreciate that information if it is available."

Response: *Table 7 demonstrates that the intersection at 25th and Willard is projected to continue to operate at a Level of Service of "B" during Weekday AM Peak Hour trip generation, and Level of Service "A" during Weekday PM Peak Hour trip generation through 2019, which are both above the Level of Service "D" requirement.*

Data relevant to SE 25th Avenue is represented by intersection number 5 throughout the report.

Ray Bryan comment #3: "It is very likely that the shortage of parking spaces will result in circling to find an available spot, putting more cars on 25th Ave."

Response: *Based upon its proximity to transit, the development plan for the site meets city parking requirements. No shortage of parking spaces is expected. In addition, having one centralized parking lot compared to the currently disconnected parking arrangement will make it much easier to find available parking spaces.*

Ray Bryan comment #4: He expressed concern that based upon the information in the application, there will not be sufficient parking for the NHA development.

Response: *Similar to the previous response, a parking shortage is not anticipated for the reasons noted in section C above.*

CONCLUSIONS

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

1. Approve the Community Service Use and Conditional Use applications (CSU-2015-008/CU-2015-002) to allow the redevelopment of the site with a shelter for up to 8 families and a 12,500 square-foot office building.
2. Approve the Transportation Facilities Review application (TFR-2015-001) to allow the shelter and office subject to providing necessary transportation facility improvements.
3. Adopt the attached Findings of Approval.

CODE AUTHORITY AND DECISION-MAKING PROCESS

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

- MMC Subsection 19.1006 Type III Review
- MMC Section 19.904 Community Service Uses
- MMC Section 19.905 Conditional Uses
- MMC Chapter 19.302 Medium and High Density Residential Zones (pertaining to the R-2 Zone)
- MMC Chapter 19.500 Supplementary Development Regulations
- MMC Chapter 19.600 Off-Street Parking and Loading
- MMC Chapter 19.700 Public Facility Improvements

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 4 decision-making options as follows:

A. Approve the application upon finding that all approval criteria have been met.

B. Approve the application with modified findings. 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 to April 12, 2016.

The final decision on these applications, which includes any appeals to the City Council, must be made by June 15, 2016 in accordance with the Oregon Revised Statutes and the Milwaukie Zoning Ordinance. The applicant can waive the time period in which the application must be decided.

COMMENTS

Notice of the proposed zone change was given to the following agencies and persons: City of Milwaukie Building Division and Engineering Department, Historic Milwaukie and Lake Road

Neighborhood District Associations (NDAs), Clackamas County Fire District #1, and properties within 400 feet of the subject site. The following is a summary of the comments received by the City.

- **Ray Bryan, Member, Historic Milwaukie NDA Land Use Committee:** Concerns about the development as noted and responded to above in Neighborhood Comments.
- **Agency comments**: Agency comments were received from Clackamas County Fire District No. 1 and the Milwaukie Director of Engineering.
- **Miranda L Byrd, 10044 SE Stanley Ave Milwaukie, OR:** Supports the application and programs provided by the applicants.

ATTACHMENTS

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

		Early PC Mailing	PC Packet	Public Copies	E-Packet
1.	Recommended Findings in Support of Approval	☐	☒	☒	☒
2.	Recommended Conditions of Approval	☐	☒	☒	☒
3.	Applicant's Narrative and Supporting Documentation dated February 2016.				
	• Narrative	☐	☒	☒	☒
	• Exhibit A Plan Set	☐	☒	☒	☒
	• Exhibit B Pre-Application Summary Notes	☐	☒	☒	☒
	• Exhibit C Traffic Impact Analysis	☐	☒	☒	☒
	• Exhibit D Bicycle Parking Product Sheets	☐	☒	☒	☒
	• Exhibit E Preliminary Stormwater Drainage Report	☐	☒	☒	☒
	• Exhibit F New Sheet 1.4 Site Plan March 10, 2016	☐	☒	☒	☒
4.	Comments Received	☐	☒	☒	☒

Key:

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

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

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

E-Packet = packet materials available online at http://www.milwaukieoregon.gov/planning/planning-commission-146. .

Recommended Findings in Support of Approval
File #s CSU-2015-008, CU-2015-002, and TFR-2015-001
Northwest Housing Alternatives

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, Northwest Housing Alternatives, has applied for approval to completely redevelop its entire site with:

   - A shelter designed to provide temporary housing for up to 8 families. This building would be located in the center of the site.
   - A 12,500 square-foot office building located on Willard Street and 23rd Street (see Sheets 1.4 Site Plan, 2.2 Shelter Floor Plans, and 3.1 Exterior Elevations, 2.0 and 2.1 Office Floor Plans, and 3.0 Office Exterior elevations).
   - In addition, the applicant intends to develop a portion of the site with 28 multi-family units. The multi-family project is not a part of this application

2. The site consists of 10 tax lots located at the intersection of Willard Street/23rd Avenue and Lake Road. The entire site is zoned Residential R-2. The land use application master file number is CSU-2015-008, with associated file numbers CU-2015-002, and TFR-2015-001.

3. The proposed components of the proposed redevelopment require different application reviews. The shelter requires a Community Service Use approval, the office requires Conditional Use approval, and the multi-family buildings are a permitted use in the R-2 Zone requiring a non-discretionary Type I Development Review. The CSU and CU components are subject to a Type III review process, and the multi-family component is subject to a Type I review process, which will be conducted at a later date. A Transportation Facilities Review was also found to be necessary because a Transportation Impact Study was required due to the potential impact of the development on transportation facilities (MMC 19.703.2 B and 19.704.1).

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

   - MMC 19.1006 Type III Review
   - MMC 19.904 Community Service Uses
   - MMC 19.905 Conditional Uses
   - MMC 19.302 Medium and High Density Residential Zones (pertaining to the R-2 Zone)
   - MMC 19.500 Supplementary Development Regulations
   - MMC 19.600 Off-Street Parking and Loading
   - MMC 19.700 Public Facility Improvements

5. MMC 19.1006 Type III Review

   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 March 22, 2016, as required by law.

6. MMC Section 19.904 Community Service Uses

MMC 19.904 provides standards and procedures for review of applications for community service uses. These are uses that are not specifically allowed outright in most zoning districts but that address a public necessity or otherwise provide some public benefit. Community service uses include such uses as schools, hospitals, nursing or convalescent homes, and temporary or transitional facilities.

a. MMC 19.904.2 establishes applicability of the Community Service Use (CSU) regulations.

The proposed use by the applicant does not represent a change in the use of the property to provide short-term housing for families and individuals. The proposal will increase Northwest Housing Alternatives' ability to serve the community with improved facilities and housing options. The shelter is a temporary or transitional facility as defined MMC 19.201 and identified in MMC 19.904.2.A.

The Planning Commission finds that the standards of MMC 19.904 are applicable to the proposed development.

b. MMC 19.904.3 establishes the review process for CSUs. Except for wireless communication facilities and minor modifications to existing CSUs, applications for CSUs are subject to Type III review (MMC 19.1006).

The proposed activity is not a wireless communication facility, nor does it represent a minor modification to the existing CSU. The proposed redevelopment represents a major modification of the existing temporary or transitional facility.

The Planning Commission finds that the proposed activity is subject to the procedures for Type III review outlined in MMC 19.1006.

c. MMC 19.904.4 contains the following approval criteria for CSUs:

(1) The building setback, height limitation, and off-street parking and similar requirements governing the size and location of development in the underlying zone are met. Where a specific standard is not proposed in the CSU, the standards of the underlying zone must be met.

The subject property is zoned Residential R-2. The standards for the base zone are addressed in Section 8 of this findings document.

The Planning Commission finds that the proposed activity is subject to the development standards of the underlying R-2 zone.

(2) Specific standards for the proposed uses as found in MMC 19.904.7-11 are met.

As a temporary or transitional facility, the proposed activity is subject to the relevant standards for facilities not covered by other subsections of the community service use regulations, provided in MMC 19.904.9. The standards of MMC 19.904.9 applicable to the proposed activity are addressed as follows:

(a) MMC 19.904.9.A requires that utilities, streets, or other improvements necessary for the institutional use shall be provided by the agency constructing the use.

The Director of Engineering determined that sufficient infrastructure is in place to serve the development. However, street frontage improvements are required to provide sidewalk that comply with city standards. The improvements along SE Lake Road also include 6.5 feet of right-of-way dedication to satisfy current arterial street standards. Finally, on-site storm

drainage improvements will be required to adequately treat and dispose of stormwater runoff. This standard is met.

(b) MMC 19.904.9.B encourages access to be provided on a collector street if practicable.

Access to the subject property is provided from SE Willard Street, SE 23rd Avenue, and SE 25th Avenue, which are all local streets. SE Willard Street and SE 23rd Avenue in turn provide direct access to SE Lake Road, an arterial.

Because access to a collector street is not feasible and easy access to an arterial street is available, this standard is met.

(c) MMC 19.904.9.C requires community service uses in residential zones to provide setbacks equal to two-thirds the height of the principal structure.

The proposed shelter will be located internally on the site. With a maximum height of approximately 28 feet and setbacks significantly greater than 19 feet, this standard is met.

(d) MMC 19.904.9.D allows the height limit of the base zone to be exceeded up to a maximum of 50 feet if the setback requirements in MMC 19.904.9 C are satisfied.

The maximum height proposed for the shelter (27' 10") is less than 50 feet and the maximum height in the R-2 Zone. This standard is met.

(e) MMC 19.904.9.E requires noise-generating equipment to be sound-buffered when adjacent to residential areas.

The proposal does not include any noise-generating equipment. This standard is not applicable.

(f) MMC 19.904.9.F requires lighting to be designed to avoid glare on adjacent residential uses and public streets.

The proposal includes a plan for new exterior lighting (see Sheets 1.5 Site Lighting Plan and 1.6 Lighting Cut Sheets). The light fixtures in the parking lot are designed to cast light downward and away from adjoining properties. Illuminated bollard lights are proposed within the remainder of the development. Based upon the information provided, it appears this standard is met. A condition of approval will require confirmation of compliance.

(g) MMC 19.904.9.G encourages hours and levels of operation to be adjusted to be compatible with adjacent uses where possible.

The surrounding properties include the high school, a church, and residences. The shelter will have the characteristics of a normal residential use with the addition of an evening curfew for its residents (10 p.m. weekdays/11 p.m. weekends). This standard is met.

(h) MMC 19.904.9.H allows a spire on a religious institution to exceed the maximum height limitation.

No spire is proposed. This standard is not applicable.

(i) MMC 19.904.9.I establishes that the minimum landscaping required for institutions is the lesser of 15% of the total site area and the percentage required by the underlying zone.

The site will provide approximately 33% landscaped area. This standard is met.

(j) MMC 19.904.9.J allows park-and-ride facilities to be encouraged for institutions along transit routes that do not have days and hours in conflict with weekday uses. Such uses may be encouraged to allow portions of their parking areas to be used for park-and-ride lots.

There is a TriMet bus route (#32) on SE Lake Road, and MAX service is available a short distance to the north in downtown Milwaukie. However, park-and-ride use, which peaks during the day, would conflict with the daytime parking demand related to the office and residential uses. This standard is not applicable.

As conditioned, the Planning Commission finds that the proposed activity meets the applicable standards of MMC 19.904.9.

(3) MMC 19.904.4 C requires the hours and levels of operation of the proposed use to be reasonably compatible with surrounding uses.

The shelter will have the characteristics of a normal residential use with the addition of an evening curfew for its residents.

The Planning Commission finds that this standard is met.

(4) MMC 19.904.4 D states that the public benefits of the proposed use are greater than the negative impacts, if any, on the neighborhood.

The shelter will be primarily oriented toward SE Willard Street, which also serves the high school and the associated activities and traffic. The shelter has provided critical temporary housing for homeless families and individuals for approximately 30 years on this site. Although the operation will expand with capacity for up to 8 families in the shelter (current capacity is 5 families), the character of the use will not change appreciably, and no additional impacts on the neighborhood are anticipated.

The Planning Commission finds that this standard is met.

(5) MMC 19.904.4 E requires the location to be appropriate for the type of use proposed.

The shelter and office will be primarily oriented toward SE Willard Street and SE Lake Road. The site has excellent transit access with a bus stop on SE Lake Road and MAX service within two blocks to the north. This will reduce the need for employees and residents to drive. The surrounding uses are a mix of public, institutional, and residential. There will be virtually no evening activity on the site to disturb nearby residents.

The Planning Commission finds that this standard is met.

As conditioned, the Planning Commission finds that the proposed activity meets the approval criteria of MMC 19.904.4.

d. MMC 19.904.5 establishes the procedures for reviewing CSUs.

(1) MMC 19.904.5.A requires the Planning Commission to hold a public hearing to consider the establishment of new CSUs or the major modification of existing CSUs. The Commission shall determine whether the proposed use meets the approval criteria of MMC 19.904.4.

The proposed activity represents a major modification to a CSU because the entire site will be redeveloped. With this application for CSU, Conditional Use, and Traffic Facilities Review and the relevant criteria in the Milwaukie Municipal Code will be used to determine if the relevant code criteria are satisfied. This standard is met.

(2) MMC 19.904.5.B establishes the types of conditions that the Planning Commission may impose on CSUs to ensure compatibility with other uses in the vicinity. Conditions may involve such aspects as hours or intensities of operation, measures to limit noise or glare, special yard setbacks, design of vehicle access points, and size or location of a building.

As conditioned, the Planning Commission finds that the proposed redevelopment of the existing shelter will remain compatible with other uses in the vicinity. This standard is met.

(3) MMC 19.904.5.C authorizes the Planning Director to approve minor modifications to an approved CSU through the Type I review process, subject to compliance with specific criteria. The proposed activity represents a major, not minor, modification to the existing CSU.

The Planning Commission finds that MMC 19.904.5.C does not apply to this application.

The Planning Commission finds that the applicable standards of MMC 19.904.5 are met.

e. MMC 19.904.6 establishes the application requirements for CSUs, including a narrative describing the proposed use, maps showing the vicinity and existing uses, and detailed plans for the project.

The applicant's submittal materials include site plans and a narrative description of the proposed activity. The application was reviewed by the planning staff and deemed complete.

The Planning Commission finds that this standard is met.

The Planning Commission finds that the proposed activity meets all applicable standards of MMC 19.904 to be approved as a CSU.

7. MMC Section 19.905 Conditional Uses

MMC 19.905 establishes regulations for conditional use applications to evaluate the establishment of certain uses that may be appropriately located in some zoning districts, but only if appropriate for the specific site on which they are proposed.

a. MMC 19.905.2 B applies to major modifications of existing conditional uses.

The Planning Commission finds that the requirements of MMC 19.905 are applicable to the proposed activity.

b. MMC 19.905.3 provides that new conditional uses or major modifications of them require a Type III review process. The Planning Commission finds that the application is being processed as a Type III application.

c. MMC 19.905.4 A lists the relevant approval criteria for a major modification to a 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 total site area is approximately 1.7 acres, and as outlined elsewhere in these findings, the proposed redevelopment of the site will be able to satisfy all of the development standards associated with the R-2 Zone. In addition, relevant standards pertaining to other relevant MMC provisions will also be will be satisfied.

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.

As noted under the applicant's findings (p. 7), the surrounding area contains a distinctive mix of different uses. Immediately surrounding uses include public, institutional, and residential uses. The primary orientation of the office building will be to SE Willard Street and SE 23rd Avenue across from the high school. The daytime hours of operation for the office (8:30 a.m. to 5:00 p.m.) will minimize any potential disruption for nearby residential uses, which are primarily located to the south and east. The proposed size, height, and setbacks for the new office building satisfy the code standards, retaining a development scale that is compatible with surrounding uses.

The Planning Commission finds that this standard is met.

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

The primary potential impacts identified for this development pertain to adequacy of on-site parking, perimeter landscaping and buffering related to the parking lot, and exterior lighting. These issues are addressed in this document under the relevant MMC sections.

(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.

As noted herein, the office use will be limited to daytime hours during the weekdays. This, along with the size, scale, and location will ensure a development character, which is compatible with nearby uses. In addition, the office will not attract or involve significant truck deliveries or customer traffic. Outdoor events or any other disturbance related to noise, odor, lighting, or vibration will not be associated with this development.

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.

As noted herein, all the applicable standards in the Milwaukie Municipal Code will be satisfied as conditioned.

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.

Chapter 4 Land Use – Objective #2 Residential Land Use: Density and Location

6. High Density in Mixed Use Areas will be based on the following policies:

   a. Within the Mixed Use Area designated on Map 7, a range of different uses including residential, commercial and office are allowed and encouraged. It is expected that redevelopment will be required to implement these policies, and that single structures containing different uses will be the predominant building type.

   b. Commercial uses will be allowed at the ground floor level, and will be located relative to the downtown area so that pedestrian access between areas is convenient and continuous.

   c. Office uses will be allowed at the ground and first floor levels.

   d. High Density residential uses will be allowed on all levels. At least fifty (50) percent of the floor area within a project must be used for residential purposes.

   e. Within the Mixed Use Area, a residential density bonus of fifteen (15) percent over the allowable density may be granted in exchange for exceptional design quality or special project amenities.

   f. All parking must be contained within a project.

The proposed redevelopment supports this land use objective by providing a mix of office and moderate density residences in a location that has excellent access to transit and downtown Milwaukie.

Chapter 4 Land Use – Objective #2 Employment Opportunity

2. The City will encourage new professional and service-oriented employment opportunities to meet the diverse needs of City residents.

Redevelopment of the site will enable better accommodation of existing employees and allow for anticipated growth. The employment opportunities will be available for Milwaukie residents.

Chapter 4 Land Use – Objective #12 Town Center

To emphasize downtown Milwaukie and the expanded city center as a Town Center with the major concentration of mixed use and high density housing, office, and service uses in the City.

Redevelopment of the site will support this objective by providing a mix of office and residential uses within the Town Center.

The Planning Commission finds that the proposed Conditional Use is consistent with relevant Comprehensive Plan objectives and policies.

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

The city departments have verified that with the improvements required in the conditions of approval, adequate public facilities and utilities are available to serve the site.

The Planning Commission finds that this standard is met.

As conditioned, the Planning Commission finds that the application meets all applicable standards of MMC 19.905.

8. MMC Section 19.302 Medium and High Density Residential Zones

MMC 19.302 establishes standards for several residential zones including the R-2 Zone.

a. MMC 19.302.2.lists the permitted and conditional uses in the R-2 Zone. Multi-family development is permitted, offices are a conditional use, and the shelter (Accessory and Other Uses) is listed a community service use. The proposed uses are allowable in the R-2 Zone, subject to city approval.

b. MMC 19.302.3 B includes a specific limitation for offices in medium density residential zones (R-2) to have the characteristics of a professional office.

c. MMC19.302.4 includes the development standards for the R-2 Zone including:

- Minimum lot size for “all other lots” of 5,000 square feet;
- Minimum lot width of 50 feet;
- Minimum lot depth of 80 feet;
- Minimum street frontage of 35 feet;
- Maximum building height of 3 stories or 45 feet whichever is less;
- Side yard plane limit height of 25 feet;
- Maximum lot coverage of 45%;
- Minimum vegetation area of 15%; and
- Minimum/maximum density 11.6/17.4 units/acre.

d. MMC19.302.5 provides additional development standards, several of which do not apply to this application. The applicable provisions include:

- MMC 19.302.5 C requires that at least one-half of the minimum required vegetation area is suitable for recreation;
- MMC 19.302.5 D requires that 40% of the front yard must be vegetated;
- MMC 19.302.5 F sets the minimum lot size for multi-family development in the R-2 Zone at 5,000 square feet for the first dwelling and a 2,500 square feet for each additional residence; and
- MMC 19.302.5 H requires multi-family buildings not to exceed 150 feet in length.

The requirements of this section are satisfied because:

- The uses proposed are either permitted or allowed conditionally;

- The lot dimensions for lot width, depth, and street frontage exceed the minimum requirements;
- The proposed shelter and office have maximum heights of less than 28 and 39 feet respectively;
- The side yard plane requirement is satisfied for both the shelter and office building due to their 50-foot minimum setbacks from side yard property lines (multi-family building will be evaluated through a separate Type I review);
- The lot coverage will be approximately 31%;
- Approximately 33% (24,352 square feet) will be vegetated;
- The 28 residential units proposed are within the allowed range of between 20 and 30 units for this property (based upon 1,7 acres and 11.6 d.u./ac. minimum and 17.4 d,u,/ac. maximum);
- Well over one-half of the vegetated area is suitable for recreation;
- Almost the entire front and front side yards are landscaped;
- The minimum lot area required for 28 units is 72,500 square feet and the property is 74,243 square feet; and
- The largest of the three multi-family buildings is proposed to be 150 feet in length (to be confirmed as part of the separate Type I review).

The Planning Commission finds that the relevant provisions are satisfied.

9. MMC19.500 Supplementary Development Regulations

MMC 19.500 provides additional standards for a variety of development types and locations. The applicable portions of this section are addressed.

a. MMC 19.501.2 requires additional building setbacks from the centerline of several streets in the city including SE Lake Road, which requires additional yard area of 30 feet from centerline plus the applicable yard requirement.

SE Lake Road currently has a 60-foot wide right-of-way, and a 30-foot setback from center line plus the required yard area of 15 feet will be provided.

The Planning Commission finds that this additional yard area requirement is met.

b. MMC 19.501.3 establishes building height and side yard height plane exceptions.

As noted above with the office and shelter satisfy the applicable dimensional standards.

The Planning Commission finds that the applicable dimensional requirements are met.

c. MMC 19.505.3 establishes design standards for multi-family housing, which are not relevant to the office and shelter. The will be relevant for the future Type I review of the three multi-family buildings.

The Planning Commission finds that the standards in this section are not applicable to this Community Service Use and Conditional Use application.

d. MMC 19.505.7 requires office and institutional development within 500 feet of a transit route to have the primary buildings oriented toward the transit route.

TriMet bus route #32 travels along SE Lake Road, and it has a stop at the intersection with SE 23rd Avenue. The main sidewalk entry to the office and internal courtyard connects with the SE 23rd Avenue sidewalk and the bus stop.

The Planning Commission finds this provision is met.

10. 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.

(1) MMC Subsection 19.602.1 General Applicability

MMC 19.602.1 provides that the regulations of MMC 19.600 apply to all off-street parking areas, whether required by the City as part of development or voluntarily installed for the convenience of users. Activity that is not described by MMC Subsections 19.602.3 or 19.602.4 is exempt from compliance with the provisions of MMC 19.600.

The proposed development will include new on-site parking. The provisions of MMC 19.602.3 apply because the total redevelopment of the site will increase in the total building floor area by over 100%.

(2) MMC Subsection 19.602.2 Maintenance Applicability

MMC 19.602.2 provides that property owners shall ensure conformance with the standards of MMC 19.600 with regard to ongoing maintenance, operations, and use of off-street parking areas. Any change to an existing off-street parking area shall not bring the area out of conformance, or further out of conformance if already nonconforming.

The proposed development will provide a new off-street parking area. As noted herein, the proposed improvements are in conformance with the applicable standards of MMC 19.606, including stall dimensions, landscaping, and lighting.

(3) MMC Subsection 19.602.4 Applicability not Associated With Development or Change in Use

MMC 19.602.4.A addresses applicability for parking projects developed to serve an existing use but not associated with other development activity or a change in use. Such activity shall conform to the requirements of MMC Sections 19.604 and 19.606-19.611. In addition, the total number of new spaces in the existing and new parking areas shall not exceed the maximum allowed quantity of parking as established in MMC Section 19.605.

This code section does not apply to this case because a total redevelopment of the property is proposed.

The Planning Commission finds that the standards and requirements of MMC 19.600 are applicable to the proposed development.

b. MMC Section 19.603 Review Process and Submittal Requirements

(1) MMC Subsection 19.603.1 Review Process

MMC 19.603.1 establishes the Planning Director as the entity with authority to apply the provisions of Chapter 19.600 unless an application is subject to a quasi-judicial review or appeal, in which case the body reviewing the application has the authority.

The application for a Community Service Use is subject to Type III review by the Planning Commission, which is the body with authority to apply the provisions of Chapter 19.600.

(2) MMC Subsection 19.603.2 Submittal Requirements

MMC 19.603.2 establishes the requirements for submittal of a parking plan, including the various details that must be presented.

The applicant has submitted a parking plan and supporting information with sufficient detail for the Community Service Use and Conditional Use application to demonstrate compliance with the applicable standards of Chapter 19.600.

The Planning Commission finds that this standard is met.

c. MMC Section 19.604 General Parking Standards

MMC 19.604.1 to 19.604.3 establish general standards for off-street parking areas, including requirements related to the provision of parking in conjunction with development activity, the location of accessory parking, and use and availability of parking areas.

The applicant proposes to provide new parking spaces on the same site as the office, shelter, and residential uses.

The Planning Commission finds that the standards of this section are met.

d. MMC Section 19.605 Vehicle Parking Requirements

MMC 19.605 establishes standards to ensure that development provides adequate vehicle parking based on estimated parking demand. In particular, MMC Table 19.605.1 provides minimum and maximum requirements for a range of different uses. For multi-family units (including the 8-unit shelter), which are 800 square feet or less, a minimum of 1 space per unit is required and a maximum of 2 spaces is permitted per unit. An 8-unit shelter is proposed along with 4 multi-family units in the same size range. An additional 24 multi-family units are also proposed, which are larger than 800 square feet, requiring 1.25 spaces per unit. As noted herein, the 28 multi-family units in the three buildings shown on the site plan will be subject to a future Type I application review. However, the application is showing the parking lot as it is intended to support all of the uses proposed. The 12,500 square-foot office requires a minimum of 2 spaces per 1,000 square feet. The applicant proposes 48 standard parking spaces and 2 accessible spaces for a total of 50. The total minimum parking requirement for the development is 67 spaces according to MMC Table 19.605.1. A 25% parking space reduction is sought according MMC 19.605.3 B, which is addressed below.

The Planning Commission finds that the standards of this section are met.

MMC 19.605.2 allows the director to adjust parking requirements through Type II process.

This is not being proposed and is not relevant to this application.

MMC 19.605.3 B 2 c allows up to a 25% reduction in the required number of parking spaces for the proposed office and multi-family uses when located within 1,000 feet of a light rail stop. The applicant is proposing to reduce the parking requirement as allowed by this section for developments that are located within 1,000 feet of a light rail transit stop. The Milwaukie/Main MAX stop is within an approximate 900-foot walking distance from the station to the shelter. Therefore, the 25% reduction in required parking spaces for the office, shelter, and multi-family units of 67 spaces to 50 spaces is justified.

The Planning Commission finds that the normal parking standards may be reduced by up to 25% as provided in MMC 19.605.3 B.

e. MMC Section 19.606 Parking Area Design and Landscaping

(1) MMC Subsection 19.606.1 Parking Space and Aisle Dimension

MMC 19.606.1 establishes dimensional standards for required off-street parking spaces and drive aisles. For 90°-angle spaces, the minimum width is 9 feet and minimum depth is 18 feet with a 9-ft minimum curb length and 22-foot-wide drive aisles. In addition, 4 parallel spaces are proposed with 22-foot lengths and widths of 8.5 feet.

The applicant has submitted a parking plan that satisfies these dimensional standards.

(2) MMC Subsection 19.606.2 Landscaping

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

Initial staff review identified deficiencies in the amount of interior landscaping and pedestrian circulation. The applicant submitted revised Site Plan (Sheet 1.4) on March 10, 2016 for consideration.

- MMC 19.606.2.C Perimeter Landscaping

  In all but the downtown zones, perimeter landscaping areas must be at least 6 feet wide where abutting other properties and at least 8 feet wide where abutting the public right-of-way. At least 1 tree must be planted for every 40 lineal feet of landscaped buffer area, with the remainder of the buffer planted with grass, shrubs, ground cover, mulch, or other landscaped treatment. Parking areas adjacent to residential uses must provide a continuous visual screen from 1 to 4 feet above the ground to adequately screen vehicle lights.

  The perimeter landscaping areas abutting the public rights-of-way along SE Willard Street and SE 25th Street are proposed to be 8 feet wide. The width of the perimeter landscaping areas abutting the adjacent properties are proposed to be 6 feet on the east side, 10.75 feet on the north side near SE 25th Avenue (including a 6-foot wide storm water treatment area), and 2.5 to 3.5 feet on the south side (revised Site Plan – Sheet 1.4). This landscaped edge of 2.5 to 3.5 feet is also proposed to have a 5-foot wide sidewalk. Such a sidewalk may be part of the perimeter landscaping if the total width is

8 feet. This southern landscape strip should be modified to meet this requirement. Also, because of the minimal width of this buffer it should include a sight-obscuring fence.

Sheet 1.3 Landscape Concept Plan in the application depicts that all perimeter landscaping areas will have at least 1 tree planted every 40 lineal feet, utilizing existing trees on the property where possible (as allowed by MMC Subsection 19.606.2.E.1). New trees will be distributed with spacing of 30 to 40 feet around the perimeter of the parking lot.

In addition to trees, landscape planting in the buffer area must be vegetated with grass, ground cover, other vegetation, or mulch. The landscaping concept indicates the buffer area between the parking lot and adjoining properties will be landscaped with continuous hedge planting to satisfy MMC 19.606.2 D 2 and 19.606.2 D 3. The current buffer between the site and adjacent properties includes a combination of fencing (chain link and wood) and hedges. However, this existing buffer does not appear to be continuous. A condition has been established to ensure that the final landscaping plan demonstrates that a suitable evergreen hedge buffer will be provided along the entire boundary between the parking lot and adjoining properties.

As conditioned, this standard is met.

- MMC 19.606.2.D Interior Landscaping

  At least 25 square feet of interior landscaped area must be provided for each parking space. Planting areas must be at least 120 square feet in area, at least 6 feet in width, and dispersed throughout the parking area. For landscape islands, at least 1 tree shall be planted per island, with the remainder of the buffer planted with grass, shrubs, ground cover, mulch, or other landscaped treatment.

  The applicant proposes to provide 50 spaces, which require a total of 1,250 square feet of interior landscaping. The proposed interior landscaping areas meet the minimum dimensional standards with approximately 1,291 square feet of landscaped area. Because the landscaped strip (4.75 feet) wide and landscaped stormwater treatment facility (6 feet wide) along the north side of the eastern portion of the lot is greater than the required 6-foot buffer, the 4.75 feet may be counted as interior landscaping. A condition of approval is included to provide the additional landscaped area within the parking lot to satisfy the area standard in this section. For interior landscaping islands, at least 1 tree is proposed per island as required.

  As conditioned, this standard is met.

- MMC 19.606.2.E Other Parking and Landscaping Provisions

  Preservation of existing trees in the off-street parking area is encouraged and may be credited toward the total number of trees required. Parking area landscaping must be installed prior to final inspection, unless a performance bond is posted with the City. Required landscaping areas may serve as stormwater management facilities, and pedestrian walkways are allowed within landscape buffers if the buffer is at least 2 feet wider than required by MMC 19.606.2.C and 19.606.2.D.

The applicant submitted information regarding the location of existing trees within the project area on Sheet 1.2 Existing Conditions. The existing trees in areas to be developed with the office building, shelter, and parking lot will not be feasible to save. Other trees in the vicinity of the multi-family units will be evaluated as part of the Type I review for that aspect of the development. Trees immediately nearby on adjacent properties should be evaluated to ensure they are adequately protected during construction. As required, parking area landscaping will be installed prior to final inspection, unless a bond is posted with the City.

With a condition to protect existing trees on adjoining properties, this standard is met.

(3) MMC Subsection 19.606.3 Additional Design Standards

MMC 19.606.3 establishes various design standards, including requirements related to paving and striping, wheel stops, pedestrian access, internal circulation, and lighting.

- MMC 19.606.3.A Paving and Striping

  Paving and striping are required for all required maneuvering and standing areas, with a durable and dust-free hard surface and striping to delineate spaces and directional markings for driveways and accessways.

  As proposed, the parking area will be paved and striped.

  This standard is met.

- MMC 19.606.3.B Wheel Stops

  Parking bumpers or wheel stops are required to prevent vehicles from encroaching onto public right-of-way, adjacent landscaped areas, or pedestrian walkways. Curbing may substitute for wheel stops if vehicles will not encroach into the minimum required width for landscape or pedestrian areas.

  As proposed, wheel stops will be provided along the perimeter of the parking area. A condition has been established to ensure that wheel stops are provided in the stalls abutting the perimeter landscaping area.

  As conditioned, this standard is met.

- MMC 19.606.3.C Site Access and Drive Aisles

  Accessways to parking areas shall be the minimum number necessary to provide access without inhibiting safe circulation on the street. Drive aisles shall meet the dimensional requirements of MMC 19.606.1.

  The parking lot is proposed to have driveway access to SE Willard Street on the north and SE 25th Avenue on the east. As proposed, the drive aisles meet the minimum dimensional requirements.

  This standard is met.

- MMC 19.606.3.D Pedestrian Access and Circulation

  Pedestrian access shall be provided so that no off-street parking space is farther than 100 feet away, measured along vehicle drive aisles, from a

building entrance or a walkway that is continuous, leads to a building entrance, and meets the design standards of Subsection 19.504.9.E.

A continuous walkway is proposed along the western side of the parking lot. The closest building entrance is the eastern entry to the proposed shelter building. The majority of the parking spaces meet the 100-foot distance standard, but the spaces on the far eastern end of the parking lot will be more than 100 feet away. To address this issue, the applicant submitted an amended site plan (Sheet 1.4) showing an additional sidewalk along the southern edge of the parking lot to satisfy this standard. A condition of approval is included to ensure walkway access that meets the standards of this section and MMC 19.504.9 E.

As conditioned, this standard is met.

- MMC 19.606.3.E Internal Circulation

  The Planning Director has the authority to review the pedestrian, bicycle, and vehicular circulation of the site and impose conditions to ensure safe and efficient on-site circulation. Such conditions may include, but are not limited to, on-site signage, pavement markings, addition or modification of curbs, and modification of drive aisle dimensions.

  The Planning Director has reviewed the proposed parking plan and determined that no additional requirements are necessary to ensure safe and efficient on-site circulation.

  This standard is met.

- MMC 19.606.3.F Lighting

  Lighting is required for parking areas with more than 10 spaces and must have a cutoff angle of 90 degrees or greater to ensure that lighting is directed toward the parking surface. Lighting shall not cause a light trespass of more than 0.5 footcandles measured vertically at the boundaries of the site, and shall provide a minimum illumination of 0.5 footcandles for pedestrian walkways in off-street parking areas.

  The proposed development will include a total of 50 parking spaces within the project area, which triggers the requirement for lighting in the project area. The lighting information and plan Suggests that the above lighting standard will be satisfied with a maximum footcandle illumination beyond the property line ranging between 0.1 and 0.5. A condition has been established to verify that all new lighting is compliant with the various applicable illumination standards established in Subsection 19.606.3.F.

  As conditioned, this standard is met.

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

f. MMC Section 19.608 Loading

MMC 19.608 establishes standards for off-street loading areas and empowers the Planning Director to determine whether or not loading spaces are required. In the case of the proposed shelter and office use and the new parking lot, the Planning Director has determined that no loading spaces are required.

The Planning Commission finds that this standard is not applicable.

g. MMC Section 19.609 Bicycle Parking

MMC 19.609 establishes standards for bicycle parking for new development of various uses, including CSUs. According to this section, the office and shelter need to provide bicycle parking at a rate of 10% of the minimum number vehicular parking spaces. For multi-family development, 1 space is required per unit for developments of more than 4 units. MMC 19.609.2 requires cover for a minimum of 50% of the bike spaces when the required number exceeds 10 spaces. MMC 19.609.3 A provides that each bicycle parking space shall have minimum dimensions of 2 feet by 6 feet, with 5-foot wide aisles for maneuvering. MMC 19.909.4 requires bike racks to be located within 50 feet of a main building entrance.

With a parking requirement of 25 vehicular spaces for the office, a minimum bike parking requirement would be 2 spaces (MMC 19.605.1 D provides fractions are rounded down). The applicant proposes to provide 6 bike spaces along the rear of the office building. The shelter, with 8 units and I space per unit, would require 8 bike parking spaces, but the applicant proposes 4 spaces. Combined, the office and shelter need to provide a minimum of 10 bike parking spaces. Once the bike parking for the 28 multi-family units is added to the office and shelter, a total of 38 bike parking spaces will be required. Although the bike parking for the 28 multi-family units will be addressed as part of the future Type I review of this aspect of the project, The applicant may want to consider how to provide all of the bike parking as it has for the vehicular demand of the entire development. Covered bike parking will ultimately be required for at least 50% of the bike parking spaces. The placement of the bike racks for the shelter does not appear to meet the dimensional standards of 19.909.3. The proposed bike rack locations satisfy MMC 19.909.4. A condition is included to require a minimum of 10 spaces and compliance the dimensional standards.

As conditioned, the Planning Commission finds that this standard is met.

h. MMC Section 19.610 Carpool and Vanpool Parking

MMC 19.610 establishes parking standards for vehicles used to carpool. The standards apply for new commercial development. As a major expansion and total redevelopment of the site, the proposed development is considered to be a new use. A condition of approval is included to identify carpool and vanpool spaces as required by this section for the office use. This is equal to 10% of the minimum number of required spaces., which in this case would be 2 spaces.

As conditioned, the Planning Commission finds this standard is met.

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

11. MMC Section 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. MMC19.702 Applicability

MMC 19.702 establishes the applicability of the provisions of MMC 19.700.

(1) MMC Subsection 19.702.1 General

MMC 19.702.1 provides that the regulations of MMC 19.700 apply to intensification of land use including new dwelling units and/or increase in gross floor area. The applicant proposes to increase the number of dwelling units and commercial use square footage by expanding their facilities with a redevelopment of the site. The intensification of use triggers the requirements of MMC Chapter 19.700.

The Planning Commission finds that the standards and requirements of MMC 19.700 are applicable to the proposed development.

b. MMC Section 19.703 Review Process

(1) MMC19.703.1 Preapplication Conference

A preapplication conference was held.

(2) MMC 19.703.2 Application Submittal

MMC 19.703.2 provides that a Transportation Facilities Review (TFR) is subject to a Type II review process, but should be consolidated with related applications. Therefore, the TFR application is being considered with this CSU/Conditional Use application.

(3) MMC 19.703.3 Approval Criteria

MMC 19.703.3 A requires compliance with procedures, requirements, and standards of MMC 19.700 and the Public works Standards.

The proposed development has, and will continue to comply with the applicable requirements noted above.

MMC 19.703.3 B Transportation Facility Improvements

As described in the Transportation Impact Study, by Kittleson and Assoc., the proposed project will not have any measurable adverse impacts on surrounding transportation facilities including streets and sidewalks.

MMC 19.703.3 C Safety and Functionality Standards requires suitable public facilities to serve a development including:

- Adequate street drainage;

  Adequate drainage will be provided as described in the Preliminary Stormwater Drainage Report, by KPFF.

- Safe access and clear vision at intersections;

  The redevelopment will reduce the number of driveways on from 3 to 2, and as indicated in the Transportation Impact Study, the new driveways will meet city spacing standards including adequate sight distance. The landscaping concept shows that adequate vision clearance areas at intersections, including these driveways, will be required as a condition of approval.

- Adequate public utilities;

  Utilities are found by the Engineering Director to be adequate, with the installation of improvements listed in the conditions of approval.

- Access onto a public street with the minimum paved widths per MMC 19.703.3 C 5.

  The development will have access to two public streets, SE Willard Street and SE 25th Avenue, both of which meet the minimum pavement width requirements for local streets.

- Adequate frontage improvements; and

  All of the street frontages are currently improved including paved streets, curbs, and sidewalks. However, they are not fully consistent with current city standards. Therefore, conditions of approval include new sidewalk and other frontage improvements along SE Lake Road, SE 25th Avenue, SE Willard Street, and SE 25th Avenue.

- Compliance with Level of Service D for all intersections impacted by the development.

  Table 7 of the Transportation Impact Study shows that Level of Service C or better will result after the development is completed, meeting this standard.

The Planning Commission finds that the appropriate review procedures have been followed, and the relevant criteria have been addressed.

c. MMC19.704 Transportation Impact Evaluation

(1) MMC 19.704 .1 grants authority to the Engineering Director to determine if a Transportation Impact Study (TIS) is necessary.

Northwest Housing Alternatives submitted a transportation impact study on November 10, 2015, which was prepared by Kittelson and Associates, Inc. and meets all stated requirements in MMC Section 19.704.

(2) MMC 19.704.2 describes the process for determining the TIS scope.

The provisions of this section were followed to guide the content of the TIS submitted by the applicant.

(3) MMC 19.704.3 describes the requirements for conducting a TIS.

The requirements were followed by the applicant and are reflected in the contents of the TIS.

(4) MMC 19.704.4 requires mitigation of any transportation impacts caused by the development.

As noted, the development is found to have insignificant impacts upon the existing vehicular traffic in the area, and no mitigation is necessary. Pedestrian and bicycle infrastructure is found to need improvement as articulated in the conditions of approval.

The Planning Commission finds that as conditioned, the requirements of this code section are met.

d. MMC 19.705 Rough Proportionality

The proposed development does not trigger mitigation of impacts beyond the required frontage improvements. The impacts are minimal and the surrounding transportation system will continue to operate at the level of service previous to the proposed

development. The proposed development, as conditioned, is consistent with MMC 19.705.

e. MMC 19.706 Fee in Lieu of Construction

The applicant is not requesting to pay a fee in lieu of constructing transportation improvements.

f. MMC 19.707 Agency Notification

The appropriate agencies were notified of the application.

g. MMC 19.708 Transportation Facility Requirements

(1) MMC 19.708 .1 General Street Requirements and Standards.

MMC 19.708.1 A requires proper access management according to city standards. The applicant is proposing a design that complies because one driveway access will be eliminated. The city accessway location spacing standards as outlined in Section 5.0082 of Milwaukie's Public Works Standards are satisfied.

The applicant shall be required to construct a driveway approach to meet all guidelines of the Americans with Disabilities Act (ADA) to the proposed development on SE Willard Street and SE 25th Avenue. The driveway approach aprons shall be between 24 feet and 36 feet in width and least 7.5 feet from the side property line.

MMC 19.708.1 B requires clear vision at driveways. This will be provided for both proposed driveways consistent with city requirements and the recommendations in the TIS to limit vegetation and signage near the driveways to maintain appropriate vision clearance.

MMC 19.708.1 D applies to development outside of the downtown. This subsection requires:

- Streets designed in improved in accordance with city standards.

  As conditioned by the Director of Engineering, all streets fronting the site shall be modified to meet current standards.

- Streets designed according to their functional classification.

  As conditioned by the Director of Engineering, all streets fronting the site shall meet current design standards.

- Street right-of-way dedication as required.

  Additional right-of-way dedication was found to be necessary along the SE Lake Road frontage, and it is required as a condition of approval.

- Development permits are contingent upon frontage or approved access to a public street.

  This development will have direct access to SW Willard Street and SE 25th Avenue.

- Off-site improvements to mitigate off-site impacts.

  No off-site impacts have been identified.

- New public streets.

  New public streets are not proposed.

- Traffic calming.

  Traffic calming was not found to be necessary.

- Railroad crossings.

  No rail crossings are affected.

- Street signs.

  The applicant shall remove all signs, structures, or vegetation in excess of three feet in height from "vision clearance areas" at intersections of streets, driveways, and alleys.

- Street lights.

  Existing street lighting is adequate.

MMC 19.708.1 E applies to street layout and connectivity.

No new streets are proposed.

MMC 19.708.1 F applies to public street intersection design.

No new streets are proposed.

(2) MMC 19.708.2 Street Design Standards

The Director of Engineering determined that SE Lake Road is a deficient width for an arterial street. Therefore, as a condition of approval, the applicant shall be required to construct a half street improvement on the northeast side of SE Lake Road along the site's frontage. The street improvement includes, from the fronting property line, construction of a 6-foot setback sidewalk, 5-foot planter strip, curb and gutter, and a 23-foot wide paved half-street. 15 feet of the paved half-street is already installed along the development property; the applicant is only responsible for 8 feet of paved width, curb and gutter, the planter strip, and sidewalk.

The existing right-of-way width of SE Lake Road fronting the proposed development is 60 feet. The Milwaukie Transportation System Plan and Transportation Design Manual classify the fronting portions of SE Lake Road an Arterial street. According to Table 19.708.2 Street Design Standards, the required right-of-way width for an arterial street is between 54 feet and 89 feet depending on the required street improvements. The required right-of-way needed for the required street improvements is 73 feet. The applicant is responsible for 6.5 feet of right-of-way dedication along SE Lake Road fronting the development property.

The applicant shall construct a half street improvement on the south side of SE Willard Street along the site's frontage. The street improvement includes, from the fronting property line, construction of a 5-foot wide setback sidewalk, 3-foot wide planter strip, curb and gutter, and an 18-foot wide paved half-street. The 18-foot wide paved half-street is already installed along the development property; the applicant is only responsible for curb and gutter, the planter strip, and sidewalk.

The existing right-of-way width of SE Willard Street fronting the proposed development is 50 feet. The Milwaukie Transportation System Plan and Transportation Design Manual classify the fronting portions of SE Willard Street a local street. According to Table 19.708.2 Street Design Standards, the required right-of-way width for a local street is between 20 feet and 68 feet depending on the required street improvements. The required right-of-way needed for the required street improvements is 50 feet. The applicant is not responsible for right-of-way dedication along SE Willard Street fronting the development property.

The applicant shall construct a half street improvement on the east side of SE 23rd Avenue along the site's frontage. The street improvement includes, from the centerline of the asphalt pavement, construction of a 23-foot wide paved half-street, curb and gutter, a 6-foot curb-tight sidewalk, a stormwater facility of sufficient size to treat runoff from the asphalt pavement, and curb ramps designed in accordance with the Americans with Disabilities Act (ADA). The 23-foot wide paved half-street is already installed along the development property; the applicant is only responsible for curb and gutter, sidewalk, the stormwater facility, and curb ramps.

The existing SE 23rd Avenue right-of-way fronting the proposed development varies in width. The Milwaukie Transportation System Plan and Transportation Design Manual classify the fronting portions of SE 23rd Avenue a local street. According to Table 19.708.2 Street Design Standards, the required right-of-way width for a local street is between 20 feet and 68 feet depending on the required street improvements. The required right-of-way needed for the required street improvements is sufficient in its current state. The applicant is not responsible for right-of-way dedication along SE 23rd Avenue fronting the development property.

The proposed development, as conditioned, is consistent with MMC Section 19.708.2.

(3) MMC 19.708.3 Sidewalk Requirements and Standards.

The construction of sidewalks along the proposed development property abutting all public rights-of-way is included in the street frontage requirements.

The proposed development, as conditioned, is consistent with MMC Section 19.708.3.

(4) MMC 19.708.4 Bicycle Facility Requirements and Standards

The portions of SE 23rd Avenue and SE Willard Street fronting the proposed development are not classified as a bike route in the Milwaukie Transportation System Plan. The portion of SE Lake Road fronting the proposed development is classified as a bike route in the Milwaukie Transportation System Plan. The additional width of asphalt required in the street improvements to SE Lake Road is sufficient to accommodate a future bike lane, which will be striped as part of a project identified in the Capital Improvement Plan to re-pave Lake Road from SE Guilford Drive to SE 21st Avenue.

The proposed development, as conditioned, is consistent with MMC Section 19.708.4.

(5) MMC 19.708.6 Transit Requirements and Standards

The portions of SE 23rd Avenue and SE Willard Street fronting the proposed development are not classified as a transit route in the Milwaukie Transportation System Plan. The portion of SE Lake Road fronting the proposed development is classified as a transit route in the Milwaukie Transportation System Plan, however, transit facilities are already in place. As a result, transit facility improvements are not required for the proposed development.

The Planning Commission finds that the requirements of this code section are met.

h. MMC 19.709 Public Utility Requirements

As noted, public utilities are adequate to serve the proposed development. Some specific improvements, particularly on-site stormwater facilities, are required as conditions of approval.

The Planning Commission finds that as conditioned, the requirements of this code section are met.

The application was referred to the following city departments and agencies on February 24, 2016:

- Milwaukie Building Department
- Milwaukie Engineering Department
- Clackamas Fire District #1
- Historic Milwaukie Neighborhood District Association (NDA) Chairperson and Land Use Committee (LUC)
- Lake Road Neighborhood District Association (NDA) Chairperson and Land Use Committee (LUC)

The comments received are summarized as follows:

- Ray Bryan, resident or Historic Milwaukie NDA representative: Submitted a March 9, 2016 letter expressing several concerns regarding the adequacy of the traffic study, the sufficiency of the proposed on-site parking, and overall compatibility of the NW Housing development and the surrounding neighborhood.
- Matt Amos, Fire Inspector, Clackamas Fire District #1: Submitted comments in response to the proposed development on June 30, 2015, which are included in the application. In response to the request for agency comments, he indicated the district had no further comment.
- Chrissy Dawson CAPM, Engineering Technician II, Milwaukie Engineering Department, submitted comments and recommended conditions of approval..

ATTACHMENT 2

Recommended Conditions of Approval
File #s CSU-2015-008, CU-2015-002, TFR-2015-001
Northwest Housing Alternatives

Conditions

1. Prior to occupancy of the site, the following shall be resolved.

   A. Dedicate 6.5 feet of right-of-way on SE Lake Road fronting the proposed development property.

   B. Install all underground utilities, including stubs for utility service prior to surfacing any streets. Relocate or provide a private utility easement for all utilities encroaching onto adjacent properties.

   C. Construct a 6-foot setback sidewalk, 5-foot planter strip, curb and gutter, and 8-feet of paved asphalt width along the north side of SE Lake Road. The half street improvements include all storm water system improvements necessary to accommodate the street improvements.

   D. Construct a 5-foot wide setback sidewalk, 3-foot wide planter strip, and curb and gutter along the south side of SE Willard Street fronting the proposed development. The half-street improvements include all storm water system improvements necessary to accommodate the street improvements.

   E. Construct curb and gutter, a 6-foot curb-tight sidewalk, a stormwater facility of sufficient size to treat runoff from the asphalt pavement, and curb ramps designed in accordance with the Americans with Disabilities Act (ADA) along the east side of SE 23rd Avenue fronting the proposed development.

   F. Provide an exterior lighting plan that will satisfy the standards in MMC 19.904.9 F.

   G. Provide a minimum of 50 parking spaces for the entire NHA development that meet the design standards in MMC 19.606 and the carpool/vanpool parking requirements of MMC 19.610.

   H. Provide a final landscaping plan that satisfies the requirements of MMC 19.606. In particular, the provisions of MMC 19.606.2 shall be satisfied for perimeter and interior landscaping for parking lots. This shall include a 6–foot high, sight-obscuring fence.

   I. Install the parking facilities in compliance with the design standards in MMC 19.606.3.

   J. Pedestrian walkways on the site that comply with MMC 19.606.3 D.

   K. A minimum of 10 bicycle parking spaces shall be provided in accordance with the location and design standards in MMC 19.609.

   L. Hours of operation for the office shall be weekdays 8:00 a.m. to 5:30 p.m. and the shelter shall observe an evening curfew of 10:00 p.m. Sunday through Thursday and 11:00 p.m. on Friday and Saturday.

2. Prior to final inspection for any building on the proposed development, the following shall be resolved:

A. Construct a private storm management system (e.g. drywell) on the proposed development property for runoff created by the proposed development. Connect all rain drains to the private storm management system.

3. This approval does not imply approval of the 28-unit multi-family development, which is subject to a separate Type I development review.

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 and Public Works Standards that are required at various point in the development and permitting process.

1. Development Review

   An application for Type I development review is required in conjunction with the submittal of the associated development permit application(s).

2. Other Engineering Requirements
   A. Submit a storm water management plan to the City of Milwaukie Engineering Department for review and approval. The plan shall be prepared in accordance with Section 2 – Stormwater Design Standards of the City of Milwaukie Public Works Standards. In the event the storm management system contains underground injection control devices, submit proof of acceptance of the storm system design from the Department of Environmental Quality.
      1. The stormwater management plan shall demonstrate that the post-development runoff does not exceed the pre-development, including any existing stormwater management facilities serving the development site.
      2. The stormwater management plan shall demonstrate compliance with water quality standards in accordance with the City of Portland Stormwater Management Manual.
      3. Development/building permits will not be issued for construction until the stormwater management plan has been approved by the City of Milwaukie.
   B. Submit full-engineered plans for construction of all required public improvements, reviewed and approved by the City of Milwaukie Engineering Department.
   C. Obtain a right-of-way permit for construction of all required public improvements listed in these recommended conditions of approval.
   D. Pay an inspection fee equal to 5.5% of the cost of the public improvements.
   E. Provide a payment and performance bond for 100 percent of the cost of the required public improvements.
   F. Provide an erosion control plan and obtain an erosion control permit.
   G. Construct a driveway approach to meet all guidelines of the Americans with Disabilities Act (ADA) to the proposed development on SE Willard Street and SE 25th Avenue in accordance with City of Milwaukie Public Works Standard Detail #502B. The driveway approach aprons shall be between 24 feet and 36 feet in width and least 7.5 feet from the side property line.
   H. Provide a final approved set of Mylar and electronic PDF “As Constructed” drawings to the City of Milwaukie prior to final inspection.

I. Remove all signs, structures, or vegetation in excess of three feet in height located in “vision clearance areas” at intersections of streets, driveways, and alleys fronting the proposed development.

3. Limitations on Development Activity

Development activity on the site shall be limited to 7:00 a.m. to 10:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. Saturday and Sunday, as per MMC 8.08.070(I).

4. Expiration of Approval

As per MMC 19.1001.7.E.1.a, proposals requiring any kind of development permit must complete both of the following steps:

a. Obtain and pay for all necessary development permits and start construction within two (2) years of land use approval.

b. Pass final inspection and/or obtain a certificate of occupancy within four (4) years of land use approval.

As per MMC 19.1001.7.E.2.b, land use approvals shall expire unless both steps noted above have been completed or unless the review authority specifies a different expiration date in the land use decision to accommodate large, complex, or phased development projects.

ATTACHMENT 3

NORTHWEST HOUSING ALTERNATIVES

Land Use Applications for Conditional Use & Community Service Use

Submitted to City of Milwaukie Planning Department

February 2016

Northwest Housing Alternatives
Project Team

Applicant:

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Application Summary Information for Northwest Housing Alternatives

Subject Tax Lots: **(All owned or under purchase contract by NHA)**	11E36BC0 6000 (under purchase contract) 11E36BC0 6100 11E36BC0 6200 11E36BC0 6300 11E36BC0 6400 11E36BC0 6500 11E36BC0 6600 11E36BC0 6700 11E36BC0 6800 11E36BC0 6900
Total NHA Site Size:	1.70 acres
Current Comprehensive Plan Designation:	Mixed Use/High Density Residential
Current Zoning:	R-2
Application Submitted for:	Conditional Use approval Community Service Use approval

TABLE OF CONTENTS
Land Use Applications for Northwest Housing Alternatives

List of Exhibits

Section 1: Project Description & Requested Approvals

Northwest Housing Alternatives (NHA), Oregon's largest non-profit developer of affordable housing, has had its corporate offices in Milwaukie for nearly 30 years. In that time, the company has grown both in Milwaukie and statewide. Locally, the NHA campus currently consists of two offices buildings, the Annie Ross Homeless Shelter for families, and nine units of affordable rental housing. Statewide, NHA now has a portfolio of over 1,800 affordable apartments for Oregonians with low incomes and special needs.

As a growing company, NHA intends to redevelop its Milwaukie campus. Redevelopment is slated to begin in 2017 and would involve demolition of all existing structures and construction of new buildings to accommodate NHA's integrated needs for office space, a new shelter and affordable housing within a cohesive campus. The primary elements of NHA's plan for redevelopment include the following (see Exhibit A: Site Plan).

- *An office building that meets NHA*'s *staff needs and serves as a community asset.* The new office space will accommodate staff growth that has occurred over the last decade and is projected to serve NHA's administrative needs for at least the next 20 years.
- *A new building for the Annie Ross House Shelter that provides families experiencing homelessness with enhanced individual living quarters.* This arrangement will afford shelter residents more privacy than the current building, which only has small bedrooms and shared bathrooms.
- *Affordable rental housing options for families.* These apartments will be designed to be compatible with the existing neighborhood and consistent with the City of Milwaukie's multi-family design standards. The nearby MAX light rail station will provide NHA residents with convenient transit access to employment and educational opportunities throughout the Metro region.

This redevelopment project will allow NHA to simultaneously improve its office space, upgrade the Annie Ross House Shelter, increase Milwaukie's affordable housing options and support transit-oriented development close to the Lake Road light rail stop, which is near the intersection of Lake Road and Main Street.

The NHA site has a Mixed-Use/High Density Residential Comprehensive Plan designation and is zoned R-2. In order to implement the campus redevelopment, NHA will need the following land use approvals from the City:

- Conditional Use (CU). An office use is allowed in the R-2 zone with Type III conditional use (CU) approval.
- Community Service Use (CSU). The Annie Ross House Shelter is considered a "temporary or transitional facility" and is allowed with Type III Community Service Use (CSU) approval.

The new multifamily affordable housing units are permitted outright in the R-2 zone and will ultimately require Development Review approval. NHA intends to meet the clear and objective design standards for multifamily development, as established in Section 19.505.3(C), and will therefore be subject to a Type I Development Review process.

This application package combines the Type III CU and CSU applications for the office and shelter uses. It's important to note that this application **does not** include the Type I Development Review request

for the multifamily units. Because NHA plans to meet the clear and objective standards for multifamily development, the Type I Development Review application will be submitted at a later date, separate from the CU and CSU Type III applications. Information about the multifamily development is included in this application package to the extent that it is part of the overall NHA campus redevelopment and provides context for the CU and CSU uses in terms of parking, access, transportation and utility impacts, open space and other site layout elements.

Section 2: Project Background

Office Space. No previous land use history for the NHA office building was able to be located; the city does not have any record of past approvals. The existing office building was originally owned by the North Clackamas School District and used by the district as an administrative office. NHA purchased the building and associated parking area from the district in 1987 and has been using it as its primary office space since that time. There are currently 35 employees (includes full and part time employees) that work on the NHA campus; employees are not typically all on site at the same time because work is intermittent and includes night shifts. Hours of operation for the main office are Monday through Friday, 8:30 AM to 5:00 PM.

The proposed new office has been designed to accommodate approximately 50 employees; this will serve existing employees and future anticipated growth in employees over the next 20 years.

Annie Ross House Shelter. The Annie Ross House Shelter was originally approved as a Community Service Use by the city in July 1985. Conditions of approval for the original use included required fencing, installation of an alarm system, and widening the access from Willard Street to meet city standards. In addition, conditions of approval required that NHA staff be present at all times on the site and that all potential clients for the shelter be screened at an off-site location.

The shelter in its current capacity can house up to five families; use is intermittent and is based on need and referrals through Clackamas County. Potential shelter residents are screened by Clackamas County at an off-site location before they are admitted to the shelter. Residents typically stay at the shelter for about 35 days before moving to a more permanent housing situation. The shelter also has space for a food pantry that serves residents on the campus. Surplus food is shared with other providers in Clackamas County and made available to residents in other NHA housing units. In addition, the shelter has a separate area for staff on duty. Staff is on duty at the shelter daily from 8:00 AM until 10:00 PM (or 11:00 PM on weekends), at which point the shelter is locked for the night (shelter residents must be back in the shelter by curfew). During nighttime, there is a staff security monitor on site who regularly patrols the campus, including the shelter. The night monitor lives on campus. Any school-age children living at the shelter are required to go to school during regular school hours.

The proposed new shelter will function in the same manner as the existing shelter, as described above, but will be large enough to accommodate eight families in separate living quarters (each with their own bathroom and limited food preparation capacity).

Per the Milwaukie Zoning Code, Section 19.201 Definitions, the shelter is considered a "transitional facility", which is defined as follows:

> *"Temporary or transitional facility" means a facility which may provide temporary or transitional services to families or individuals, including lodging where the average stay is 60 days or less. Such facilities shall be classified as community service uses and may include shelters, community counseling centers, rehabilitation centers, and detention and detoxification facilities."*

Per City staff, the shelter living quarters are not considered dwelling units because they are defined as a type of Community Service Use and they do not have full kitchens. Therefore, the shelter does not count towards density standards applicable to the site.

Previous Zone Change Request. In 2013, NHA requested a zone change from the City of Milwaukie in order to rezone their properties to R-1-B. Both zones implement the same Comprehensive Plan designation (Mixed-Use/High Density Residential); however, the R-1-B zone would allow more intense levels of development than the existing R-2 zone. The zone change was approved by the Planning Commission but appealed by citizens who were concerned about the potential for development that might be perceived as incompatible with the surrounding neighborhood. City Council ultimately upheld the appeal and denied the zone change request. In an effort to recognize those previous community concerns, NHA is now proposing development at levels consistent with the existing R-2 zone. This includes fewer affordable housing units and a smaller office building than were originally considered. Proposing this project under the current R-2 zoning also allows the city to review the office building as a Conditional Use (under the R-1-B zoning, the office would be permitted outright).

Neighborhood Outreach. Starting in 2012, NHA began quarterly open house meetings to re-introduce NHA to the surrounding community. Open house meetings are designed to discuss neighborhood safety and to create effective lines of communication between NHA and immediate neighbors. During these meetings, informal discussions of NHA's plans to renovate its campus occurred. Additionally, NHA has attended meetings with the Lake Road Neighborhood Association and the Historic Milwaukie Neighborhood District Association (Historic Milwaukie NDA) to discuss campus redevelopment plans. In 2015, as NHA began to solidify its approach for a revised application under the existing zoning, NHA met with the Historic Milwaukie NDA twice and met informally with their board president once. At these meetings, NHA discussed plans for moving forward with the campus redevelopment. NHA has discussed the site plan and provided concept materials with architectural features of the proposed campus layout, including massing studies and 3-dimensional renderings. As NHA has continued to refine drawings, scope and timelines for application submittal, they have reached out to the Historic Milwaukie NDA and requested addition to their agenda for their next available neighborhood meetings. Most recently, NHA met with the Historic Milwaukie NDA on November 9, 2015.

Figure 1: Site and Surrounding Zoning

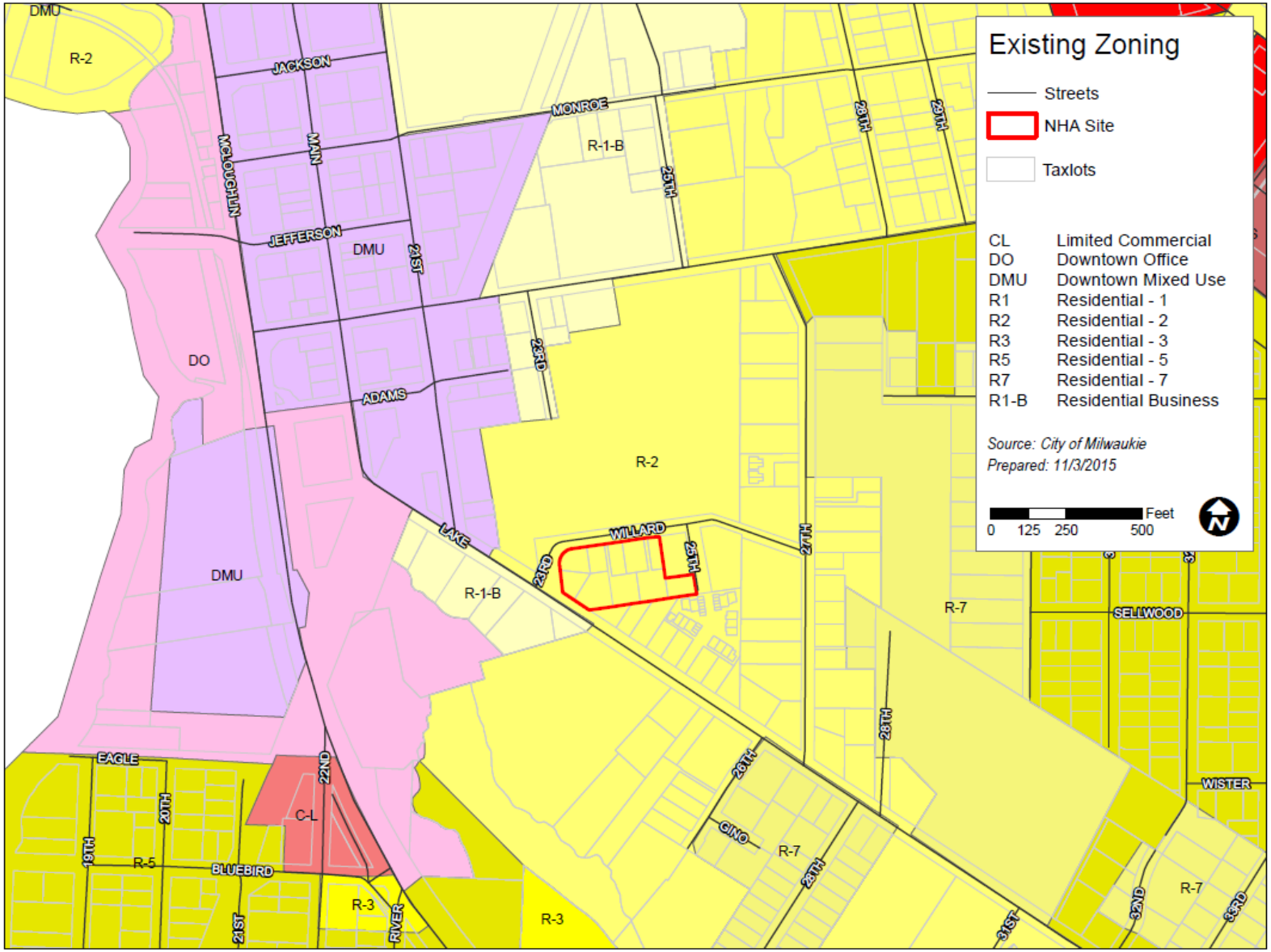
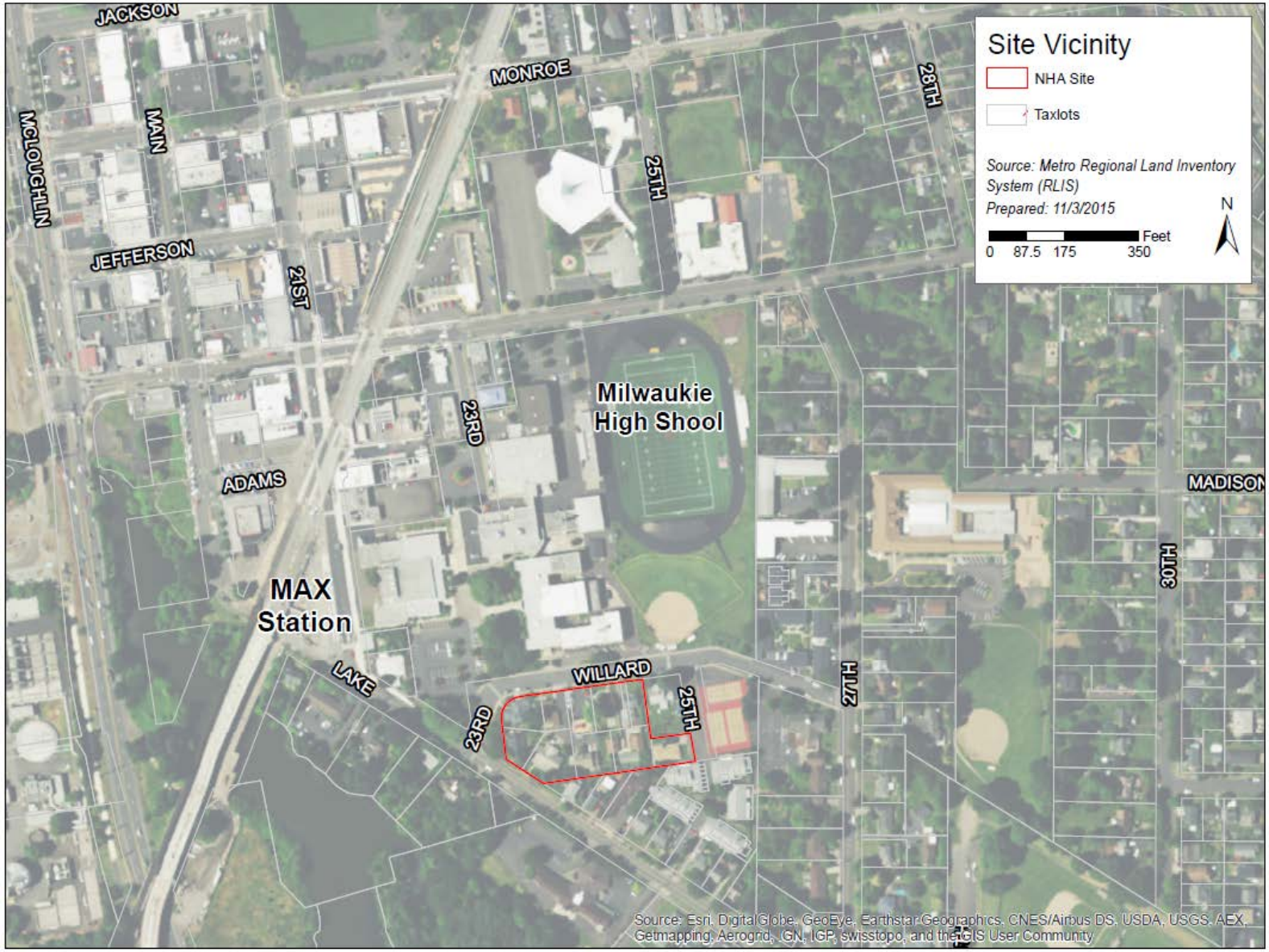


Figure 2: Aerial Image of Site and Vicinity



Section 3: Conditional Use Approval Criteria - Office Use

This section provides findings to demonstrate compliance with the approval criteria for a new conditional use approval per Section 19.905 of the Milwaukie Zoning Code. Each criterion is cited in full (in italics) and followed by a response section that details how the proposed new office use complies.

19.905 CONDITIONAL USES

19.905.4 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 NHA site is approximately 1.70 acres in size and relatively flat (with the exception of the somewhat steep edge along the Lake Road frontage and western boundary of the property). Existing improvements include an office building, the Annie Ross House Shelter, some duplex and single-family housing units and associated parking and open space. All development currently on the site will be removed in order to accommodate the proposed new development and allow reconfiguration of the site to better suit the applicant's needs. As shown on the Site Plan in Exhibit A, the site is large enough to allow for a larger office building and shelter, additional multifamily housing units, and adequate parking, open spaces and landscaping and comply with all development standards of the R-2 zone.

In terms of the proposed office building (the subject of the conditional use review), the site provides ample space for the new office, which will have a footprint of approximately 4,770 square feet (for comparison, the existing office footprint is approximately 4,000 square feet). It will be located in the same area of the NHA site as the existing office building and will have a total of 12,500 square feet of floor area on three levels. Due to the topography of the site, the office design will take advantage of the site grades to allow for the building to engage at the street level more than the current facilities. The building is designed in a split level fashion where the lowest floor is along Willard Street. Within the building, at this level, will be conference room and employee breakroom space along with a small outdoor plaza area at the NW corner of the building (identified on Sheet 1.3). The building will appear as three levels in height at Willard Street but as viewed from the interior courtyard and Lake Street it will appear as two levels in height.

The site will be configured so that access to the office building will be available from the sidewalk along SE Willard Street, the sidewalk at the corner of SE Willard Street and SE 23rd Street, and from the on-site walkways provided between the parking lot and the office building. The location of the NHA site is suitable for this project because it is located in a zone that allows the mix of uses being proposed. The surrounding area is developed at moderate densities that are comparable to the development proposed for the NHA site. The site is also located along Lake Road, which has frequent bus service, and is near (less than two blocks) the new MAX light rail station. This convenient access to transit will serve both NHA employees and clients/residents.

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

Response: The character of the area surrounding the NHA site is transitioning to a mixed use area, consistent with the vision established in the Milwaukie Comprehensive Plan. Downtown Milwaukie is located to the west of the site and is developed with mixed-use commercial uses; properties to the southwest of the site are developed with a combination of office, single-family residential, and institutional uses; properties to the southeast of the site are developed with single-family, multifamily, office, and institutional uses; and properties to the east are developed with multifamily, institutional, and single-family uses. Within the context of the Historic Milwaukie Neighborhood, the predominant use by area is commercial (49 percent), followed by single-family residential (24 percent), multifamily residential (13 percent), institutional (8 percent), and vacant properties (6 percent). The proposed project would permit the development of the site with uses similar to those found in the vicinity. The proposed NHA office has been designed to be compatible with these surrounding uses, both in terms of operations and physical characteristics. Furthermore, NHA has been operating an office use on this site for 30 years. Prior to that, the North Clackamas School District operated an office use on the site.

The new office will have typical weekday hours of operation, generally between 8:30 AM and 5:00 PM. Employees will enter and exit the site throughout the day using the primary vehicle access along SE Willard Street. It is also expected that some employees will bicycle to work and/or use transit, and will therefore access the site from the surrounding sidewalk network. Parking for office employees will be provided on site and is also available on-street along SE Willard and SE 23rd Ave. The office will not hold large events that would generate high levels of traffic or noise. The office building is also configured on the site so that it is located away from the existing lower-density residential uses that are south and east of the NHA property.

In terms of physical characteristics, the proposed office building will be setback from the sidewalk 15 feet, as required by the Milwaukie Zoning Code. The setback area will be landscaped with a mix of trees and ground cover, providing a green buffer between the building and the sidewalk/street. The office building has been designed with large windows along the street-facing façade to provide a sense of openness and transparency into the building.

The NHA site is surrounded by a variety of building functions, architectural styles and building materials. Because of this, the surrounding neighborhood does not provide a defined context; therefore the design of the office uses similar visual and massing elements in order to respect the eclectic neighborhood mix but does not attempt to replicate any one style. As an office building, it is important that it be identified differently from the housing around it. Through the use of brick, cement plank cladding, and wood siding, the office building reflects the variety of material and textural elements without appearing institutional. The mass of the building is broken down into smaller components in order to reflect the residential development around the property and not compete in massing with the high school to the north. The roof is residential in character with the use of a gable form. It is offset which is slightly different in the neighborhood but intentional, to allow for sustainability goals for the project which include the use of photovoltaic panels to reduce utility costs. The intent is that the residents, neighbors and community identify the building as an office yet understand the relationship to the larger development through the massing and material uses. The

shelter shares a similar form and material palette while the future multi-family housing will have some similar roof forms but a smaller percentage of similar cladding materials.

Traffic generated by the proposed office is projected to increase minimally with this project (7 additional trips during the weekday AM peak hour and 6 trips during the PM peak hour). Those increases are based on projected increase in the number of employees from 35 to 50. Traffic generated by this project will not result in impacts to intersections; all intersections near the site will continue to operate at acceptable levels. The proposed access drives into the site will meet the city's access spacing and sight distance requirements. The Traffic Impact Analysis included in Exhibit C provides additional detail about traffic impacts.

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

Response: As noted in the response above, impacts to the surrounding neighborhood are not anticipated to occur as a result of conditional use approval of the proposed office. An office use has operated at this location for more than 30 years.

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 office use will not generate nuisance impacts such as noise, odor or vibrations. The office will function in a manner typical to most office uses, with weekday hours between 8:30 AM and 5:00 PM. Office functions will take place inside the building and primarily involve administrative activities. The office does not engage in any activity that would generate odor or vibrations. There will be no activities at the office that will result in unusual noise levels (outdoor events or large truck deliveries, for example). As noted above, traffic generated by the proposed office use will be minimal and will not result in measurable impacts to the surrounding streets or intersections.

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 subject properties are zoned R-2. There are no overlay zones or special areas that apply to this project. Section 5 of this narrative demonstrates how the proposed use meets the requirements and development standards for the R-2 zone. No other standards in 19.905 apply to this use.

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

Response: Policies relevant to the proposed NHA project are addressed below. While this section of the narrative addresses the Conditional Use criteria for the office building, some of the responses below consider the entire site. Because the NHA site is being redeveloped as a cohesive campus with multiple uses, context is necessary to make a thorough statement of consistency with city policies. This

is especially true when evaluating transportation and public utility impacts; those elements were considered in the context of the overall site redevelopment.

Chapter 4 Land Use

OBJECTIVE #2 — RESIDENTIAL LAND USE: DENSITY AND LOCATION

To locate higher density residential uses so that the concentration of people will help to support public transportation services and major commercial centers and foster implementation of the Town Center Master Plan.

6. High Density in Mixed Use Areas will be based on the following policies:

a. Within the Mixed Use Area designated on Map 7, a range of different uses including residential, commercial and office are allowed and encouraged. It is expected that redevelopment will be required to implement these policies, and that single structures containing different uses will be the predominant building type.

b. Commercial uses will be allowed at the ground floor level, and will be located relative to the downtown area so that pedestrian access between areas is convenient and continuous.

c. Office uses will be allowed at the ground and first floor levels.

d. High Density residential uses will be allowed on all levels. At least fifty (50) percent of the floor area within a project must be used for residential purposes.

e. Within the Mixed Use Area, a residential density bonus of fifteen (15) percent over the allowable density may be granted in exchange for exceptional design quality or special project amenities.

f. All parking must be contained within a project.

Response: The proposed redevelopment on the NHA site supports the above land use policies by providing a mix of office and moderate-density residential uses on the site, in a location that is in close proximity to transit (bus and light rail) and to businesses in downtown Milwaukie. In addition, NHA provides its employees with reimbursement for expenses associated with commuting to work via transit and using transit for work-related meetings. As further incentive, NHA employees are eligible for monthly prize drawings if they submit their transit logs each month.

Required parking will be contained on site.

This project will result in more efficient use of the site, providing a greater concentration of office employees and housing in this area, consistent with city objectives and the existing R-2 zoning.

OBJECTIVE #2 — EMPLOYMENT OPPORTUNITY

To continue to support a wide range of employment opportunities for Milwaukie citizens.

2. The City will encourage new professional and service-oriented employment opportunities to meet the diverse needs of City residents.

Response: Redevelopment of the NHA site will allow NHA to better accommodate existing employees in the office space and allow for anticipated growth over the next 20 years. This anticipated growth will provide professional employment opportunities for Milwaukie residents. In addition, expanding employment in proximity to transit and the downtown area will support plans to revitalize downtown Milwaukie.

OBJECTIVE #12 — TOWN CENTER

To emphasize downtown Milwaukie and the expanded city center as a Town Center with the major concentration of mixed use and high density housing, office, and service uses in the City.

Response: As noted above, the proposed redevelopment of the NHA campus supports the above objective by providing a mix of office and residential uses within the Town Center in close proximity to retail and service businesses in downtown Milwaukie.

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 Pre-Application Report (Exhibit B) notes that existing City of Milwaukie public utilities are available to serve the NHA site for water and sanitary sewer. For stormwater, NHA will be required to submit a stormwater management plan prior to development that meets the city's standards and requirements. As shown on the Landscape Plan in Exhibit A, stormwater treatment facilities are planned for various locations on the site to mitigate impervious surfaces created as part of the development. All water quality facilities on site will be designed according to city design standards.

As demonstrated in the Traffic Impact Analysis provided in Exhibit C, adequate public transportation facilities are available to serve the proposed redevelopment of the NHA site. No improvements to public transportation facilities are identified in the analysis. The applicant will be required to dedicate additional right-of-way along the site's frontage with Lake Road in order to comply with applicable street width standards for an arterial roadway.

Section 4: Community Service Use Approval Criteria - Shelter Use

This section provides findings to demonstrate compliance with the approval criteria for a new community service use approval per Section 19.904 of the Milwaukie Zoning Code. Each criterion is cited in full (in italics) and followed by a response section that details how the proposed new shelter use complies.

19.904 COMMUNITY SERVICE USES

19.904.4 Approval Criteria

An application for a community service use may be allowed if the following criteria are met:

A. The building setback, height limitation, and off-street parking and similar requirements governing the size and location of development in the underlying zone are met. Where a specific standard is not proposed in the CSU, the standards of the underlying zone are met;

Response: Compliance with the development standards of the underlying R-2 zone is demonstrated in Section 5 of this narrative.

B. Specific standards for the proposed uses as found in Subsections 19.904.7-11 are met;

Response: The standards found in 19.904.9 are intended for "Public, Private, Religious, and Other Facilities not Covered by Other Standards", which applies to the shelter use. Those standards are addressed after this section of approval criteria.

C. The hours and levels of operation of the proposed use are reasonably compatible with surrounding uses;

Response: The area surrounding the subject site has an urban residential character with a mix of institutional uses and commercial/office uses, and a moderately dense blend of single-family homes, townhomes and apartment buildings. Milwaukie High School is directly across the street (Willard Street) from the site and generates a large amount of activity during peak school times.

The proposed new shelter will be designed to house a maximum of eight families and will function like a small apartment building in terms of hours and level of use. Shelter residents will live there, go to work and attend school in the same manner as residents in the surrounding neighborhood. The shelter is closed each night at 10:00 PM (11:00 PM on weekends); shelter residents are required to be back in the shelter by the designated curfew in order to spend the night. During the daytime, many shelter residents are off-site at work or school.

The Milwaukie High School has typical hours of operation for a high school, with arrival activities beginning around 7:30 AM (school classes begin at 8:35 AM). Classes end at 3:10 PM and extracurricular activities (sports and band practice, etc.) typically end by 7:00 PM. During spring and fall seasons, outside events such track meets or football games occur in the evening. Football games, which typically generate the highest level of use, start at 7:00 PM and are over by 10:00 PM.

Milwaukie Presbyterian Church, located across Lake Road from the NHA site, operates seven days a week, typically between the hours of 8:00 AM to 9:00 PM. The highest levels of operation occur during Sunday service at 10:00 AM. Several annual events (Christmas Eve service, for example) extend past the typical hours, but those types of events occur only three to four times per year.

Based on the above information, the hours and levels of operation of the shelter will be reasonably compatible with adjacent uses.

Furthermore, the shelter is oriented internally on the NHA site, providing a substantial buffer between the shelter and outside adjacent uses. Approximately half of shelter residents do not own a car and will use other forms of transportation (transit, walking and biking) to get to and from the shelter. To ensure the safety and comfort of shelter residents and neighbors, there will be NHA staff on site at all times, day and night. The shelter has been operating on this site for 30 years and has been granted two expansions by the City of Milwaukie. The shelter does not generate unusual or incompatible levels of noise, traffic or light and has historically blended well with the surrounding residential, commercial and institutional uses.

D. The public benefits of the proposed use are greater than the negative impacts, if any, on the neighborhood;

Response: The proposed Annie Ross House redevelopment will continue to provide a much-needed public benefit by giving temporary shelter to families experiencing homelessness in Clackamas County. From the most recent available homeless counts in Clackamas County (performed in 2015), over 2,000 people identified as being homeless and of those 2,000 over half were from families with children.[1]. Clackamas County has virtually the same landmass as the state of Delaware and the Annie Ross House is the only shelter in Clackamas County that provides emergency housing for families with children. There is a severe shortage of shelter housing for families in Clackamas County which is why NHA proposes to expand the Annie Ross House to serve eight families at a time instead of five. Families who stay at the shelter also have access to critical services (healthcare, job training, food boxes, etc.) and receive assistance in securing permanent housing. An on-site staff member, with the oversight of the Shelter Operations Manager, is always available to help with smooth transitions for new families and ensure the shelter functions well. As noted above, the shelter will operate similar to a small apartment building and will not have negative impacts on the neighborhood.

E. The location is appropriate for the type of use proposed.

Response: The Annie Ross House Shelter has operated at this site for 30 years. There are a number of reasons why the site has been, and will continue to be, an appropriate location for the shelter:

- The main NHA office is also on this site. This provides shelter residents convenient access to many of the support services that NHA provides. It also allows NHA staff to regularly monitor and access the shelter as needed to help transition families in and out of the shelter.
- The site is located in close proximity (two blocks) to the Lake Road light rail station as well as nearby downtown commercial businesses and services. This will allow shelter residents to access downtown and transit by foot or bike, thus reducing the need for vehicle use.

[1] Clackamas County point-in-time count, as referenced on 11/16/15; from-http://www.lotsm.org/docs/2015_Clackamas_Homeless_PIT_Report_Final.pdf

- The site is located along Lake Road, which is a major arterial street with bus service and allows shelter residents to access the NHA site with minimal use of smaller, local streets.
- This site and surrounding area have a Mixed-Use/High Density Residential plan designation, which means the city has determined that this area is appropriate for a mix of commercial, institutional and higher-density residential uses. The shelter use, and the other NHA uses proposed on the site, are consistent with this designation and with the types of residential and institutional development that have already occurred in the area.

19.904.9 Specific Standards for Institutions—Public, Private, Religious, and Other Facilities not Covered by Other Standards

A. Utilities, streets, or other improvements necessary for the public facility or institutional use shall be provided by the agency constructing the use.

Response: NHA (the applicant and agency constructing the use) will provide any needed utility work on the site, and any other improvements associated with the proposed project. Per the Traffic Impact Analysis (see Exhibit C), no street improvements are required for this proposed project.

B. When located in or adjacent to a residential zone, access should be located on a collector street if practicable. If access is to a local residential street, consideration of a request shall include an analysis of the projected average daily trips to be generated by the proposed use and their distribution pattern, and the impact of the traffic on the capacity of the street system which would serve the use. Uses which are estimated to generate fewer than 20 trips per day are exempted from this subsection.

Response: There are no collector streets adjacent to the NHA site from which access may be taken. Access to the site will be taken from SE Willard Street, which is a local street. The Traffic Impact Analysis included with this submittal in Exhibit C provides projected trip data and evaluates the potential impact of the overall site development (including the new shelter) on the local street system. The analysis concludes that the proposed NHA project will not have measurable impacts and no mitigation is required.

C. When located in a residential zone, lot area shall be sufficient to allow required setbacks that are equal to a minimum of ⅔ the height of the principal structure. As the size of the structure increases, the depth of the setback must also increase to provide adequate buffering.

Response: As shown on the Site Plan, the proposed shelter is located internally on the NHA site and has adequate setbacks to meet the above standard. The shelter is proposed to be 33'-6" in height, which would require 22-foot setbacks per the above standard. The shelter is setback from property lines well beyond 22 feet.

D. The height limitation of a zone may be exceeded to a maximum height of 50 ft provided Subsection 19.904.9.C of this subsection is met.

Response: Subsection D is not applicable because the height limit of the R-2 zone will not be exceeded. The shelter will be 33'-6" in height, which is below the 45-foot maximum allowed.

E. Noise-generating equipment shall be sound-buffered when adjacent to residential areas.

Response: The shelter will not have any noise-generating equipment. Therefore, this standard is not applicable.

F. Lighting shall be designed to avoid glare on adjacent residential uses and public streets.

Response: Outdoor lighting on NHA site will be provided in the parking lot (as required) and along the on-site pedestrian walkways. The Site Lighting Plan and Cut Sheets provided in Exhibit A demonstrate that lighting fixtures will have cut-off features that will minimize lighting at the property line and comply with City of Milwaukie lighting standards. Extra perimeter landscaping will also be provided around the parking lot where it abuts residential uses to screen vehicle lights from adjacent homes.

G. Where possible, hours and levels of operation shall be adjusted to make the use compatible with adjacent uses.

Response: As noted previously, the Annie Ross House Shelter will function similarly to a small apartment building. At full capacity, it will hold eight families who will use the shelter as their temporary home. Consistent with current practice, the shelter doors will close at 10:00 PM (or 11:00 PM on weekends); shelter residents are required to be home by curfew. The hours and levels of operation of the proposed shelter will be very similar to those of the surrounding residential uses.

Section 5: Base Zone Standards for the R-2 Zone

This section demonstrates how the proposed office and shelter uses comply with the applicable development standards of the R-2 zone.

"Lot" as defined by the MZC includes: "a legally defined unit of land other than a tract that is a result of a subdivision or partition. For general purposes of this title, lot also means legal lots or lots of record under the lawful control, and in the lawful possession, of 1 distinct ownership. When 1 owner controls an area defined by multiple adjacent legal lots or lots of record, the owner may define a lot boundary coterminous with 1 or more legal lots or lots of record within the distinct ownership."

NHA owns and controls the subject tax lots and therefore, defines the lot area as a single site or "lot" for purposes of complying with the development standards. City staff concurred with this approach in the Pre-Application Report dated July 16, 2015 (see Exhibit B). Therefore, the table below addresses the site as a whole.

19.302.4 Development Standards

R-2 Development Standard	Proposed Project Consistency
Minimum lot size: Rowhouse - 3,000 sq. ft. Duplex - 7,000 sq. ft. All other lots - 5,000 sq. ft.	The NHA site is 1.70 acres, which exceeds the minimum lot size requirement for "all other lots".
Minimum lot width: 50 ft.	As demonstrated on the Site Plan in Exhibit A, the proposed project meets the applicable standards for lot width, lot depth, street frontage and required yards.
Minimum lot depth: 80 ft.	
Minimum street frontage: 35 ft.	
Minimum front yard: 15 ft.	
Minimum side yard: 5 ft.	
Minimum street side yard: 15 ft.	
Minimum rear yard: 15 ft.	
Maximum bldg. height: 3 stories or 45 ft.	Office building: 38'-7"(3 stories) Shelter: 27'-10.5" (2 stories)
Side yard height plane	Not applicable.
Maximum lot coverage: 45%	Total site coverage: 31%
Minimum vegetation: 15%	Total site vegetation: Approximately 33% (24,352 square feet of vegetation)
Density requirements: Min 11.6 units per acre Max 17.4 units per acre	Not applicable to the office (CU) and shelter (CSU) uses. The multifamily units will be permitted under a separate land use process and density will be addressed in that review.

19.302.5 Additional Development Standards

C. Minimum Vegetation

At least half of the minimum required vegetation area must be suitable for outdoor recreation by residents, and not have extreme topography or dense vegetation that precludes access.

Response: Required vegetation for the NHA site is 15% of the total site area, which is approximately 11,136 square feet. Half of that required area (5,568 sf) must be suitable for outdoor recreation. As shown on the Landscape Plan in Exhibit A, there are several areas designated as usable outdoor space, including the main courtyard in the center of the site, a play area, picnic area, and patio area. Together, those areas are 7,560 square feet, which exceeds the 50% requirement.

D. Front Yard Minimum Vegetation

At least 40% of the front yard shall be vegetated. The front yard vegetation area required by this subsection counts toward the minimum required vegetation for the lot. A property may provide less than the 40% of the front yard vegetation requirement if it is necessary to provide a turnaround area so that vehicles can enter a collector or arterial street in a forward motion.

Response: As shown on the Landscape Plan in Exhibit A, the majority of the front yard along Willard Street (and 23rd Street) is landscaped with a combination of trees, shrubs and groundcover. The only exception is the location of walkways that connect the sidewalk to the office and housing buildings.

J. Off-Street Parking and Loading

Off-street parking and loading is required as specified in Chapter 19.600.

Response: Off-street parking and loading is addressed in Section 6 of this narrative.

K. Public Facility Improvements

Transportation requirements and public facility improvements are required as specified in Chapter 19.700.

Response: Responses to demonstrate compliance with the requirements of Chapter 19.700 are provided in Section 6 of this narrative.

L. Additional Standards

Depending upon the type of use and development proposed, the following sections of Chapter 19.500 Supplementary Development Regulations may apply. These sections are referenced for convenience, and do not limit or determine the applicability of other sections within the Milwaukie Municipal Code.

1. *Subsection 19.504.4 Buildings on the Same Lot*
3. *Subsection 19.504.9 On-Site Walkways and Circulation*
4. *Subsection 19.504.10 Setbacks Adjacent to Transit*
6. *Subsection 19.505.2 Garage and Carport Standards*
9. *Subsection 19.505.6 Building Orientation to Transit*

Response: The subsections of Chapter 19.500 applicable to this proposal are 19.504.9 and 19.505.6. The other subsections listed above are not relevant to the proposed NHA project.

19.504.9 On-Site Walkways and Circulation

A. Requirement

All development subject to Chapter 19.700 (excluding single-family and multifamily residential development) shall provide a system of walkways that encourages safe and convenient pedestrian movement within and through the development site. Redevelopment projects that involve remodeling or changes in use shall be brought closer into conformance with this requirement to the greatest extent practicable. On-site walkways shall link the site with the public street sidewalk system. Walkways are required between parts of a site where the public is invited to walk. Walkways are not required between buildings or portions of a site that are not intended or likely to be used by pedestrians, such as truck loading docks and warehouses.

B. Location

A walkway into the site shall be provided for every 300 ft of street frontage.

C. Connections

Walkways shall connect building entrances to one another and building entrances to adjacent public streets and existing or planned transit stops. On-site walkways shall connect with walkways, sidewalks, bicycle facilities, alleys, and other bicycle or pedestrian connections on adjacent properties used or planned for commercial, multifamily, institutional, or park use. The City may require connections to be constructed and extended to the property line at the time of development.

D. Routing

Walkways shall be reasonably direct. Driveway crossings shall be minimized. Internal parking lot circulation and design shall provide reasonably direct access for pedestrians from streets and transit stops to primary buildings on the site.

E. Design Standards

Walkways shall be constructed with a hard surface material, shall be permeable for stormwater, and shall be no less than 5 ft in width. If adjacent to a parking area where vehicles will overhang the walkway, a 7-ft-wide walkway shall be provided. The walkways shall be separated from parking areas and internal driveways using curbing, landscaping, or distinctive paving materials. On-site walkways shall be lighted to an average 5/10-footcandle level. Stairs or ramps shall be provided where necessary to provide a direct route.

Response: As illustrated on the Landscape Plan, a pedestrian walkway system will be provided throughout the NHA site that connects the office, shelter and multifamily buildings to each other, to the parking lot, and to the surrounding public sidewalk system. Pedestrian connections to the public sidewalk along SE Willard Street will be available in five locations: one near the northeast corner of the office building, three leading to housing in Building A, and one at the northwest corner of the parking lot. The distance between those access points does not exceed 300 feet. There is also a pedestrian access (via stairs) connecting the western portion of the site to the public sidewalk area at the corner of SE 23rd Street and Lake Road. That access also provides a connection to the bus stop located at that corner (TriMet line #32). The on-site pedestrian walkway system does not cross through driveways or the parking lot. All walkways will be at least five feet in width and will be constructed in accordance

with the requirements above. Walkways will be lit at night in accordance with the above requirement. Proposed lighting is shown on the Lighting Plan in Exhibit A.

19.505.6 Building Orientation to Transit

The following requirement applies to all new commercial, office, and institutional development within 500 ft of an existing or planned transit route measured along the public sidewalk that provides direct access to the transit route:

New buildings shall have their primary orientation toward a transit street or, if not adjacent to a transit street, a public right-of-way which leads to a transit street. The primary building entrance shall be visible from the street and shall be directly accessible from a sidewalk connected to the public right-of-way. A building may have more than 1 entrance. If the development has frontage on more than 1 transit street, the primary building entrance may be oriented to either street or to the corner.

Response: The NHA site has frontage along Lake Road, which is served by an existing bus route. There is a bus stop located at the corner of Lake Road and SE 23rd Avenue, adjacent to the NHA development. The proposed office building is not adjacent to Lake Road; however, as shown on the Site Plan in Exhibit A, there is a direct public access from that corner to the primary entrance of the office building via stairs leading from the sidewalk/public plaza area.

Section 6: Public Facilities

This section provides responses to demonstrate compliance with the public facility requirements of Chapter 19.700.

19.702 Applicability

Chapter 19.700 applies to the following types of development in all zones:

…

E. Modification or expansion of an existing structure or a change or intensification in use that results in any one of the following. See Subsections 19.702.2-3 for specific applicability provisions for single-family residential development and development in downtown zones.

1. *A new dwelling unit.*
2. *Any increase in gross floor area.*
3. *Any projected increase in vehicle trips, as determined by the Engineering Director.*

Response: The proposed NHA project involves an expansion and intensification of the existing use that will result in an increase in floor area and vehicle trips. Therefore, Chapter 19.700 is applicable.

19.703.1 Pre-application Conference

For all proposed development that requires a land use application and is subject to Chapter 19.700 per Section 19.702, the applicant shall schedule a pre-application conference with the City prior to submittal of the land use application. The Engineering Director may waive this requirement for proposals that are not complex.

Response: NHA attended a pre-application meeting with the city on July 2, 2015. Summary notes from the meeting are provided in Exhibit B. A second meeting was held with the city on December 17, 2015, prior to submittal, to discuss the Transportation Impact Analysis.

19.703.2 Application Submittal

For all proposed development that is subject to Chapter 19.700 per Section 19.702, one of the following types of applications is required.

…

B. Transportation Facilities Review (TFR) Land Use Application

If the proposed development triggers a transportation impact study (TIS) per Section 19.704, a TFR land use application shall be required. …

Response: The proposed development triggers a TIS. Therefore, a Transportation Facilities Review application is required. That application is part of this submittal package.

19.703.3 Approval Criteria

For all proposed development that is subject to Chapter 19.700 per Section 19.702, the required development permit and/or land use application shall demonstrate compliance with the following approval criteria at the time of submittal.

A. Procedures, Requirements, and Standards

Development and related public facility improvements shall comply with procedures, requirements, and standards of Chapter 19.700 and the Public Works Standards.

Response: The proposed development and associated public facility improvements will comply with all applicable procedures, requirements and standards of Chapter 19.700 and the city's Public Works Standards. Responses to all applicable sections of Chapter 19.700 are provided in this section.

B. Transportation Facility Improvements

Development shall provide transportation improvements and mitigation at the time of development in rough proportion to the potential impacts of the development per Section 19.705 Rough Proportionality, except as allowed by Section 19.706 Fee in Lieu of Construction.

…

Response: As noted in the Traffic Impact Analysis provided in Exhibit C, the proposed project is not anticipated to have measurable impacts on surrounding transportation facilities. As such, no off-site improvements or mitigation is required. Standard frontage improvements required by the city are discussed under (C) below.

C. Safety and Functionality Standards

The City will not issue any development permits unless the proposed development complies with the City's basic safety and functionality standards, the purpose of which is to ensure that development does not occur in areas where the surrounding public facilities are inadequate. Upon submittal of a development permit application, an applicant shall demonstrate that the development property has or will have all of the following:

1. Adequate street drainage, as determined by the Engineering Director.

Response: This submittal includes a stormwater management plan that demonstrates how NHA will address drainage for the proposed redevelopment. The NHA project engineers have been working with city engineering staff to develop a drainage program that is adequate and efficient. NHA proposes to construct a green street planter/swale in the 5-foot wide landscape strip on Lake Road that will be large enough to handle the basin area that drains to it. The stormwater plan provides additional detail.

2. Safe access and clear vision at intersections, as determined by the Engineering Director.

Response: As noted in the TIS in Exhibit C, the proposed site driveways on SE Willard Street and 25th Avenue meet the city's accessway spacing standards. There is also sufficient sight distance in both directions at the SE Willard Street driveway. Clear vision areas at both proposed driveways will be established and maintained, as recommended in the TIS and as required by MMC 12.24.

3. Adequate public utilities, as determined by the Engineering Director.

Response: The NHA site is well served by public utilities. A Preliminary Utility Plan is included in the Plan Set in Exhibit A.

4. Access onto a public street with the minimum paved widths as stated in Subsection 19.703.3.C.5 below.

Response: The NHA site will have access onto two public streets, SE Willard Street and SE 25th Avenue, both of which meet the minimum paved width requirements for a local street. See the response to subsection (5) below for detail.

5. Adequate frontage improvements as follows:

a. For local streets, a minimum paved width of 16 ft along the site's frontage.

b. For nonlocal streets, a minimum paved width of 20 ft along the site's frontage.

c. For all streets, a minimum horizontal right-of-way clearance of 20 ft along the site's frontage.

Response: The NHA site has frontages along SE Lake Road (arterial), SE Willard Street (local) and SE 23rd Avenue (local). Per the pre-application summary notes (Exhibit B), SE Lake Road has a paved width of 30 feet along the NHA frontage. SE Willard Street has a paved width of 36 feet, and SE 23rd Avenue has a paved width of 46 feet. All frontages have at least 20 feet of horizontal right-of-way clearance. Therefore, the NHA site frontages meet or exceed the above standard.

6. Compliance with Level of Service D for all intersections impacted by the development, except those on Oregon Highway 99E that shall be subject to the following:

…

Response: Table 7 in the TIS (Exhibit C) provides level of service forecasts for all impacted intersections. All intersections will operate at level C or above after the NHA project is complete. Therefore, this standard is met.

19.704 Transportation Impact Evaluation

19.704.2 TIS General Provisions

A. All transportation impact studies, including neighborhood through-trip and access studies, shall be prepared and certified by a registered Traffic or Civil Engineer in the State of Oregon.

Response: The TIS provided in Exhibit C was prepared by Kittelson & Associates, Inc., by a traffic engineer registered in the State of Oregon (see stamp on page 22 of the TIA).

B. Prior to TIS scope preparation and review, the applicant shall pay to the City the fees and deposits associated with TIS scope preparation and review in accordance with the adopted fee schedule. The City's costs associated with TIS scope preparation and review will be charged against the respective deposits. Additional funds may be required if actual costs exceed deposit amounts. Any unused deposit funds will be refunded to the applicant upon final billing.

Response: Fees and deposits associated with the TIS scope preparation and review were provided to the city as required.

C. The TIS shall be submitted with a transportation facilities review (TFR) land use application pursuant to Subsection 19.703.2.B and associated application materials pursuant to Subsection 19.703.3. The City will not accept a TFR application for processing if it does not include the required TIS. The City will not accept other associated land use applications for processing if they are not accompanied by the required TFR application.

Response: The TIS is submitted as Exhibit C with this TFR, CU and CSU application package.

D. The Engineering Director may require a TIS review conference with the applicant to discuss the information provided in the TIS. This conference would be in addition to the required pre-application conference pursuant to Subsection 19.703.1. If such a conference is required, the City will not accept the TFR application for processing until the conference has taken place. The applicant shall pay the TIS review conference fee at the time of conference scheduling, in accordance with the adopted fee schedule.

Response: The required TIS review conference was held with the city on December 17, 2015.

E. The City may attach conditions of approval to land use decisions as needed to satisfy the transportation facility requirements of Section 19.708 and to mitigate transportation impacts identified in the TIS.

Response: The applicant understands that the city may attach conditions of approval to the land use decision to satisfy transportation facility requirements.

19.704.3 TIS Requirements

…

B. TIS Content

A project-specific TIS checklist will be provided by the City once the Engineering Director has determined the TIS scope. A TIS shall include all of the following elements, unless waived by the Engineering Director.

1. Introduction and Summary

This section should include existing and projected trip generation including vehicular trips and mitigation of approved development not built to date; existing level and proposed level of service standard for City and County streets and volume to capacity for State roads; project build year and average growth in traffic between traffic count year and build year; summary of transportation operations; proposed mitigation(s); and traffic queuing and delays at study area intersections.

2. Existing Conditions

This section should include a study area description, including existing study intersection level of service.

3. Impacts

This section should include the proposed site plan, evaluation of the proposed site plan, and a project-related trip analysis. A figure showing the assumed future year roadway network (number and type of lanes at each intersection) should also be provided.

4. Mitigation

This section should include proposed site and areawide specific mitigation measures. Mitigation measures shall be roughly proportional to potential impacts pursuant to Section 19.705.

5. Appendix

This section should include traffic counts, capacity calculations, warrant analysis, and any information necessary to convey a complete understanding of the technical adequacy of the TIS.

Response: The TIS provided in Exhibit C contains all required content as described above. Specifically:

- Introduction, page 1
- Existing Conditions, page 4
- Impacts, page 9
- Mitigation, page 21
- Appendix, included at the end of the report

D. Neighborhood Through-Trip Study

Any nonresidential development projected to add more than 25 through-vehicles per day to an adjacent residential local street or neighborhood route will require assessment and mitigation of residential street impacts. …

Response: Per the Transportation Impact Study Checklist provided to the NHA traffic engineer, a neighborhood through-trip study is not required for this project.

19.704.4 Mitigation

A. Transportation impacts shall be mitigated at the time of development when the TIS identifies an increase in demand for vehicular, pedestrian, bicycle, or transit transportation facilities within the study area.

Response: As noted in the TIS in Exhibit C, the proposed NHA campus redevelopment will not have significant impacts to surrounding transportation facilities. All study area intersections are forecast to continue to operate acceptably in post-development conditions. The TIS does not recommend any mitigation other than ensuring that vision clearance is maintained along the two proposed site driveways. The TIS also notes that NHA employs some transportation demand management measures currently, and will continue to do so after the redevelopment is complete. Those measures include an employee transit incentive plan, transit cost reimbursement, and secure, sheltered bicycle parking for employees who bike to work.

19.706 Fee in Lieu of Construction

If transportation facility improvements are required and determined to be proportional, the City will require construction of the improvements at the time of development. However, the applicant may request to pay a fee in lieu of constructing the required transportation facility improvements.

Response: The applicant is not requesting to pay a fee in lieu of constructing required transportation improvements.

19.708 Transportation Facility Requirements

19.708.1 General Street Requirements and Standards

A. Access Management

All development subject to Chapter 19.700 shall comply with access management standards contained in Chapter 12.16.

Response: Chapter 12.16 states that, "Driveway approaches shall be constructed as set forth in the Milwaukie Public Works Standards." The applicant is proposing to close the three existing site driveways and construct two new driveway approaches as part of the campus redevelopment. As noted in the TIS in Exhibit C, the two proposed site driveways (on SE Willard Street and SE 25th Avenue) meet City of Milwaukie's accessway location spacing standards as outlined in Section 5.0082 of Milwaukie's Public Works Standards.

B. Clear Vision

All development subject to Chapter 19.700 shall comply with clear vision standards contained in Chapter 12.24.

Response: Clear vision areas will be established and maintained at the two proposed site driveways. The TIS provided in Exhibit C recommends the following with regard to clear vision:

"Any new landscaping, signage or above-ground utilities along the SE Willard Street and SE 25th Avenue site frontage should be installed and maintained to ensure they do not interfere with the vision clearance triangles at the two proposed site driveways."

…

D. Development in Non-Downtown Zones

Development in a non-downtown zone that has frontage on a street section shown in the PAR is subject to the requirements of the Milwaukie Public Works Standards, which implements the street design standards and right-of-way dedication requirements contained in the PAR for that street frontage. The following general provisions apply only to street frontages that are not shown in the PAR and for development that is not in any of the downtown zones listed in Subsection 19.708.1.C above:

1. Streets shall be designed and improved in accordance with the standards of this chapter and the Public Works Standards. ODOT facilities shall be designed consistent with State and federal standards. County facilities shall be designed consistent with County standards.

2. Streets shall be designed according to their functional classification per Figure 8-3b of the TSP.

Response: As part of the NHA redevelopment, the applicant will be providing street improvements to the site's frontage along SE Lake Road intended to bring the road up current standard. SE Lake Road is a designated arterial. Based on conversations between the project engineer (KPFF) and city engineering staff, the required frontage improvements along SE Lake Road will include the following:

- 6.5-foot right-of-way dedication
- From the new property line, the cross section will include: 6-inch buffer, 6-foot sidewalk, 5-foot landscape strip, 6-inch curb
- Paving as needed to fill in the gap to reach center line

These improvements will result in approximately 8.5-feet of widening on Lake Road. The city plans to ultimately add a center turn lane on Lake Road and stripe a bike lane in this location; those future planned facilities will be accommodated by these frontage improvements.

3. Street right-of-way shall be dedicated to the public for street purposes in accordance with Subsection 19.708.2. Right-of-way shall be dedicated at the corners of street intersections to accommodate the required turning radii and transportation facilities in accordance with Section 19.708 and the Public Works Standards. Additional dedication may be required at intersections for improvements identified by the TSP or a required transportation impact study.

Response: Per the pre-application meeting notes (see Exhibit B), existing rights-of-way along SE 23rd Avenue and SE Willard Street are adequate and no right-of-way dedication is required. Existing right-of-way along SE Lake Road is not adequate and the city is requiring 6.5 feet of dedication along the NHA site frontage with SE Lake Road. Plans provided in Exhibit A show the required right-of-way dedication.

4. The City shall not approve any development permits for a proposed development unless it has frontage or approved access to a public street.

Response: The NHA site has frontage along SE Lake Road, SE 23rd Avenue, SE 25th Avenue and SE Willard Street. Proposed access to the site will be taken from SE Willard Street and a secondary access on SE 25th Avenue.

5. Off-site street improvements shall only be required to ensure adequate access to the proposed development and to mitigate for off-site impacts of the proposed development.

Response: No off-site street improvements are being required for the proposed NHA project.

6. The following provisions apply to all new public streets and extensions to existing public streets.

…

Response: No new public streets or extensions to existing public streets are required or proposed as part of the NHA redevelopment project.

7. Traffic calming may be required for existing or new streets. Traffic calming devices shall be designed in accordance with the Public Works Standards or with the approval of the Engineering Director.

Response: Traffic calming is not required by the city as part of this project.

8. Railroad Crossings

Where anticipated development impacts trigger a need to install or improve a railroad crossing, the cost for such improvements may be a condition of development approval.

Response: This standard is not applicable because there are no railroad crossings impacted by this proposal.

9. Street Signs

The City shall install all street signs, relative to traffic control and street names, as specified by the Engineering Director. The applicant shall reimburse the City for the cost of all such signs installed by the City.

Response: The Engineering Director has not informed the applicant of any street signs that may be required. As such, NHA assumes no street sign reimbursement will be required.

10. Streetlights

The location of streetlights shall be noted on approved development plans. Streetlights shall be installed in accordance with the Public Works Standards or with the approval of the Engineering Director.

Response: No streetlights have been required as part of this project.

E. Street Layout and Connectivity

…

Response: The proposed NHA project does not include any new streets or changes to the existing street layout and connectivity patterns of the surrounding street network. Therefore, subsection (E) does not apply.

19.708.2 Street Design Standards

…

Response: As noted previously, the city has required frontage improvements along SE Lake Road that include the following:

- 6.5-foot right-of-way dedication
- From the new property line, the cross section will include: 6-inch buffer, 6-foot sidewalk, 5-foot landscape strip, 6-inch curb
- Paving as needed to fill in the gap to reach center line
- There is no on-street parking on Lake Road in this location

These improvements will result in approximately 8.5-feet of widening on Lake Road. The city plans to ultimately add a center turn lane on Lake Road and stripe a bike lane in this location; those future planned facilities will be accommodated by these frontage improvements.

As shown on the Landscape Plan in Exhibit A, street trees will be provided along the site's frontage with Lake Road, as required.

A stormwater treatment facility (swale) will be included in the 5-foot wide landscape strip along Lake Road to treat impervious surfaces from the project (plus additional impervious area beyond what is required).

19.708.3 Sidewalk Requirements and Standards

…

B. Sidewalk Requirements

1. Requirements

Sidewalks shall be provided on the public street frontage of all development per the requirements of this chapter. Sidewalks shall generally be constructed within the dedicated public right-of-way, but may be located outside of the right-of-way within a public easement with the approval of the Engineering Director.

2. Design Standards

Sidewalks shall be designed and improved in accordance with the requirements of this chapter and the Public Works Standards.

3. Maintenance

Abutting property owners shall be responsible for maintaining sidewalks and landscape strips in accordance with Chapter 12.04.

Response: As part of the proposed redevelopment, NHA will provide sidewalks along the site's frontages as follows:

- A 6-foot setback sidewalk along the Lake Road frontage
- 5-foot sidewalks along the SE Willard Street and SE 23rd Avenue frontages where necessary to replace sidewalk impacted during construction.

All sidewalks will be constructed to city standard and maintained by NHA.

19.708.4 Bicycle Facility Requirements and Standards

A. General Provisions

1. Bicycle facilities include bicycle parking and on-street and off-street bike lanes, shared lanes, bike boulevards, and bike paths.

…

B. Bicycle Facility Requirements

Response: As part of the NHA campus redevelopment, on-site bicycle parking will be provided consistent with the bicycle parking requirements in Chapter 19.609. Details regarding amount, location and design of bicycle parking are provided in the response to 19.609 in Section 7 of this narrative.

In addition, the city's cross section for SE Lake Road requires a 6-foot wide bike lane along the NHA frontage. Currently, no bike lane exists in this location. As part of the NHA redevelopment project, additional (6.5 feet) right-of-way will be dedicated along SE Lake Road and the paved width of Lake Road will be widened such that a future bike lane can be accommodated. However, the bike lane will not be striped as part of this project due to the absence of an adjacent connecting bike lane, as noted in subsection (2) regarding timing of construction.

19.708.5 Pedestrian/Bicycle Path Requirements and Standards

Response: No pedestrian/bicycle path is required as part of the proposed NHA project. Therefore, Section 19.708.5 is not applicable.

19.708.6 Transit Requirements and Standards

Response: The NHA site is located along a designated transit route listed in the city's TSP (SE Lake Road). Transit facilities currently exist along the route and no additional transit facilities are being required as part of this project. Therefore, Section 19.708.6 does not apply.

19.709 Public Utility Requirements

19.709.2 Public Utility Improvements

Public utility improvements shall be required for proposed development that would have a detrimental effect on existing public utilities, cause capacity problems for existing public utilities, or fail to meet standards in the Public Works Standards. Development shall be required to complete or otherwise provide for the completion of the required improvements.

Response: Per the pre-application summary notes, the following applies to public utilities serving the NHA site:

- Water - Existing city water mains on SE Lake Rd, SE 23rd Ave, and SE Willard St are available to serve the proposed NHA development.
- Sewer - Existing city sewer mains on SE Lake Rd and SE Willard St are available to serve the proposed development.
- Stormwater - A stormwater management plan is required with this land use submittal to demonstrate how the proposed development will comply with all applicable standards.

This submittal includes a Preliminary Stormwater Drainage Report and a Utility Plan (Sheet C2 in Exhibit A). These items demonstrate that the proposed NHA project will comply with all applicable public utility requirements.

Section 7: Off-Street Vehicle & Bicycle Parking

Off-street parking will be provided on the NHA site to serve all users, including employees, visitors and residents of the shelter and housing units. Parking on the site will remain continually available to these primary users of the site and will not be rented, sold or used for any purpose other than accommodating NHA related uses.

Required Parking Spaces. The table below summarizes the vehicle parking requirements for the entire NHA site.

- The shelter use is not a use that is specifically listed in Table 19.605.1 (Off-Street Parking Requirements). However, for the purpose of parking, the shelter units can be considered similar to a small multifamily unit (less than 800 square feet in size). Therefore, the table below assumes one parking space per shelter unit.
- Parking requirements for the office use are based on 12,500 square feet of office floor area
- Parking requirements for the multifamily housing are based on 4 units with less than 800 square feet of floor area and 24 units with more than 800 square feet of floor area.

NHA Use	Minimum Required	Maximum Allowed
Office	2 spaces per 1,000 sf of floor area = 24 spaces	3.4 spaces per 1,000 sf of floor area = 43
Shelter	1 space per unit = 8 spaces	1.25 spaces per unit = 10
Multifamily Housing	1 space per unit > 800 sf = 4 spaces 1.25 space per unit < 800 sf = 30	2 spaces per unit = 56
Totals	**66**	**109**

Per Section 19.605.3(B), certain reductions to the minimum parking requirements are allowed outright up to a 25% reduction in total parking. The following language applies to the NHA site:

> *c. Parking for all uses except single-family attached and detached dwellings may be reduced by 25% if the development is within 1,000-ft walking distance, as defined in Subsection 19.605.3.B.2.d, of a light rail transit stop.*
>
> *d. In determining walking distance, the applicant shall measure the shortest route along sidewalks, improved pedestrian ways, or streets if sidewalks or improved pedestrian ways are not present. Walking distance shall be measured along the shortest course from the point on the development site that is nearest to the transit stop.*

The NHA site is located approximately 550 feet in walking distance from the new MAX Orange Line light rail station on Lake Road. Therefore, a 25% reduction in parking minimums is allowed, bringing the minimum required parking to 50 spaces. As shown on the Site Plan, a total of 50 parking spaces is provided on the NHA site, including two ADA accessible spaces.

Parking Dimensions. Parking space and aisle dimensional requirements are established in Section 19.606.1. Parking spaces requirements applicable to the NHA site are summarized in the table below.

Standard	90 Degree Parking	Parallel Parking
Stall width	9 feet	8.5 feet
Curb length	9 feet	22 feet
2-way aisle width	22 feet	19 feet
Stall depth	18 feet	8.5 feet

As shown on the Site Plan, all parking spaces provided on the NHA site will meet these dimensional standards.

Parking Location. Section 19.604.2 establishes locational standards for parking as follows:

19.604.2 Parking Area Location

Accessory parking shall be located in one or more of the following areas:

A. On the same site as the primary use for which the parking is accessory.

B. On a site owned by the same entity as the site containing the primary use that meets the standards of Subsection 19.605.4.B.2. Accessory parking that is located in this manner shall not be considered a parking facility for purposes of the base zones in Chapter 19.300.

All of the parking necessary to serve the proposed office and shelter uses will be consolidated within a single area. The Milwaukie Code does not define the term "site" but treating the property as a single "lot" for purposes of the development standards suggests that the accessory parking is located on the same "site" as the office and shelter uses.

Parking Lot Landscaping. Per Section 19.606.2(C), perimeter landscaping is required around the parking lot at a width of 8 feet where abutting a public right-of-way and 6 feet where abutting another property. Planting requirements for the perimeter are as follows:

2. Planting Requirements

Landscaping requirements for perimeter buffer areas shall include 1 tree planted per 40 lineal ft of landscaped buffer area. Where the calculation of the number of trees does not result in a whole number, the result shall be rounded up to the next whole number. Trees shall be planted at evenly spaced intervals along the perimeter buffer to the greatest extent practicable. The remainder of the buffer area shall be grass, ground cover, mulch, shrubs, trees, or other landscape treatment other than concrete and pavement.

3. Additional Planting Requirements Adjacent to Residential Uses

In addition to the planting requirements of Subsection 19.606.2.D.2, all parking areas adjacent to a residential use shall have a continuous visual screen in the landscape perimeter area that abuts the residential use. The area of required screening is illustrated in Figure 19.606.2.C.3. The screen must be opaque throughout the year from 1 to 4 ft above ground to adequately screen vehicle lights. These standards must be met at the time of planting. Examples of acceptable visual screens are a fence or wall, an earth berm with plantings, and other plantings of trees and shrubs

As shown on the Site Plan and Landscape Plan in Exhibit A, perimeter landscaping that meets the width and planting requirements will be provided around the parking lot on the NHA site. For the perimeter of the parking lot that is adjacent to the residential property, additional plantings will be provided that will effectively screen vehicle lights as required.

Interior Landscaping. Interior parking lot landscaping is required for parking areas with over 10 spaces and therefore must be provided on the NHA site.

2. Required Amount of Interior Landscaped Area

At least 25 sq ft of interior landscaped area must be provided for each parking space. Planting areas must be at least 120 sq ft in area and dispersed throughout the parking area.

3. Location and Dimensions of Interior Landscaped Areas

a. Interior landscaped area shall be either a divider median between opposing rows of parking, or a landscape island in the middle or at the end of a parking row.

b. Interior landscaped areas must be a minimum of 6 ft in width. Where a curb provides the border for an interior landscape area, the dimension shall be measured from the inside of the curb(s).

Response: There are 50 parking spaces proposed for the NHA site, which requires a total of 1,250 square feet of interior parking lot landscaping. As shown on the Landscape Plan in Exhibit A, there are nine landscaped islands in the parking lot with a total of 1,332 square feet, which exceeds the minimum requirement. All landscaped islands are greater than six feet in width and at least 120 square feet in area.

4. Planting Requirements for Interior Landscaped Areas

b. For landscape islands, at least 1 tree shall be planted per island. If 2 interior islands are located contiguously, they may be combined and counted as 2 islands with 2 trees planted.

c. The remainder of any divider median or landscape island shall be grass, ground cover, mulch, shrubs, trees, or other landscape treatment other than concrete and pavement.

Response: As shown on the Landscape Plan in Exhibit A, the landscape islands provided on the NHA site will be planted with one tree per island. The remainder of the islands will be planted with ground cover.

19.606.3 Additional Design Standards

A. Paving and Striping

Paving and striping are required for all required maneuvering and standing areas. Off-street parking areas shall have a durable and dust-free hard surface, shall be maintained for all-weather use, and shall be striped to show delineation of parking spaces and directional markings for driveways and accessways. Permeable paving surfaces may be used to reduce surface water runoff and protect water quality.

Response: The proposed parking lot on the NHA site will be paved and striped, and will be constructed in accordance with the above standard. Permeable paving surfaces are not being proposed as part of this project.

B. Wheel Stops

Parking bumpers or wheel stops, of a minimum 4-in height, shall be provided at parking spaces to prevent vehicles from encroaching on the street right-of-way, adjacent landscaped areas, or pedestrian walkways. Curbing may substitute for wheel stops if vehicles will not encroach into the minimum required width for landscape or pedestrian areas.

Response: Wheel stops will be provided for all parking spaces, consistent with the above requirement. Wheel stops are shown on the Site Plan in Exhibit A.

C. Site Access and Drive Aisles

1. Accessways to parking areas shall be the minimum number necessary to provide access while not inhibiting the safe circulation and carrying capacity of the street. Driveway approaches shall comply with the access spacing standards of Chapter 12.16.

2. Drive aisles shall meet the dimensional requirements in Subsection 19.606.1.

3. Parking drive aisles shall align with the approved driveway access and shall not be wider than the approved driveway access within 10 ft of the right-of-way boundary.

4. Along collector and arterial streets, no parking space shall be located such that its maneuvering area is in an ingress or egress aisle within 20 ft of the back of the sidewalk, or from the right-of-way boundary where no sidewalk exists.

5. Driveways and on-site circulation shall be designed so that vehicles enter the right-of-way in a forward motion.

Response: As shown on the Site Plan, the proposed parking lot will meet the above standards regarding drive aisles and site access.

D. Pedestrian Access and Circulation

1. Pedestrian access shall be provided for off-street parking areas so that no parking space is further than 100 ft away, measured along vehicle drive aisles, from a building entrance, or a walkway that meets the standards of Subsection 19.606.3.D.2.

2. Walkways through off-street parking areas must be continuous, must lead to a building entrance, and meet the design standards of Subsection 19.504.9.E.

Response: As shown on the Landscape Plan, no parking space on the NHA site will be located further than 100 feet from a building entrance or a walkway. There are no walkways through the off-street parking area.

F. Lighting

Lighting is required for parking areas with more than 10 spaces. The Planning Director may require lighting for parking areas of less than 10 spaces if the parking area would not be safe due to the lack of lighting. Lighting shall be designed to enhance safe access for vehicles and pedestrians on the site, and shall meet the following standards:

1. Lighting luminaires shall have a cutoff angle of 90 degrees or greater to ensure that lighting is directed toward the parking surface.

2. Parking area lighting shall not cause a light trespass of more than 0.5 footcandles measured vertically at the boundaries of the site.

3. Pedestrian walkways and bicycle parking areas in off-street parking areas shall have a minimum illumination level of 0.5 footcandles, measured horizontally at the ground level.

4. Where practicable, lights shall be placed so they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

Response: The proposed parking area on the NHA site will be lighted in accordance with the standards in this section. The Lighting Cut Sheets and the Lighting Plan in Exhibit A provide additional detail and demonstrate compliance. There are no WQR or HCA locations on or adjacent to the site that will be impacted by on-site lighting.

19.609 BICYCLE PARKING

19.609.2 Quantity of Spaces

A. The quantity of required bicycle parking spaces shall be as described in this subsection. In no case shall less than 2 spaces be provided.

1. Unless otherwise specified, the number of bicycle parking spaces shall be at least 10% of the minimum required vehicle parking for the use.

2. The number of bicycle parking spaces at transit centers shall be provided at the ratio of at least 1 space per 100 daily boardings.

3. Multifamily residential development with 4 or more units shall provide 1 space per unit.

Response: Required bicycle parking for the office and shelter uses were calculated as shown below.

- Office use. Required vehicle parking for the office use is a minimum of 25 spaces. At ten percent of required vehicle parking, the number of required bicycle parking spaces is three. However, based on past demand for bicycle parking at the NHA office, the applicant will provide six bicycle parking spaces for the office use.
- Shelter. A shelter is not a use specified by the Milwaukie code and therefore does not have an associated bicycle parking requirement. Based on past use of the Annie Ross House Shelter, the applicant proposes to provide four bicycle parking spaces for the shelter.

Bicycle parking will also be provided for the multifamily housing units as required by Section 19.609. However, the multifamily development is not part of this review. Specific bicycle parking provisions for the multifamily buildings will be addressed when the applicant submits the land use application associated with those buildings.

B. Covered or enclosed bicycle parking. A minimum of 50% of the bicycle spaces shall be covered and/or enclosed (in lockers or a secure room) in any of the following situations:

1. When 10% or more of vehicle parking is covered.

2. If more than 10 bicycle parking spaces are required.

3. Multifamily residential development with 4 or more units.

Response: The proposed office and shelter developments do not meet the thresholds identified above for covered or enclosed bicycle parking. Therefore, the standard is not applicable. However, the bicycle parking spaces provided for the office and shelter will be located in a covered location. Bicycle parking for the office will be located under a building overhang; bicycle parking for the shelter will be located under a building overhang.

19.609.3 Space Standards and Racks

A. The dimension of each bicycle parking space shall be a minimum of 2 x 6 ft. A 5-ft-wide access aisle must be provided. If spaces are covered, 7 ft of overhead clearance must be provided. Bicycle racks must be securely anchored and designed to allow the frame and 1 wheel to be locked to a rack using a high security, U-shaped, shackle lock.

B. Lighting shall conform to the standards of Subsection 19.606.3.F.

Response: The bicycle parking on the NHA site will be designed to meet the above standards. The Bike Parking Product Sheets in Exhibit D provide additional detail and the Lighting Plan in Exhibit A demonstrates that lighting will be consistent with the standards of 19.606.3.F.

19.609.4 Location

A. Bicycle parking facilities shall meet the following requirements:

1. *Located within 50 ft of the main building entrance.*
2. *Closer to the entrance than the nearest non-ADA designated vehicle parking space.*
3. *Designed to provide direct access to a public right-of-way.*
4. *Dispersed for multiple entrances.*
5. *In a location that is visible to building occupants or from the main parking lot.*
6. *Designed not to impede pedestrians along sidewalks or public rights-of-way.*
7. *Separated from vehicle parking areas by curbing or other similar physical barriers.*

Response: As shown on the Site Plan in Exhibit A, the location of bicycle parking for the office and shelter uses will meet the above standards. For the office, bicycle parking is located within the main entry plaza and will be visible to building occupants. This location provides direct access to the main building entrance and to the on-site pedestrian walkways that connect to the adjacent public sidewalk. Because there will be just six bicycle parking spaces and the main entry plaza is the most secure and visible location for office bicycle parking, dispersion of the spaces to other building entries is not appropriate. For the shelter, bicycle parking will be located next to the primary shelter entrance and will be visible from both the parking lot and the shelter. This location provides direct access to the shelter entrance and to the on-site pedestrian walkways that connect to the adjacent public sidewalk.

Section 8: Summary

The above narrative demonstrates how the proposed redevelopment of the office building and Annie Ross House Shelter on the NHA campus will comply with the criteria for Conditional Use and Community Service Use approvals. Allowing these uses will enable NHA to continue their mission of providing affordable housing and essential services to Oregonians in need.

Exhibit A: Plan Set

RECORD OF SURVEY

BEING PART OF LOTS 1 AND 2 AND ALL OF LOTS 3 AND 4, BLOCK 3 "YOUNG'S ADDITION" SITUATED IN THE SW 1/4 OF THE NW 1/4 OF SECTION 36, PART OF THE LOT WHITCOMB DLC, T. 1 S., R. 1 E., W.M. CITY OF MILWAUKIE, CLACKAMAS COUNTY, OREGON

CLACKAMAS COUNTY SURVEYOR

DATE RECEIVED _____

DATE ACCEPTED/FILED _____

SURVEY NUMBER _____

LEGEND

- ● FOUND MONUMENT AS NOTED
- ○ SET 5/8" X 30" IRON ROD WITH YELLOW PLASTIC CAP STAMPED "BUCKEL ASSOC. INC." SET (date)
- M MEASURED DISTANCE
- R1 RECORD DISTANCE PER "YOUNG'S ADDITION"
- R2 MEASUREMENT PER PS 23906
- R3 MEASUREMENT PER SN 2008-060
- M MEASURED DISTANCE
- BP BRASS DISK
- W/ WITH
- YPC YELLOW PLASTIC CAP
- (4) LOT NUMBER PER "YOUNG'S ADDITION"

- FND FOUND MONUMENT AS NOTED
- BS BRASS SCREW
- IR IRON ROD
- O/S OFFSET
- SN OR PS SURVEY NUMBER, CLACKAMAS COUNTY SURVEY RECORDS
- BK. BOOK
- PG. PAGE
- S.F. SQUARE FEET
- R-O-W RIGHT-OF-WAY
- BL BLOCK

REFERENCES

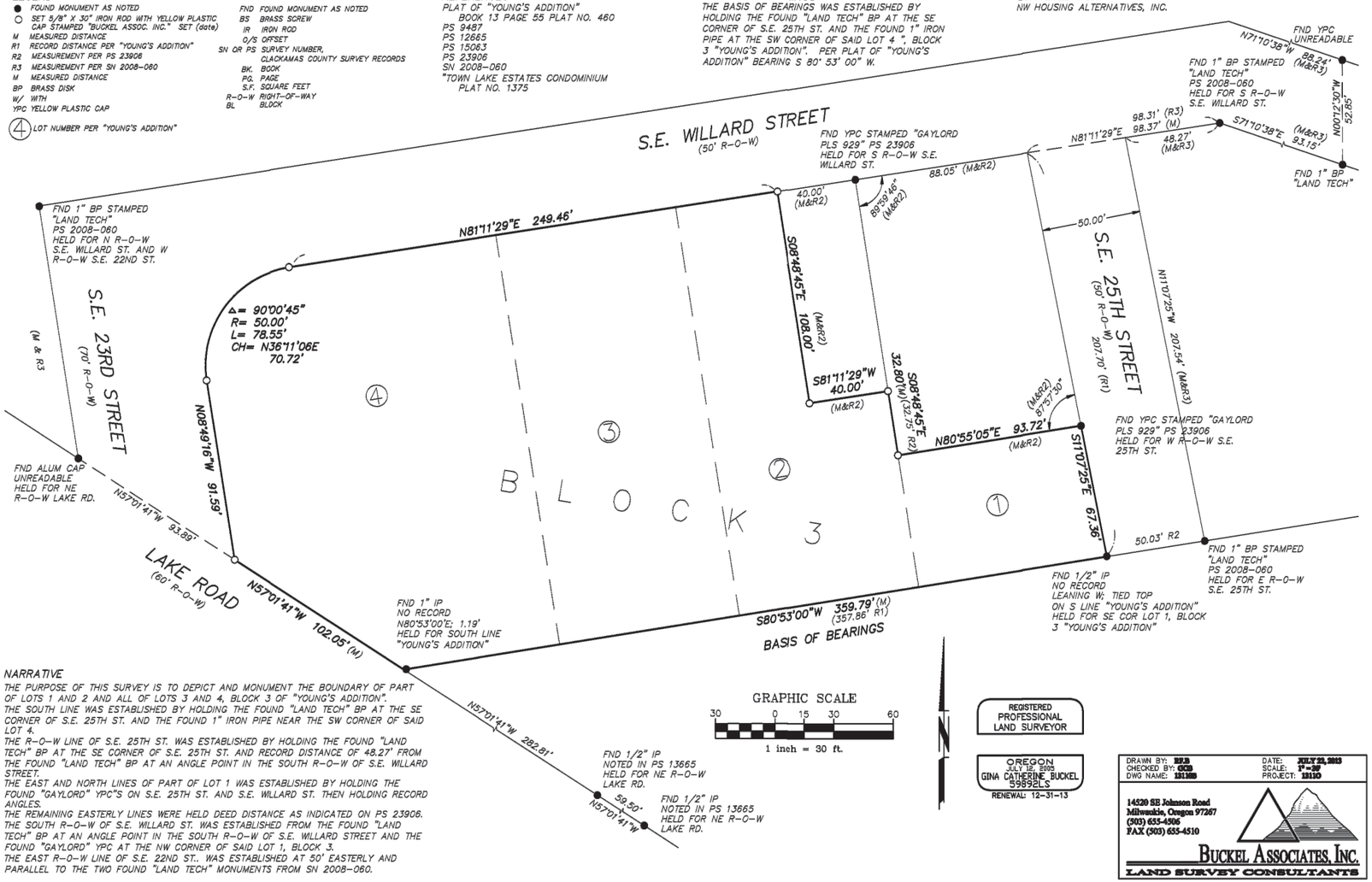
PLAT OF "YOUNG'S ADDITION"
BOOK 13 PAGE 55 PLAT NO. 460
PS 9487
PS 12685
PS 15063
PS 23906
SN 2008-060
"TOWN LAKE ESTATES CONDOMINIUM PLAT NO. 1375

BASIS OF BEARINGS

THE BASIS OF BEARINGS WAS ESTABLISHED BY HOLDING THE FOUND "LAND TECH" BP AT THE SE CORNER OF S.E. 25TH ST. AND THE FOUND 1" IRON PIPE AT THE SW CORNER OF SAID LOT 4 ", BLOCK 3 "YOUNG'S ADDITION". PER PLAT OF "YOUNG'S ADDITION" BEARING S 80° 53' 00" W.

SURVEYED FOR:

NW HOUSING ALTERNATIVES, INC.



GRAPHIC SCALE

30 0 15 30 60

1 inch = 30 ft.

N

NARRATIVE

THE PURPOSE OF THIS SURVEY IS TO DEPICT AND MONUMENT THE BOUNDARY OF PART OF LOTS 1 AND 2 AND ALL OF LOTS 3 AND 4, BLOCK 3 OF "YOUNG'S ADDITION". THE SOUTH LINE WAS ESTABLISHED BY HOLDING THE FOUND "LAND TECH" BP AT THE SE CORNER OF S.E. 25TH ST. AND THE FOUND 1" IRON PIPE NEAR THE SW CORNER OF SAID LOT 4.
THE R-O-W LINE OF S.E. 25TH ST. WAS ESTABLISHED BY HOLDING THE FOUND "LAND TECH" BP AT THE SE CORNER OF S.E. 25TH ST. AND RECORD DISTANCE OF 48.27' FROM THE FOUND "LAND TECH" BP AT AN ANGLE POINT IN THE SOUTH R-O-W OF S.E. WILLARD STREET.
THE EAST AND NORTH LINES OF PART OF LOT 1 WAS ESTABLISHED BY HOLDING THE FOUND "GAYLORD" YPC"S ON S.E. 25TH ST. AND S.E. WILLARD ST. THEN HOLDING RECORD ANGLES.
THE REMAINING EASTERLY LINES WERE HELD DEED DISTANCE AS INDICATED ON PS 23906.
THE SOUTH R-O-W OF S.E. WILLARD ST. WAS ESTABLISHED FROM THE FOUND "LAND TECH" BP AT AN ANGLE POINT IN THE SOUTH R-O-W OF S.E. WILLARD STREET AND THE FOUND "GAYLORD" YPC AT THE NW CORNER OF SAID LOT 1, BLOCK 3.
THE EAST R-O-W LINE OF S.E. 22ND ST. WAS ESTABLISHED AT 50' EASTERLY AND PARALLEL TO THE TWO FOUND "LAND TECH" MONUMENTS FROM SN 2008-060.

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 12, 2005
GINA CATHERINE BUCKEL
59992LS
RENEWAL: 12-31-13

DRAWN BY: RLB
CHECKED BY: GCB
DWG NAME: 13110B

DATE: JULY 23, 2013
SCALE: 1" = 30'
PROJECT: 13110

14520 SE Johnson Road
Milwaukie, Oregon 97267
(503) 653-4506
FAX (503) 653-4510

BUCKEL ASSOCIATES, INC.
LAND SURVEY CONSULTANTS

mwa architects
70 NW COUCH STREET
SUITE 401
PORTLAND, OR 97209
P 503 973 5151
F 503 973 5060
MWAARCHITECTS.COM

REVISION NO. DATE

NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
LAND USE APPLICATION

DATE
12/1/2015

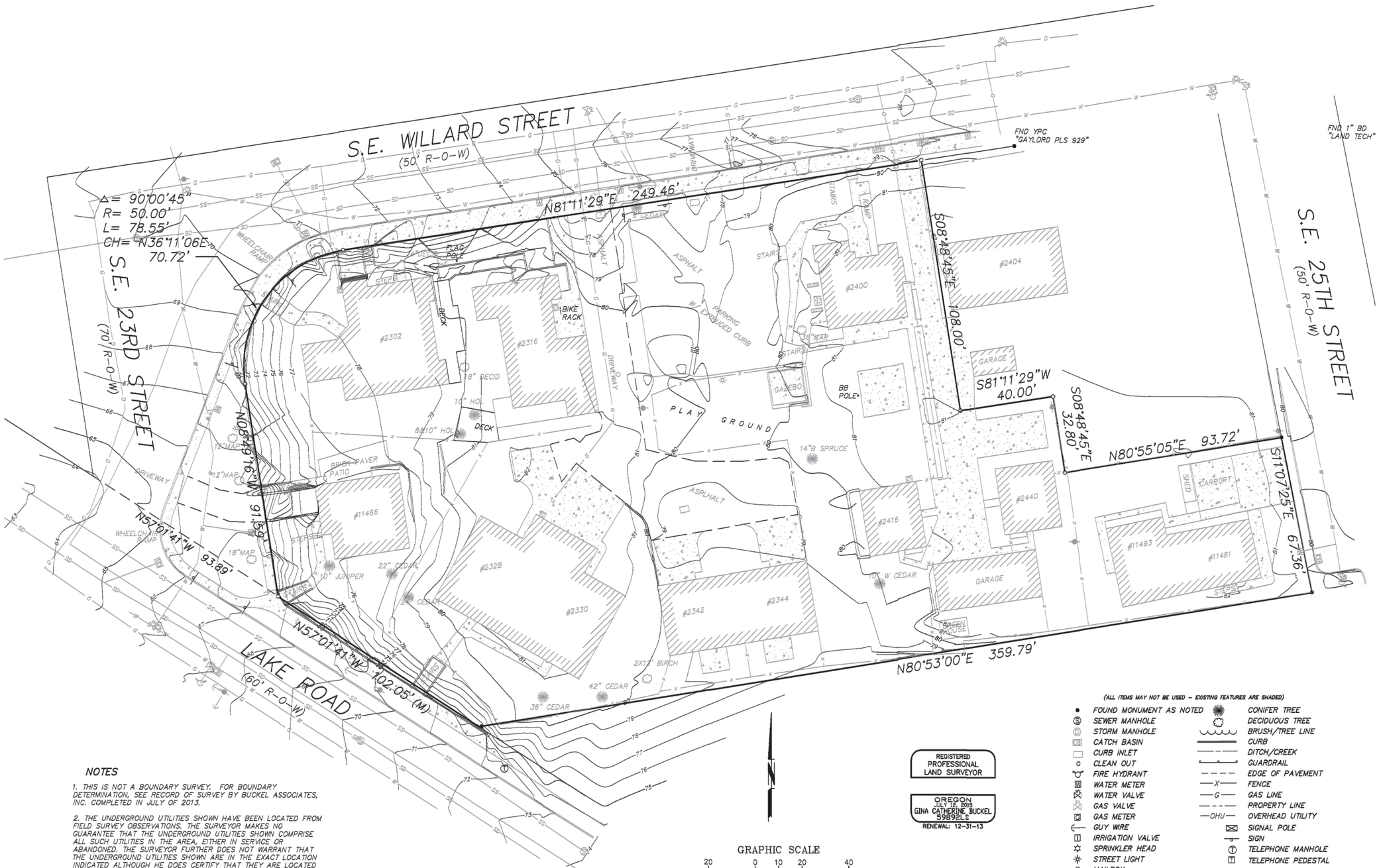
SCALE
1" = 30'

PROJECT NUMBER
201327.00

DRAWN BY
KEH

DRAWING TITLE
EXISTING SITE CONDITIONS - EXHIBIT A

SHEET NUMBER
1.1



NOTES

1. THIS IS NOT A BOUNDARY SURVEY. FOR BOUNDARY DETERMINATION, SEE RECORD OF SURVEY BY BUCKEL ASSOCIATES, INC. COMPLETED IN JULY OF 2013.

2. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY OBSERVATIONS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

3. ELEVATIONS ARE BASED UPON CONTROL POINT #1940 FROM SURVEY NO. SN2013-011. BEING A 1" BRASS CAP IN CONCRETE DRIVEWAY, STAMPED "TRIMET CTRL 1940" AT THE NORTHWEST CORNER OF SE 21ST STREET AND LAKE ROAD. DATUM IS NAVD 88, ELEVATION = 50.728.

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 18, 2008
GINA CATHERINE BUCKEL
59892LS
RENEWAL: 12-31-13

(ALL ITEMS MAY NOT BE USED - EXISTING FEATURES ARE SHADED)

- FOUND MONUMENT AS NOTED
- SEWER MANHOLE
- STORM MANHOLE
- CATCH BASIN
- CURB INLET
- CLEAN OUT
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- GAS VALVE
- GAS METER
- GUY WIRE
- IRRIGATION VALVE
- SPRINKLER HEAD
- STREET LIGHT
- MAILBOX
- POWER PEDESTAL
- SIGNAL CONTROL BOX
- UTILITY VAULT
- JUNCTION BOX
- CONCRETE
- CONIFER TREE
- DECIDUOUS TREE
- BRUSH/TREE LINE
- CURB
- DITCH/CREEK
- GUARDRAIL
- EDGE OF PAVEMENT
- FENCE
- GAS LINE
- PROPERTY LINE
- OVERHEAD UTILITY
- SIGNAL POLE
- SIGN
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- BOLLARD
- UTILITY POLE
- WELL
- MONITORING WELL
- ABANDONED WELL

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REVISION NO. DATE

NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
LAND USE APPLICATION

DATE
12/1/2015

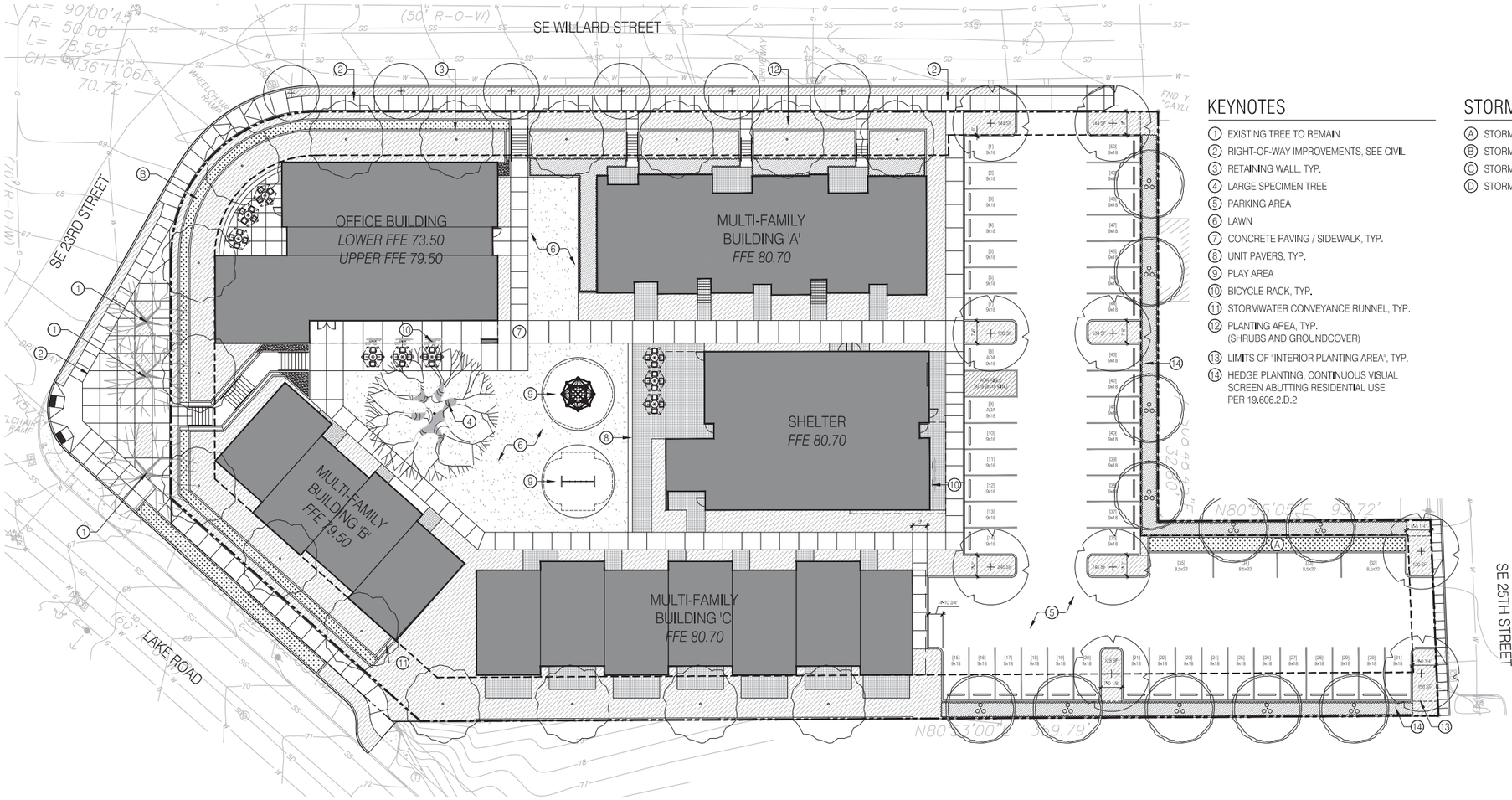
SCALE
1" = 20'

PROJECT NUMBER
201327.00

DRAWN BY
KEH

DRAWING TITLE
EXISTING SITE CONDITIONS - EXHIBIT B

SHEET NUMBER
1.2



KEYNOTES

1. EXISTING TREE TO REMAIN
2. RIGHT-OF-WAY IMPROVEMENTS, SEE CIVIL
3. RETAINING WALL, TYP.
4. LARGE SPECIMEN TREE
5. PARKING AREA
6. LAWN
7. CONCRETE PAVING / SIDEWALK, TYP.
8. UNIT PAVERS, TYP.
9. PLAY AREA
10. BICYCLE RACK, TYP.
11. STORMWATER CONVEYANCE RUNNEL, TYP.
12. PLANTING AREA, TYP. (SHRUBS AND GROUNDCOVER)
13. LIMITS OF "INTERIOR PLANTING AREA", TYP.
14. HEDGE PLANTING, CONTINUOUS VISUAL SCREEN ABUTTING RESIDENTIAL USE PER 19.606.2.D.2

STORMWATER FACILITIES

- (A) STORMWATER TREATMENT AREA: 425 SF
- (B) STORMWATER TREATMENT AREA: 563 SF
- (C) STORMWATER TREATMENT AREA: 128 SF
- (D) STORMWATER TREATMENT AREA: 128 SF

0 10 20 40 60 100FT

SCALE 1"=20'

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REVISION NO. DATE

NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
LAND USE APPLICATION-REV

DATE
02/5/2016

SCALE
AS SHOWN

PROJECT NUMBER
201327.00

DRAWN BY
CO

DRAWING TITLE
LANDSCAPE CONCEPT PLAN

SHEET NUMBER
1.3

SITE DATA

SITE LOCATION:	2613 SE WILLARD STREET, MILWAUKIE, OR 97222
SITE AREA:	1.70 ACRES / 74,243 S.F.

BUILDING SUMMARY

OFFICE - BUILDING GROSS SF	12,500 SQ. FT.
SHELTER - BUILDING GROSS SF	8,639 SQ. FT.
HOUSING BUILDING TYPE A - BUILDING GROSS SF	13,966 SQ. FT.
HOUSING BUILDING TYPE B - BUILDING GROSS SF	7,800 SQ. FT.
HOUSING BUILDING TYPE C - BUILDING GROSS SF	13,932 SQ. FT.
TOTAL BUILDINGS GROSS SF=	57,383 SQ. FT.

ZONING DATA

ZONE CLASSIFICATION:	R-2 MEDIUM AND HIGH DENSITY RESIDENTIAL
TYPES ALLOWED: (TABLE 19.302.2)	MULTI-FAMILY HOUSING OFFICE PERMITTED WITH CONDITIONAL USE APPROVAL COMMUNITY SERVICE USE (SHELTER) PERMITTED WITH COMMUNITY SERVICE USE APPROVAL
DENSITY: (TABLE 19.302.4)	DWELLING UNITS PER ACRE: MINIMUM: 11.6 MAXIMUM: 17.4
TOTAL SITE AREA:	1.70 ACRES / 74,243 S.F.
PROPOSED NUMBER OF UNITS:	28 UNITS
MINIMUM YARD REQUIREMENTS FOR PRIMARY STRUCTURES:	FRONT YARD: 15 FT. SIDE YARD (19.302.5.A): 5 FT. STREET SIDE YARD: 15 FT. REAR YARD: 15 FT.
ALLOWABLE BUILDING HEIGHT: (TABLE 19.302.4) MAXIMUM: (19.202.2 2C)	3 STORIES OR 45 FT., WHICHEVER IS LESS PITCHED ROOF WHERE ROOF PITCH IS 12/12 OR LESS: MEASURE TO THE AVERAGE HEIGHT OF THE HIGHEST GABLE
PROPOSED:	BUILDING TYPE A: 3 STORIES, 39'-0" BUILDING TYPE B: 3 STORIES, 42'-0" BUILDING TYPE C: 3 STORIES, 42'-0" OFFICE: 3 STORIES, 38'-7" AT AVERAGE HT, 44'-5 1/2" AT TOP HT SHELTER: 2 STORIES, 27'-10 1/2" AT AVERAGE HT, 33'-6" AT TOP HT
MAXIMUM LOT COVERAGE: (TABLE 19.302.4)	ALLOWED: 45%; 33,409 S.F. PROPOSED: 31%; 23,242 S.F.
MINIMUM VEGETATION:	ALLOWED: 15%
MINIMUM SITE SIZE FOR MULTI-FAMILY: (TABLE 19.302.5.F.2)	5,000 S.F. FOR FIRST DWELLING UNIT, 2,500 S.F. FOR ADDITIONAL DWELLING UNITS = 72,500 S.F.

PARKING SUMMARY

19.600 OFF STREET PARKING — MULTI-FAMILY DWELLING

MINIMUM ON-SITE PARKING:	1 SPACE PER DWELLING UNIT (800 SF OR LESS) = 4
	1.25 SPACE PER DWELLING UNIT (800 SF OR MORE) = 30
	TOTAL FOR MINIMUM REQUIREMENTS = 34
MAXIMUM ON-SITE PARKING:	2 SPACES PER DWELLING UNIT = 56

19.600 OFF STREET PARKING — COMMERCIAL USE - OFFICE

MINIMUM ON-SITE PARKING:	2 SPACES PER 1,000 SF OF FLOOR AREA = 25
MAXIMUM ON-SITE PARKING:	3.4 SPACES PER 1,000 SF OF FLOOR AREA = 43

19.600 OFF STREET PARKING — COMMUNITY SERVICE - SHELTER

MINIMUM ON-SITE PARKING:	1 SPACE PER DWELLING UNIT (800 SF OR LESS) = 8
MAXIMUM ON-SITE PARKING:	1.25 SPACE PER DWELLING UNIT (800 SF OR MORE) = 0

19.609 BICYCLE PARKING

OFFICE:	6
SHELTER:	4
TOTAL BICYCLE PARKING:	10

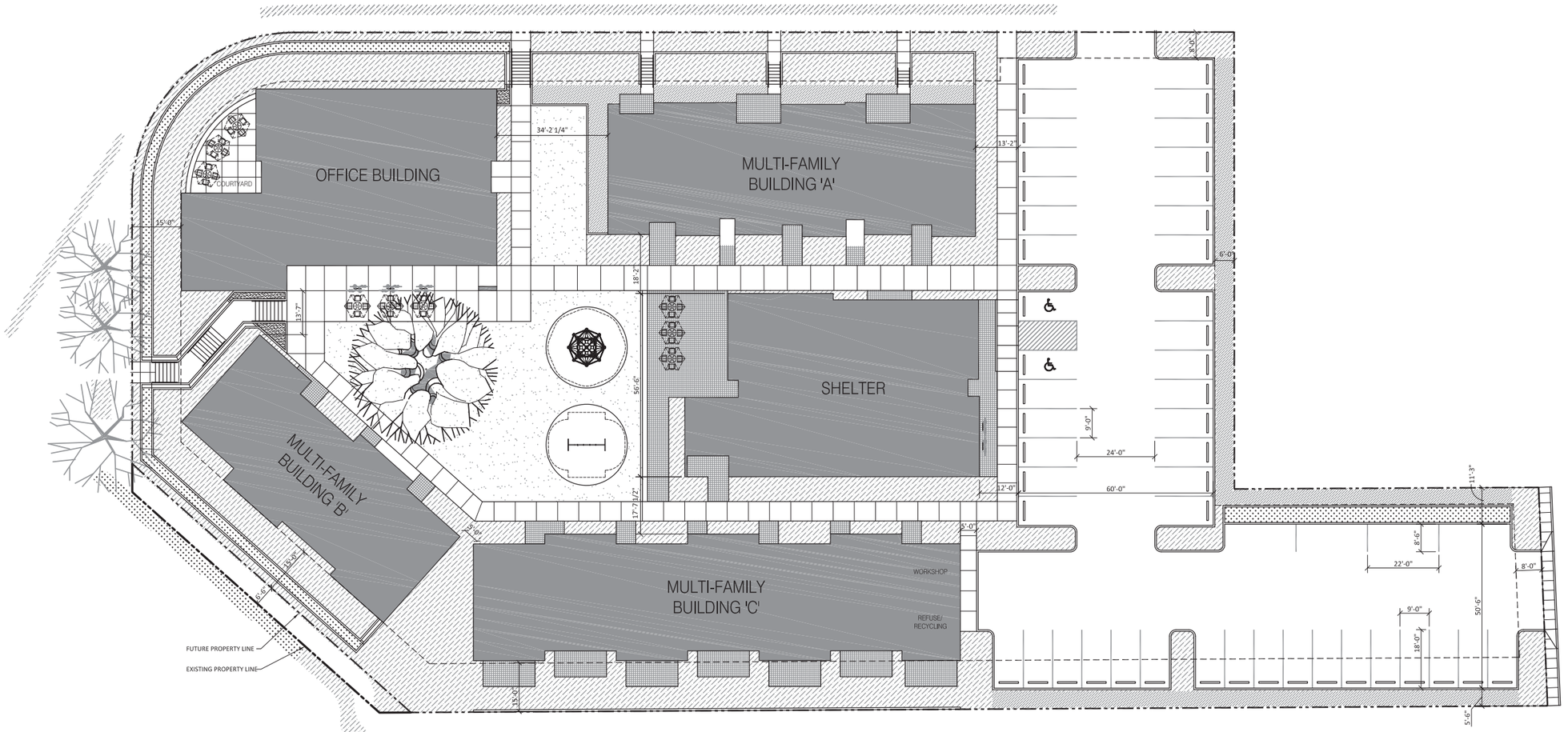
PROVIDED ON-SITE PARKING:

STANDARD SIZE:	48
ACCESSIBLE:	2 (LOCATED AT FRONT ENTRY)
TOTAL PARKING:	50

LEGEND

- PROPERTY LINE
- ACCESSIBLE PARKING
- MAIN UNIT ENTRY
- BICYCLE RACK

S.E. WILLARD STREET



1 SITE PLAN
SCALE: 1/16"=1'-0"

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2316 SE WILLARD ST.
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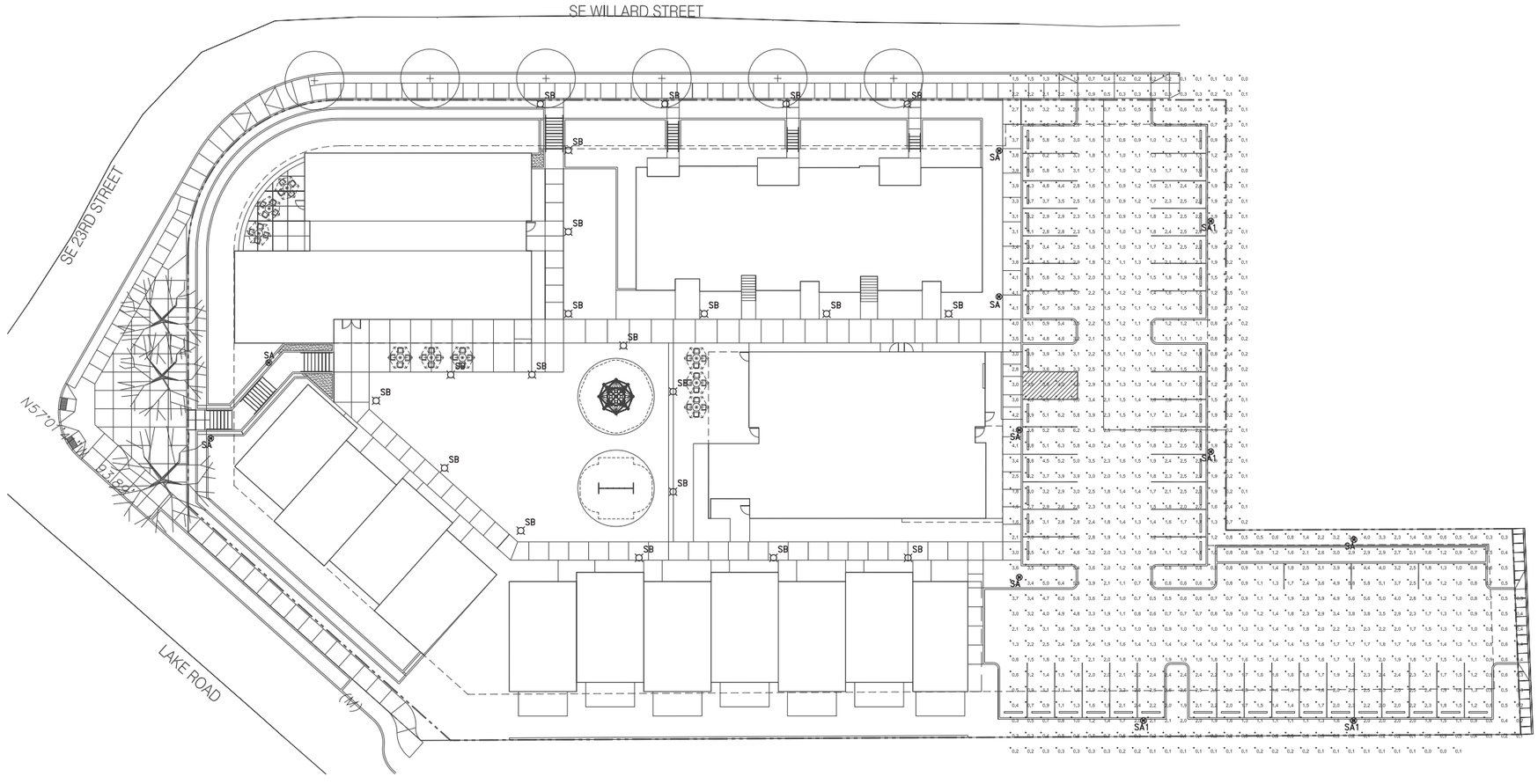
ISSUANCE
LAND USE APPLICATION-REV
DATE
02/5/2016
SCALE
1/16"=1'-0"
PROJECT NUMBER
201327.00
DRAWN BY
KH
DRAWING TITLE
SITE PLAN

SHEET NUMBER
1.4

Luminaire Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
Ⓚ	SA	5	PHILIPS GARDCO	SFRA-2-80LA-4853-NW	SLENDERFORM ROUND WITH 48 LEDs @ 530mA	(1) FLEXGINE 48 LUXEON R NW. LUMINAIRE OUTPUT: 7103 Lms.	1	SFRA-2-80LA-4853-NW.IES	7103.294	0.95	80.1
Ⓚ	SA1	4	PHILIPS GARDCO	SFRA-BLC-80LA-4853-NW	SLENDERFORM ROUND WITH 48 LEDs @ 530mA. BLACK LAMINATE, BLACK REFLECTOR	(1) FLEXGINE 48 LUXEON R NW. LUMINAIRE OUTPUT: 4434 Lms.	1	SFRA-BLC-80LA-4853-NW.IES	4434.012	0.95	80.1



1 / E1.5 SITE LIGHTING DESIGN
SCALE: 1"=20'-0"
0 4' 8' 16'
N

PLOTTED: DANIEL DERHEIMER 2/5/2016 9:06 AM
X:\DWG\MWA\4316\4316E100

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engineering@mke-inc.com

NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
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DATE
02/5/2016

SCALE
1"=20'-0"

PROJECT NUMBER
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DD

DRAWING TITLE
SITE LIGHTING PLAN

SHEET NUMBER
1.5

PHILIPS

GARDCO

Site & Area

SlenderForm

Round Post Top luminaire

Project:
Location:
Cat.No:
Type:
Qty:
Notes:

Philips Gardco SlenderForm luminaires combine LED perfornance excellence and advanced LED thermal management technology with a distinct styling to provide outdoor area lighting that is both energy efficient and aesthetically pleasing. SlenderForm is defined by its high performance, sleek low profile design and rugged construction. The advanced LED optical systems provide IES Types II, III, IV and V distributions. Surge protection included with all SlenderForm luminaires.

Ordering guide

example: SFRP-APD-T3-4-80LA-4853-NW-120-AR-NP-PCR5

Prefix	Controls	MTP	Mounting[6]	Optics[1]	LED Watts	LED Temp	Voltage	Ring	Finish	Options
SFRP-	— Standard luminaire **DIM** 0-10V Dimming **APD** Automatic Profile Dimming **APD-MR**[12] Auto Profile Dimming with Motion Response Override Luminaire mounted sensor **MR**[13] Motion Response at 50% low, fixture mounted sensor	— (blank) **MTP**[4] Module Thermal Protection	**T3** Mounts to 3" x 4" Tenon (standard) **T2** Mounts to 2 1/2" x 4" Tenon	Standard Optic Position **2** Type 2 **3** Type 3 **4** Type 4 **SW** Type 5 Wide **SM** Type 5 Medium **BLC** Backlight Control **2BL** Type 2 with backlight (less shield) Optic Rotated Left (90°) **LCL**[5] LED Corner Left Optic Rotated Right (270°) **2-270** Type 2 **3-270** Type 3 **4-270** Type 4 **BLC-270** Backlight Ctl. **2BL-270** Type 2 with backlight (less shield) **LCR**[5] LED Corner Right	150 mA **25LA-4815** 350 mA **55LA-4835** **70LA-6435** **90LA-8035** 530 mA **80LA-4853** **105LA-6453** **130LA-8053** 700mA **110LA-4870** **140LA-6470**	**CW** Cool White 5,700K 70 CRI (nominal) **NW** Neutral White 4,000K 70 CRI (nominal) **WW**[7] Warm White 3,000K 70 CRI (nominal)	**120** 120V **208** 208V **240** 240V **277** 277V **347** 347V **480** 480V **UNV** 120-277V 50hz/60hz **HVU** 347-480V 50hz/60hz	**AR** Ring painted to match housing **ORBRP** Optional Painted Ring Bronze paint **ORBLP** Optional Painted Ring Black paint **ORWP** Optional Painted Ring White paint **ORNP** Optional Painted Ring Natural paint **OROC** Optional painted ring - Optional Color. Specify optional color or RAL, ex: OC-LGP or OC-RAL7024) **ORSC** Optional Painted Ring - Special Color Specify. Must supply color chip. Requires factory quote.	**BRP** Bronze Paint **BLP** Black Paint **WP** White Paint **NP** Natural Paint **OC** Optional Color Specify optional color o RAL (ex: OC-LGP or OC-RAL7024) **SC** Special color Specify. must supply color chip. Requires factory quote.	**LF**[7] Line Fusing **LFC**[7] Line Fusing for Canada **PC**[14] Photocell with Receptacle (includes PCR5 receptacle) **PCB**[14] Photocell, Button **PCR5**[14,15] Photocell Receptacle only with 2 dimming connections **PCR7**[14,15] Photocell Receptacle only with 2 dimming and 2 auxiliary connections **DL**[8] Diffusing Lens **CLR**[8] Clear Glass Lens **POLY**[8] Polycarbonate Lens (1 yr warranty on lens) **BD**[10] Bird Deterrant Spike Kit (field installed only)

1. Available 120V - 277V only.
2. Available 120V or 277V only.
3. MR and APD-MR luminaires include an integral motion sensor.
4. MTP types limited to LED Wattages utilizing 530 mA (80LA,105LA,130LA) or 700 mA (110LA,140LA) only.
5. See page 4–5 for details on optic orientation prior to ordering.
6. Available with 90LA-6435 and 130LA-8053 only.
7. Must specify input voltage with LF, LFC, PC, and PCB options.
8. Not available in 480V. Provide specific input voltage.
9. Consult factory for lead times on Warm White.
10. Kits consist of 25 injection molded plastic bird deterrent spikes.
11. Reduces performance.
12. Works with 3-pin or 5-pin NEMA photocell/dimming device.
13. Works with 3-pin or 5-pin NEMA photocell/dimming device and auxiliary connections are not connected (for future use only).
14. If ordered with DIM, APD, MR, MRSO, APD-MRI, APD-4RO, dimming will not be connected to NEMA receptacle.
15. Mount to a round pole with 4" O.D. for a smooth transition.

SFRP SlenderForm

Site & Area, Round Post Top luminaire

SlenderForm Accessories (order separately)

FS1R-100 MR hand held programmer
For use with 'MR' motion response when field programming is required.
For use with MRI and APD-MR only. If desired, only one is needed per job.

Description

Philips Gardco SlenderForm luminaires combine LED performance excellence and advanced Philips Gardco LED thermal management technology with a distinct styling to provide outdoor area lighting that is both energy efficient and aesthetically pleasing. SlenderForm is defined by its high performance, sleek low profile design and rugged construction. The die cast aluminum housing has a maximum profile of just 3.67". The advanced LED optical systems provide IES Types II, III, IV and V distributions. All LED wattages utilize highperformance Class 1 LED systems. The luminaire features a state of the art integral thermal control system to maximize LED performance and life, and to extend component life. The door frame is die cast aluminum. Luminaires are finished with a fade and abrasion resistant TGIC powdercoat. All Slenderform luminaires provide full cutoff performance, with 4% lumens at or above 90° above nadir.

LED Wattage and Lumen Values

Order Code (standard units)	Array Quantity	Total LEDs	LED Current (mA)	Average System Watts[1]	LED Selection	Initial Lumens[2] 2 Type 2	2BL Type 2 with Backlight	3 Type 3	4 Type 4	5M Type 5 Medium	5W Type 5 Wide
25LA	48	48	150	25	NW	2,352 (s)	2,477 (s)	2,287 (s)	2,169	2,579 (s)	2,538
55LA	48	48	350	53	NW	4,942 (s)	5,203 (s)	4,804 (s)	4,759 (s)	5,419 (s)	5,313 (s)
70LA	64	64	350	69	NW	6,549 (s)	6,896 (s)	6,367 (s)	6,307	7,182 (s)	7,041
90LA	80	80	350	84	NW	7,997 (s)	8,420 (s)	7,775 (s)	7,701 (s)	8,769 (s)	8,597 (s)
80LA	48	48	530	80	NW	7,103 (s)	7,479 (s)	6,905 (s)	6,671	7,788 (s)	7,824
105LA	64	64	530	105	NW	9,414 (s)	9,912 (s)	9,152 (s)	9,076	10,322 (s)	10,108
130LA	80	80	530	128	NW	11,494 (s)	12,102 (s)	11,174 (s)	10,945	12,603 (s)	12,494
110LA	48	48	700	107	NW	8,874 (s)	9,343 (s)	8,627 (s)	8,522 (s)	9,730 (s)	9,567 (s)
140LA	64	64	700	140	NW	11,761	12,383	11,434	11,294	12,896	12,679

1. System input wattage may vary based on input voltage, byup to +/- 10% , and based on manufacturer forward voltage, by up-to +/- 8%.
2. Lumen values based on photometric tests performed in compliance with IESNA LM-79.
(s) Data is scaled based on tests of similar, but not identical, luminaires.

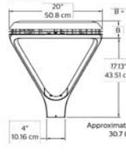
Dimensions – Post Top Luminaire (SFRP)

Effective Projected Area ft² / m²

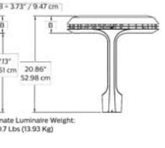
Type	Single
SFRP	0.80 / 0.075

Approximate Motion Sensor Placement on MRI and APD-MRI luminaires.

Front View



Side View



Approximate Luminaire Weight: 30.7 Lbs (13.93 Kg)

LIGMAN LIGHTING USA

LUMINAIRE SPECIFICATION

Head Office: Tel: 503-645-0500
7144 NW Progress Ct Fax: 503-645-8100
Hillsboro, Oregon 97124
www.ligmanlightingusa.com

IP55 : Suitable for Wet Locations
IK08 : Impact Resistant (Vandal Resistant)

USM-10692

Smith bollard LED

Smith is an elegant lighting bollard that is suitable for both modern and classic architecture. Ideal for creating visual guidance with exceptional visual comfort using energy saving LEDs. Developed to compliment the Smith range of lightcolumn and wall light luminaires. Designed for various applications including entrances, gardens, precincts and pathways. The LED luminaires have features such as long life, limited maintenance and constant lifetime performance.
Extruded aluminum column and low copper content die-cast aluminum housing with high corrosion resistance. Stainless steel screws. Durable silicone rubber gasket and opal impact resistant UV stabilized polycarbonate diffuser. Housing is treated with a chemical chromatized protection before powder coating, ensuring high corrosion resistance. Integral control gear.

Physical Data
Length: 6.65"
Height: 34.33"
Weight: 15.4 lbs

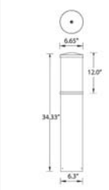
Lamp
☐ 18w - 760lm - White - LED @

LED Color (Please Specify)
☐ W27 - 2700K
☐ W30 - 3000K
☒ W40 - 4000K

Voltage (Please Specify)
☐ 120V
☐ 277V
☐ Other _____

Options (Please Specify)

Color (Please Specify)
☐ 01-Black - RAL 9011
☐ 02- Dark Grey - RAL 7043
☐ 03-White - RAL 9003
☐ 04 - Metallic Silver - RAL 9006
☐ 05-Matt Silver - RAL 9006
☐ 07- Custom - RAL _____
☐ 06-Bronze - RAL 6014



Mounting detail

Mounting Accessories

☐ Anchor Bolt Kit
☐ Specify Custom Bollard height_____ ft
☐ Specify Custom Lens height_____ ft

Custom Smith Bollard With 24" Lens and 22" Pole

Ordering Example : USM - 10692 - White-18w - W30 - 120v

Rev: 11/13

PROJECT: _____ DATE: _____
TYPE: SB QUANTITY: NOTE:

Ligman Lighting USA reserves the right to change specifications without prior notice, please contact factory for latest information.
Due to the continual improvements in LED technology data and components may change without notice.

Intertek

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CONTACT...HANK BARLEEN
engineering@mke--inc.com

REVISION NO. DATE

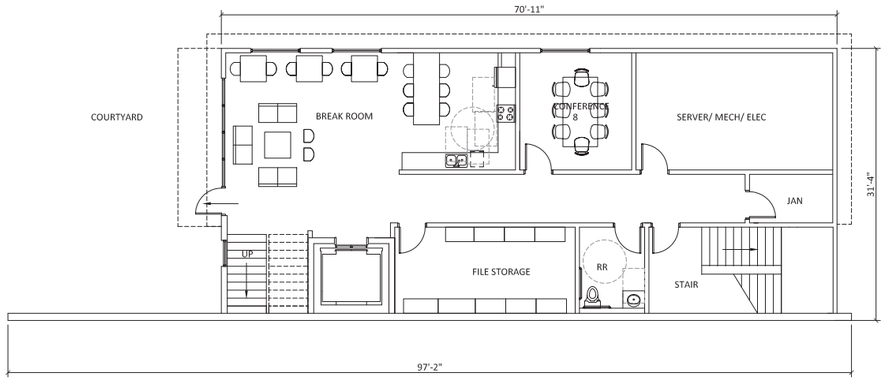
NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

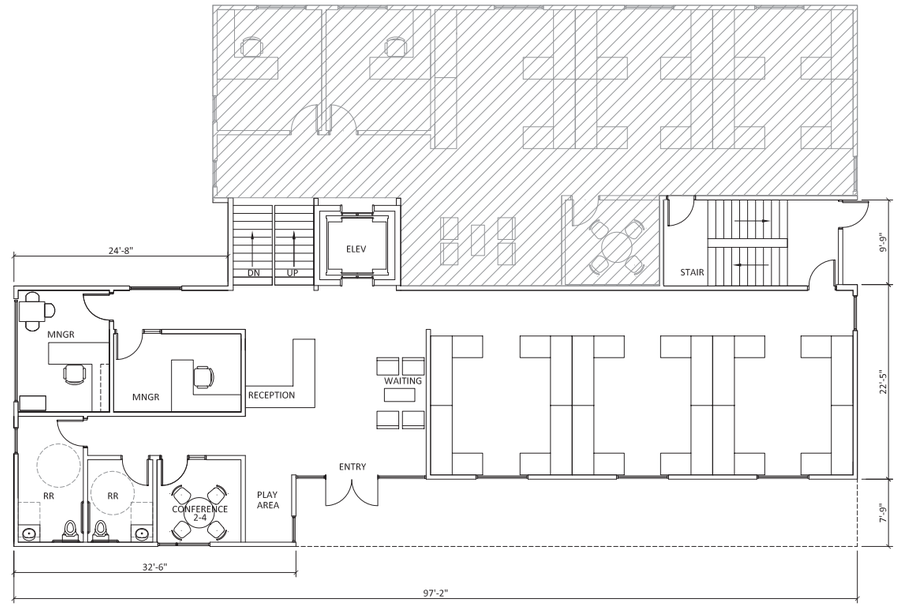
ISSUANCE
LAND USE APPLICATION
DATE
12/1/2015
SCALE

PROJECT NUMBER
201327.00
DRAWN BY
DD
DRAWING TITLE
LIGHTING CUT SHEETS

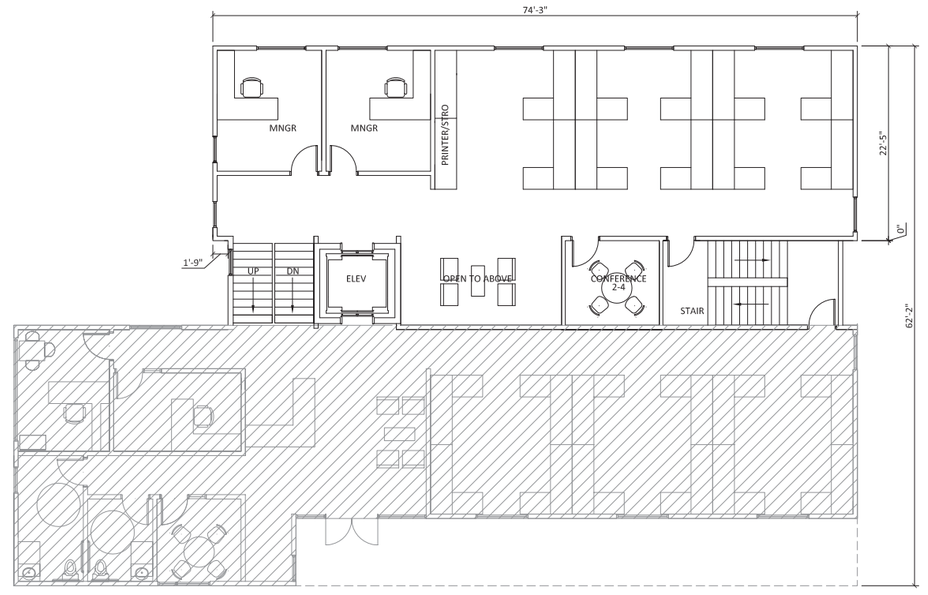
SHEET NUMBER
1.6



1 LEVEL 0- BASEMENT
SCALE: 1/8" = 1' - 0"



2 LEVEL 1- GROUND
SCALE: 1/8" = 1' - 0"



3 LEVEL 1.5
SCALE: 1/8" = 1' - 0"

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1/8"=1'-0"
PROJECT NUMBER
201327.00
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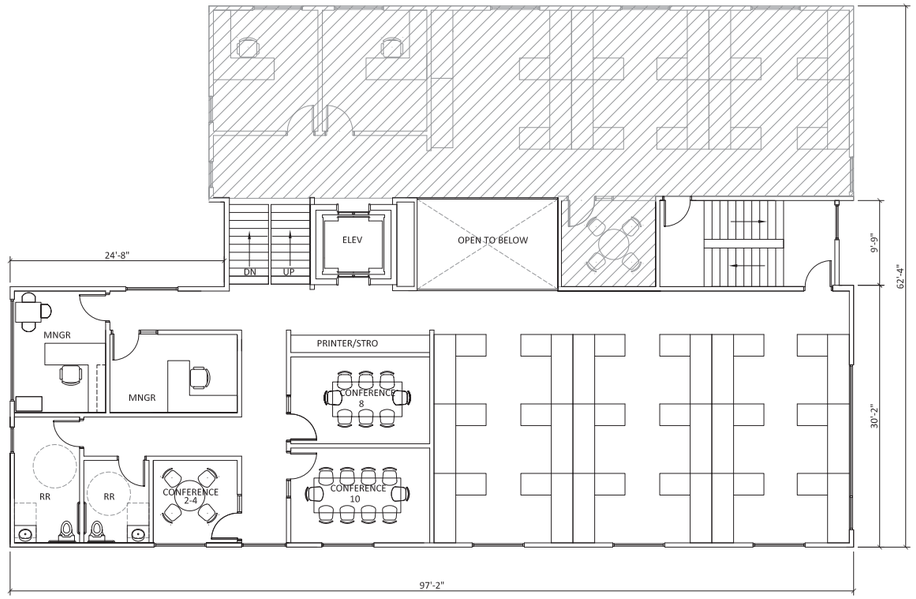
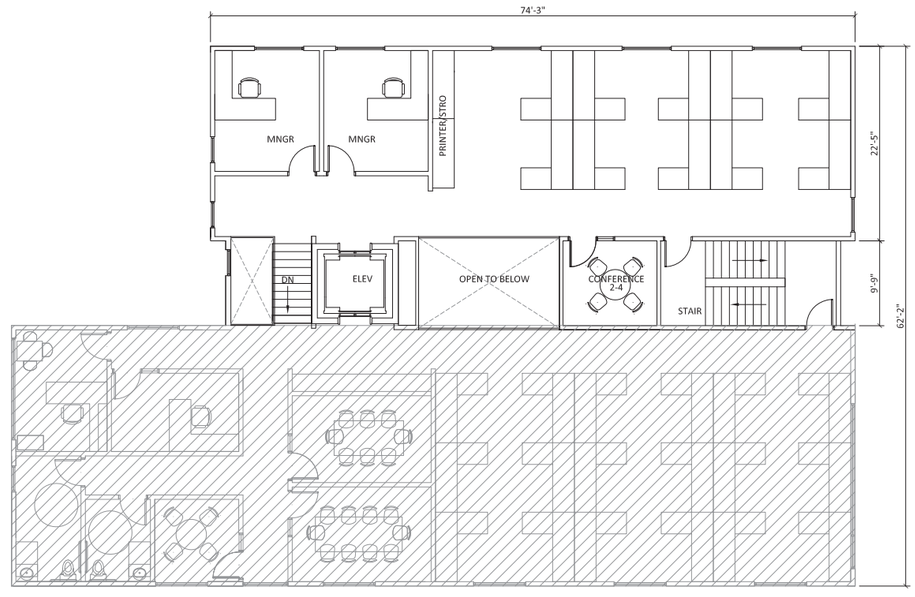
KH
DRAWING TITLE
OFFICE- SPLIT LEVEL
LEVEL 0 - 1.5
FLOOR PLANS
SHEET NUMBER
2.0



1 LEVEL 2

SCALE: 1/8" = 1' - 0"



2 LEVEL 2.5

SCALE: 1/8" = 1' - 0"

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DATE
12/1/2015

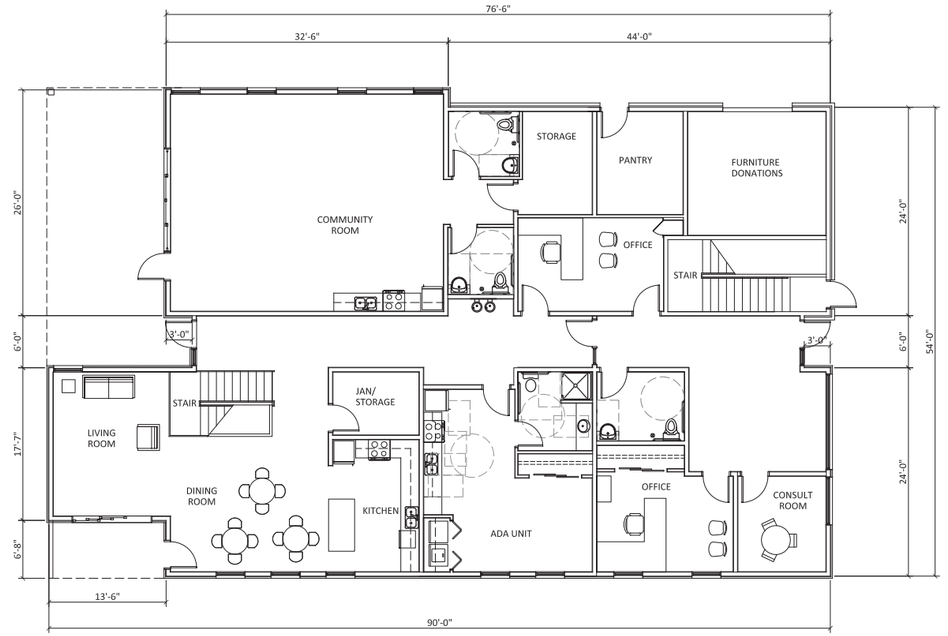
SCALE
1/8"=1'-0"

PROJECT NUMBER
201327.00

DRAWN BY
KH

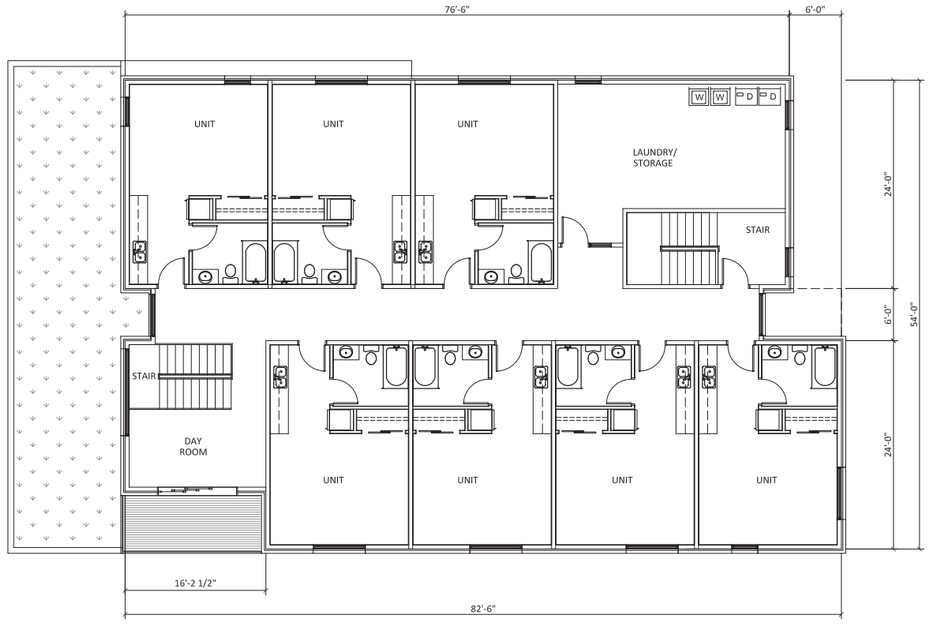
DRAWING TITLE
OFFICE- SPLIT LEVEL
LEVEL 2 - 2.5
FLOOR PLANS

SHEET NUMBER
2.1



1 FIRST FLOOR PLAN

SCALE: 1/8" = 1' - 0"



2 SECOND FLOOR PLAN

SCALE: 1/8" = 1' - 0"

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ISSUANCE
LAND USE APPLICATION-REV

DATE
02/5/2016

SCALE
1/8"=1'-0"

PROJECT NUMBER
201327.00

DRAWN BY
KH

DRAWING TITLE
SHELTER FLOOR PLANS

SHEET NUMBER
2.2

1 NORTH ELEVATION
SCALE: 1/8" = 1' - 0"

2 EAST ELEVATION
SCALE: 1/8" = 1' - 0"

3 SOUTH ELEVATION
SCALE: 1/8" = 1' - 0"

4 WEST ELEVATION
SCALE: 1/8" = 1' - 0"

KEYNOTES

1. BRICK VENEER
2. REINFORCED CONCRETE PANEL
3. VERTICAL CEDAR SIDING
4. ALUMINUM STOREFRONT SYSTEM
5. STEEL CANOPY
6. ELEVATOR ROOF BEYOND

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2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
LAND USE APPLICATION
DATE
12/1/2015
SCALE
1/8"=1'-0"
PROJECT NUMBER
201327.00
DRAWN BY
KH
DRAWING TITLE
OFFICE EXTERIOR ELEVATIONS
SHEET NUMBER
3.0

1 NORTH ELEVATION
SCALE: 1/8" = 1' - 0"

2 EAST ELEVATION
SCALE: 1/8" = 1' - 0"

3 SOUTH ELEVATION
SCALE: 1/8" = 1' - 0"

4 WEST ELEVATION
SCALE: 1/8" = 1' - 0"

KEYNOTES

1. BRICK VENEER
2. REINFORCED CONCRETE PANEL
3. VERTICAL CEDAR SIDING
4. ALUMINUM STOREFRONT SYSTEM
5. GALVANIZED RAILING SYSTEM
6. CEDAR SCREEN WALL
7. GREEN ROOF/CANOPY
8. STEEL CANOPY

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NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
LAND USE APPLICATION
DATE
11/25/2015
SCALE
1/8"=1'-0"
PROJECT NUMBER
201327.00
DRAWN BY
KH
DRAWING TITLE
SHELTER EXTERIOR ELEVATIONS
SHEET NUMBER
3.1

SE Willard Street- NW Corner

SE Willard Street- NE Corner

SE Willard Street- View into Courtyard

Courtyard-View from SW Corner

Exhibit B: Pre-Application Summary

July 16, 2015

Bill Lanning
MWA Architects
70 NW Couch St., Suite 401
Portland, OR 97209

Re: Preapplication Report

Dear Bill:

Enclosed is the Preapplication Report Summary from your meeting with the City on July 2, 2015, concerning your proposal for action on property located at 2316 SE Willard Street.

A preapplication conference is required prior to submittal of certain types of land use applications in the City of Milwaukie. Where a preapplication conference is required, please be advised of the following:

- Preapplication conferences are valid for a period of 2 years from the date of the conference. If a land use application or development permit has not been submitted within 2 years of the conference date, the Planning Director may require a new preapplication conference.

- If a development proposal is significantly modified after a preapplication conference occurs, the Planning Director may require a new preapplication conference.

If you have any questions concerning the content of this report, please contact the appropriate City staff.

Sincerely,

B. Marston

Blanca Marston
Administrative Specialist II

Enclosure

cc: Stephen McMurtrey - NW Housing Alternatives
Martha McLennan - NW Housing Alternatives
Mary Dorman - APG
Josh Lighthipe - KPFF
Carrie Richter - Garvey Schubert Barer

CITY OF MILWAUKIE

PreApp Project ID #: 15-013PA

PRE-APPLICATION CONFERENCE REPORT

This report is provided as a follow-up to a meeting that was held on 7/2/2015 at 10:00am

Applicant Name: **Bill Lanning**

Company: **MWA Architects**

Applicant 'Role': Architect

Address Line 1: 70 NW Couch St, Ste. 401

Address Line 2:

City, State Zip: Portland OR 97209

Project Name: **NHA Campus Redevelopment**

Description: **Redevelop existing properties to provide for an office building, a shelter, and affordable housing apartments.**

ProjectAddress: **2316 SE Willard St**

Zone: R-2

Occupancy Group:

ConstructionType:

Use: Current and proposed: residential and office

Occupant Load:

AppsPresent: Bill Lanning, Stephen McMurtruy, Josh Lighthipe, Carrie Richter,Mary Dorman, Martha McLennan

Staff Attendance: Vera Kolias, Brad Albert, Chrissy Dawson

BUILDING ISSUES

ADA:

Structural:

Mechanical:

Plumbing:

Plumb Site Utilities:

Electrical:

Notes: No comments at this time.

Please note all drawings must be individually rolled. If the drawings are small enough to fold they must be individually folded.

FIRE MARSHAL ISSUES

Fire Sprinklers: The congregate residence may be required to have a fully compliant NFPA sprinkler system.

Fire Alarms:

Fire Hydrants:

Turn Arounds:

Addressing:

Fire Protection:

Fire Access:

Hazardous Mat.:

Fire Marshal Notes: See attached.

PUBLIC WORKS ISSUES

Water: City of Milwaukie 8-inch diameter water mains on SE Lake Road, SE 23rd Avenue and SE Willard Street are available to serve future development. The water System Development Charge (SDC) is based on the size of water meter(s) serving the property. The corresponding water SDC will be assessed with installation of each water meter. Water SDC credit will be provided based on the size of any existing water meter serving the property removed from service. The water SDC will be assessed and collected at the time the building permits are issued

Sewer: A City of Milwaukie 12-inch diameter sewer main on SE Lake Road and a City of Milwaukie 8-inch sewer main on SE Willard Street are available to serve future development.

Currently, the wastewater System Development Charge (SDC) is comprised of two components. The first component is the City's SDC charge of $893.00 and the second component is the County's connection fee for treatment of $5,970 that the City collects and forwards to the County. Both charges are per connection unit. The wastewater SDC and connection fee is assessed using a plumbing fixture count from Table 7-3 of the Uniform Plumbing Code. The wastewater SDC connection units are calculated by dividing the fixture count of new plumbing fixtures by sixteen. The wastewater SDC will be assessed and collected at the time the building permits are issued.

Storm: Submission of a storm water management plan by a qualified professional engineer is required as part of future development. The plan shall conform to Section 2 - Stormwater Design Standards of the City of Milwaukie Pubic Works Standards.
The storm water management plan shall demonstrate that the post-development runoff does not exceed the pre-development, including any existing storm water management facilities serving the development property. Also, the plan shall demonstrate compliance with water quality standards. The City of Milwaukie has adopted the most current City of Portland Stormwater Management Manual for design of water quality facilities.

All new impervious surfaces, including replacement of impervious surface with new impervious surfaces, are subject to the water quality standards. See City of Milwaukie Public Works Standards for design and construction standards and detailed drawings.

The storm SDC is based on the amount of new impervious surface constructed at the site. One storm SDC unit is the equivalent of 2,706 square feet of impervious surface. The storm SDC is currently $844 per unit. The storm SDC will be assessed and collected at the time the building permits are issued.

Street:

The proposed development fronts the northeast side of SE Lake Road, an arterial road with a 65-foot right-of-way width, a paved width of 30 feet, 6.5 foot planter strips and 5 foot set-back sidewalks on both sides.

The proposed development fronts the east side of SE 23rd Avenue, a local street with a varying width of right-of-way, a 46-foot paved width and 5-foot curb-tight sidewalks on both sides.

The proposed development fronts the south side of SE Willard Street, a local street with a right-of-way width of 50 feet, a 36-foot paved width, a 5-foot curb-tight sidewalk on the north side, and a 3-foot planter strip with a 5-foot set-back sidewalk on the south side.

Frontage:

Chapter 19.700 of the Milwaukie Municipal Code, hereafter referred to as "Code", applies to partitions, subdivisions, and new construction.

Transportation Facility Requirements, Code Section 19.708, states that all rights-of-way, streets, sidewalks, necessary public improvements, and other public transportation facilities located in the public right-of-way and abutting the partition site shall be adequate at the time of final plat or shall be made adequate in a timely manner.

According to Code Table 19.708.2 and the Transportation Design Manual, the arterial road cross section includes the following:

- 11-foot travel lanes
- 6-foot bike lane
- 5-foot landscape strips
- 6-foot setback sidewalks

The Lake Road improvements include, form the fronting property line, a 6 foot setback sidewalk, 5 foot planter strip, curb and gutter, and 17 feet of paved width to the center line of the road.

According to Code Table 19.708.2 and the Transportation Design Manual, the local street cross section includes the following:

- 10-foot travel lanes
- 6-foot parking strips with curb
- 3-foot landscape strips
- 5-foot setback sidewalks

The Willard Street improvements include, from the fronting property line, a 5-foot set-back sidewalk, 3-foot planter strip, curb and gutter.

Improvements to 23rd Avenue and the intersection of Lake Road and 23rd Avenue will depend on the results of a Traffic Impact Study. Final engineered plans for street improvements will be reviewed by

City of Milwaukie Engineering Staff at the time of final plat and shall be approved before construction begins.

Right of Way: The existing right-of-way width on SE Lake Road fronting the proposed development is 65 feet. According to Code Table 19.708.2, the required right-of-way width for an arterial road is 63 feet. The applicant is responsible for right-of-way dedication 6.5 feet in width on SE Lake Road fronting the proposed development.

Existing right-of-way widths on SE 23rd Avenue and SE Willard Street are adequate and do not require dedication.

Driveways: Code Section 12.16.040.A states that access to private property shall be permitted with the use of driveway curb cuts and driveways shall meet all applicable guidelines of the Americans with Disabilities Act (ADA). Driveway approaches shall be improved to meet the requirements of Milwaukie's Public Works Standards.

Erosion Control: Per Code Section 16.28.020(C), an erosion control permit is required prior to placement of fill, site clearing, or land disturbances, including but not limited to grubbing, clearing or removal of ground vegetation, grading, excavation, or other activities, any of which results in the disturbance or exposure of soils exceeding five hundred square feet.

Code Section 16.28.020(E) states that an erosion control permit is required prior to issuance of building permits or approval of construction plans. Also, Section 16.28.020(B) states that an erosion control plan that meets the requirements of Section 16.28.030 is required prior to any approval of an erosion control permit.

Traffic Impact Study: Code Section 19.704.1(A) states that the City will determine whether a transportation impact study (TIS) is required. In the event the proposed development will increase the intensity of use, a transportation impact study is required. The transportation impact study triggers a Transportation Facilities Review (TFR) Land Use Application to be filed concurrent with the land use application. Once the scope of the proposed development is determined and a deposit of $1000.00 is paid, the City of Milwaukie will provide a detailed transportation impact study scope for the traffic study.

When the traffic impact study is completed in accordance with the TIS scope, the applicant shall schedule a second pre-application meeting with Milwaukie Engineering Staff. The second pre-application meeting will allow Engineering staff to review and comment on the applicant's traffic impact study prior to submission of any land use applications. The fee for the second pre-application meeting is $100.00 and a deposit of $2500.00. Upon completion of the second pre-application meeting, the applicant may submit their land use applications.

PW Notes: TRANSPORTATION SDC
The Transportation SDC will be based on the increase in trips generated by the new use per the Trip Generation Handbook from the Institute of Transportation Engineers. The SDC for transportation is $1,873 per trip generated. Credits will be given for any demolished structures, which shall be based upon the existing use of the structures. Credits for improvements to Lake Road and the intersection of Lake Road and 23rd Avenue will be calculated based on proportionality of the cost of the improvements. The transportation SDC will be assessed and collected at the time building permits are issued for development.

PARKS & RECREATION SDC
The parks & recreation System Development Charge (SDC) is triggered when application for a building permit on a new dwelling is received. Currently, the parks and recreation SDC for each Single-Family Residence is $3,985.00. Credit is applied to any demolished structures and is based upon the existing use of the structures. The parks and recreation

SDC will be assessed and collected at the time building permits are issued for development.

REQUIREMENTS AT FINAL PLAT
- Engineered plans for public improvements (street, sidewalk, and utility) are to be submitted and approved prior to start of construction. Full-engineered design is required along the frontage of the proposed partition.

- The applicant shall pay an inspection fee of 5.5% of the cost of public improvements prior to start of construction.

- The applicant shall provide a payment and performance bond for 100% of the cost of the public improvements prior to the start of construction.

- The applicant shall provide a final approved set of Mylar "As Constructed" drawings to the City of Milwaukie prior to the final inspection.

- The applicant shall provide a maintenance bond for 100% of the cost of the public improvements prior to the final inspection.

PLANNING ISSUES

Setbacks:

R-2 zone: front 15 ft; rear 15 ft, street side yard 15 ft; side yard 5 ft (with some exceptions related to town homes). Minimum setback from Lake Rd is 30 ft from the centerline.

Landscape:

R-2 zone: at least 15% of the site must be vegetated, and at least 40% of the front yard shall be vegetated. The front yard vegetation area counts toward the minimum required vegetation for the lot. A property may provide less than the 40% of the front yard vegetation requirement if it is necessary to provide a turnaround area so that vehicles can enter a collector or arterial street in a forward motion.

Per MMC 19.504.7, no more than 20% of the required vegetation area shall be covered in mulch or bark dust. Mulch or bark dust under the canopy of trees or shrubs is excluded from this limit. Plans for development shall include landscaping plans which shall be reviewed for conformance to this standard.

Parking:

MMC Chapter 19.600 Off-Street Parking and Loading establishes minimum off-street parking ratios for various uses. For multifamily dwelling units of less than 800 sq ft, a minimum of 1 parking space per unit is required and a maximum of 2 parking spaces per dwelling unit is permitted. For multifamily dwelling units of more than 800 sq ft, a minimum of 1.25 parking space per unit is required and a maximum of 2 parking spaces per dwelling unit is permitted.

For general office use, a minimum of 2 spaces per 1,000 sq ft of area is required and a maximum of 3.4 spaces per 1,000 sq ft is permitted.

There are some by-right reductions available for developments within 500 ft of a frequent transit stop and within 1,000 ft of a light rail station. These reductions are detailed in MMC 19.605.3. Parking space and drive aisle dimensions and parking lot landscaping and design requirements are located in MMC 19.606.

Please refer to MMC 19.605.4 for Shared Parking information.

For the purposes of parking requirements, as long as the property is under one ownership, the project is

considered to be one development site.

Parking lot design subject to MMC 19.606, including dimensional requirements and landscaping.

Proposal is also subject to bicycle parking requirements, per MMC 19.609.

Transportation Review: The City's transportation requirements are located in MMC 19.700. The Engineering Department has determined that this chapter may be triggered by the proposed zone change. See 'Public Works' notes for details.

Application Procedures: Application procedures are described below:

Conditional Use (CU): CU approval is required to permit the office use in the R-2 zone. The application is reviewed through a Type III review per MMC 19.1006, and the application fee is $2,000. The approval criteria for CU applications are in MMC 19.905.4.

Community Service Use (CSU): CSU approval is required to permit the shelter use in the R-2 zone. The application is reviewed through a Type III review per MMC 19.1006, and the application fee is $2,000. The approval criteria for CSU applications are in MMC 19.904.4.

Transportation Facilities Review (TFR): If a TIS is required, TFR approval will be required to evaluate the impacts of the Conditional Use and Community Service Use. The application is reviewed through a Type II review per MMC 19.1005, and the application fee is $1,000. The approval criteria for TFR applications are in MMC 19.703.3.

Multi-family Residential Development Review (MFR): Development review for the proposed multi-family housing is subject to design review under two review processes: Objective (Type I) and Discretionary (Type II). The objective process is reviewed through a Type I review per MMC 19.1004, and the application fee is $200. The design guidelines and standards are in MMC 19.505.3.D.

For the City's initial review, the applicant should submit 5 complete copies of the application, including all required forms and checklists. A determination of the application's completeness will be issued within 30 days. If deemed incomplete, additional information will be requested. If deemed complete, additional copies of the application will be required for referral to other departments, the Neighborhood District Association (NDA), and other relevant parties and agencies. City staff will inform the applicant of the total number of copies needed.

Type III applications are quasi-judicial in nature and are decided by the Planning Commission at a public hearing. The Planning Commission hears land use applications on the second and fourth Tuesdays of every month, and completed applications need to be submitted to the Planning Department no later than 45 days prior to the target Planning Commission hearing. In general, staff recommends that applications be submitted one to two weeks before the 45-day deadline in order to ensure that there is time to make the applications complete if they are initially deemed incomplete. Once the Planning Commission renders a decision, there is a fifteen calendar-day appeal period. Building permits will be accepted for review only after the appeal period for all land use decisions has expired.

Type II applications are administrative in nature and are decided by the Planning Director after a public notice period. The timeline for review and approval is generally 30 – 45 days.

Type I applications are administrative in nature and are decided by the Planning Director. The timeline for review and approval is generally 14 days.

Applications may be submitted concurrently. There is a 25% discount for the least expensive application(s).

Land use application submission materials are listed below for your convenience. Please refer to the handouts distributed at the pre-application conference for more detailed information.

1. All applicable land use applications forms with signatures of property owners.
2. All applicable land use application fees.
3. Completed and signed "Submittal Requirements" form.
4. Completed and signed "Site Plan Checklist and Procedures" form.
4. 5 copies of an existing conditions and a proposed conditions site plan, both to scale. These two site plans can be combined onto one site plan. Once the application is deemed complete, additional copies will be requested for distribution to City departments, applicable governmental agencies, and the neighborhood district association for review.
5. Detailed narrative describing compliance with all applicable code sections.

Natural Resource Review: Not required.

Lot Geography: The site consists of 9 tax lots and is generally rectilinear in shape, with an uneven eastern boundary.

Planning Notes:

1) A question was asked regarding the calculation of required parking for the shelter use, which is not listed in Table 19.605.1. The applicant may, within the application narrative, make an argument as to which of the listed uses is the most comparable. Alternatively, the applicant may submit a Type II parking determination application (MMC 1.605.2).

2) The City will consider all of the tax lots as a single site for the purposes of setbacks, lot coverage, minimum vegetation, etc.

3) Public notice signs will need to be posted on site prior to any hearing or decision on the Type III land use application. Notice of the application will be sent to property owners within 300 ft of the subject property. The applicant may wish to communicate with these property owners prior to submittal of the application in order to identify any potential concerns.

4) The preapplication conference is valid for purposes of submitting future land use applications as described in 19.1002.4. In general, a preapplication conference is valid for 2 years.

5) The Milwaukie Municipal Code is available online at http://www.qcode.us/codes/milwaukie/

ADDITIONAL NOTES AND ISSUES

County Health Notes:

Other Notes:

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 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
Bonnie Lanz - Permit Technician - 503-786-7613

ENGINEERING DEPARTMENT
Vacant - Engineering Director - 503-786-7605
Brad Albert - Civil Engineer - 503-786-7609
Stacy Stubblefield - Civil Engineer - 503-786-7602
Chrissy Dawson - Engineering Technician II - 503-786-7610
Alex Roller - Engineering Technician I - 503-786-7695

COMMUNITY DEVELOPMENT DEPARTMENT
Alma Flores - Community Develop. Dir. - 503-786-7652
Marcia Hamley - Admin Specialist II - 503-786-7656
Alicia Martin -Admin Specialist II - 503-786-7600
Blanca Marston -Admin Specialist II - 503-786-7600

PLANNING DEPARTMENT
Dennis Egner - Planning Director - 503-786-7654
Li Alligood - Senior Planner - 503-786-7627
Brett Kelver - Associate Planner - 503-786-7657
Vera Kolias - Associate Planner - 503-786-7653

CLACKAMAS FIRE DISTRICT
Mike Boumann - Lieutenant Deputy Fire Marshal - 503-742-2673

Clackamas County Fire District #1
Fire Prevention Office

E-mail Memorandum

To: City of Milwaukie Planning Department

From: Matthew Amos, Fire Inspector, Clackamas Fire District #1

Date: **6/30/2015**

Re: **2316 SE Willard St. 15-013PA**

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.

Fire Department Access:

1. Provide address numbering that is clearly visible from the street.
2. No part of a building may be more than 150 feet from an approved fire department access road.
3. Buildings exceeding 30 feet in height shall require extra width and proximity provisions for aerial apparatus.

2930 S.E. Oak Grove Blvd. • Milwaukie, OR 97267 • 503-742-2660

Water Supply:

1. Fire Hydrants, Commercial Buildings: Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. Note: This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.
2. 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.
3. 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.
4. Please see our design guide at:
   http://www.clackamasfire.com/documents/fireprevention/firecodeapplicationguide.pdf
5. Comments may not be all inclusive based on information provided.

If you have questions please contact Clackamas Fire District @503-742-2660

Exhibit C: Traffic Impact Analysis

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

October 27, 2015 Project #: 13922

Stephen McMurtrey
Northwest Housing Alternatives
2316 SE Willard Street
Milwaukie, OR 97222

RE: Northwest Housing Alternatives Campus Redevelopment Plan - Transportation Impact Analysis

Dear Stephen,

Northwest Housing Alternatives (NHA) is proposing to redevelop its existing Milwaukie campus to include new NHA office space, a new emergency family shelter, and new affordable rental housing. This report addresses the redevelopment's traffic and parking impacts on the surrounding transportation system and complies with the City of Milwaukie's traffic impact study criteria. Additional details of the methodology, findings and recommendations are provided herein.

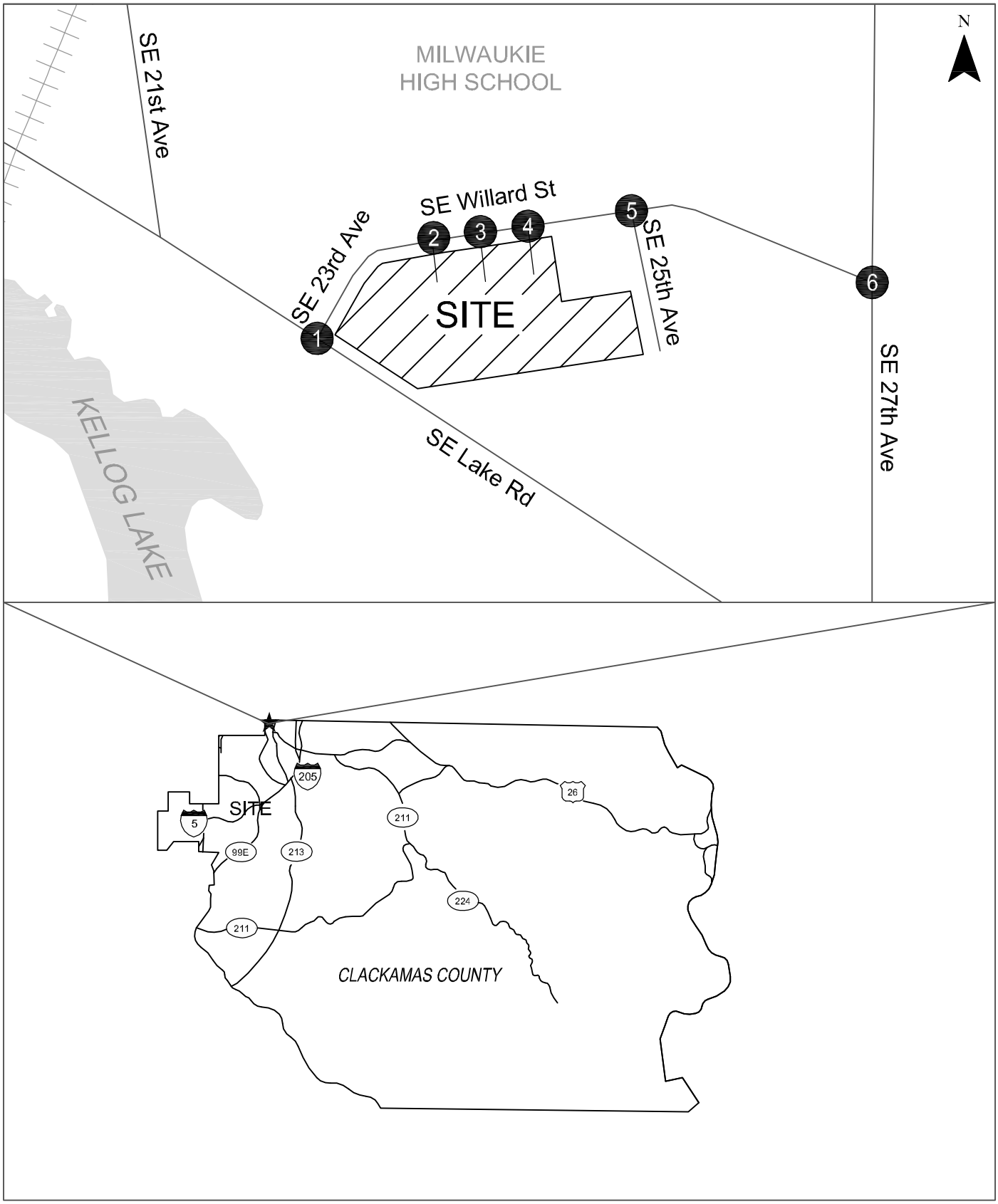
INTRODUCTION

NHA is proposing redevelopment of its existing campus, which is located just south of Milwaukie High School. The redevelopment will involve demolition of all existing campus structures and the construction of new building for its office, a new Annie Ross House, and 28 new affordable rental housing units. Figure 1 illustrates the site vicinity and Figure 2 illustrates the conceptual site layout. For the purposes of this study, full build-out and occupancy of the redeveloped campus is anticipated by the year 2019.

SCOPE OF THE REPORT

This report identifies the transportation and parking-related impacts associated with the proposed redevelopment, and was prepared in accordance with the scope of work outline provided by the City of Milwaukie. Accordingly, operational analyses were performed at the following study intersections during the weekday AM and PM peak periods as they are expected to experience a ten percent increase in peak hour traffic volumes as a result of the proposed redevelopment:

- SE Lake Road/SE 23rd Avenue
- SE Willard Street/SE 25th Avenue
- SE Willard Street/SE 27th Avenue

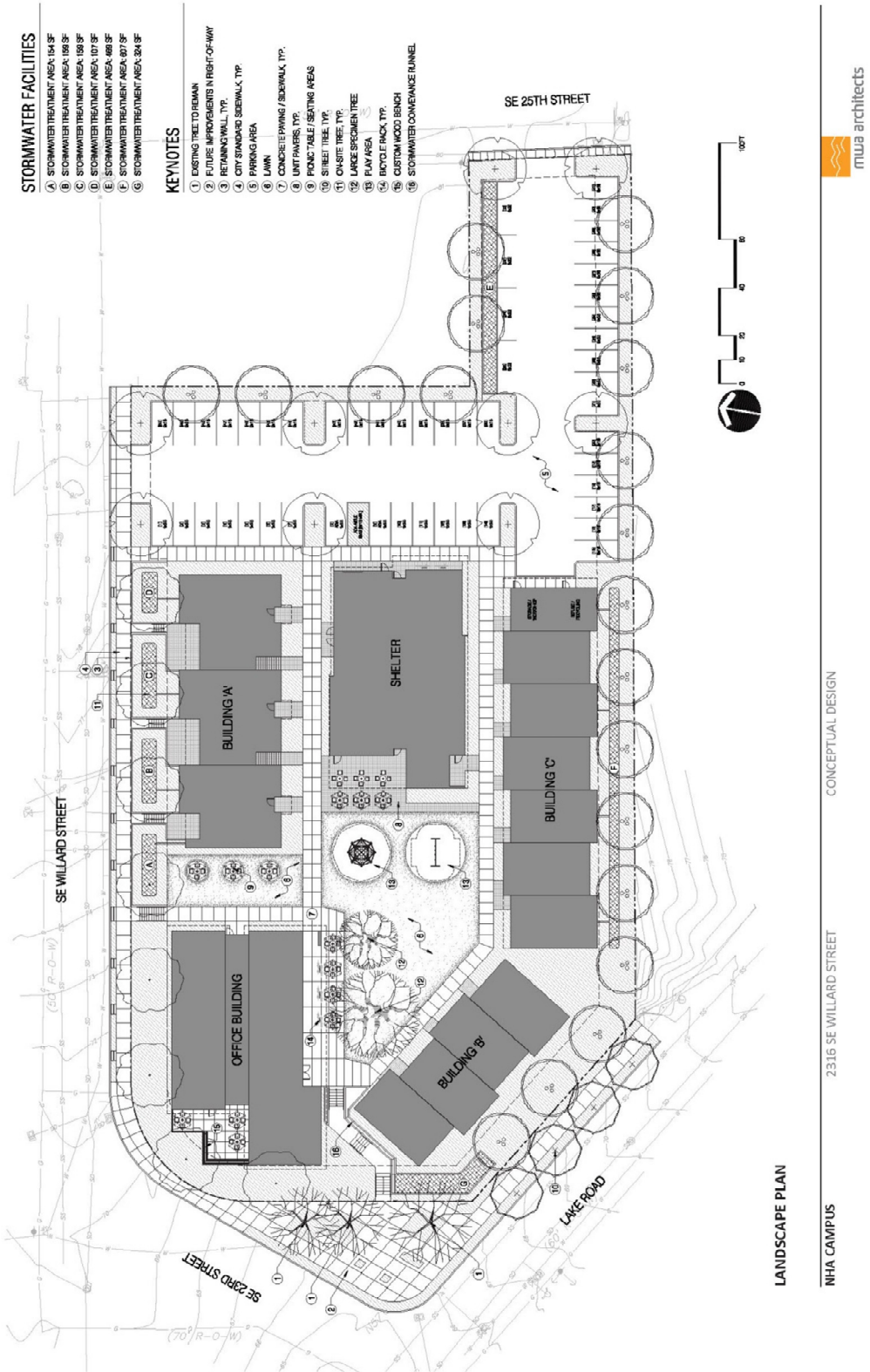


(##) - Study Intersections

Site Vicinity Map
Milwaukie, Oregon

Figure
1

Figure 2 – Conceptual Site Layout (Prepared by MWA Architects)



This report evaluates the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity during the weekday AM and PM peak periods;
- Forecast year 2019 background traffic conditions during the weekday AM and PM peak periods;
- Trip generation and distribution estimates for the campus redevelopment;
- Forecast year 2019 total traffic conditions during both peak hours of the site assuming full buildout of the site;
- A comparison of on-street parking demand and supply to determine the potential for any parking impacts on the adjacent local streets surrounding the project site; and
- A summary of compliance of the redevelopment with the applicable transportation-related code requirements.

Analysis Methodology

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the 2010 Highway Capacity Manual (HCM). A description of level of service and the criteria by which they are determined is presented in Appendix "A". Appendix "A" also indicates how level of service is measured and what is generally considered the acceptable range of level of service. To ensure that this analysis was based on a reasonable worst-case scenario, the peak 15 minute flow rate during the peak hour periods was used in the evaluation of all intersections. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. Traffic conditions during other weekday hours will likely be better than those described in this report.

EXISTING CONDITIONS

This section summarizes the existing characteristics of the transportation system and adjacent land uses in the vicinity of the campus redevelopment site, including an inventory of the existing multi-modal transportation facilities and options, an evaluation of existing intersection operations for motor vehicles at the study intersections, and a summary of recent crash history.

Site Conditions and Adjacent Land Uses

The existing NHA campus is located just to the south of Milwaukie High School and is roughly bordered by SE Willard Street to the north, SE 23rd Avenue to the west, SE Lake Road to the south, and SE 25th Avenue to the east. Single-family homes and condominiums border the campus to the south and east. Vehicular access to the campus is provided by three driveways located off of SE Willard Street.

Transportation Facilities

Table 1 identifies the characteristics of key roadways located within the campus vicinity, including the existing street classifications reflected in the City's Transportation System Plan (TSP). Figure 3 identifies the lane configurations and traffic control devices at the study intersections.

Table 1 – Existing Transportation Facilities

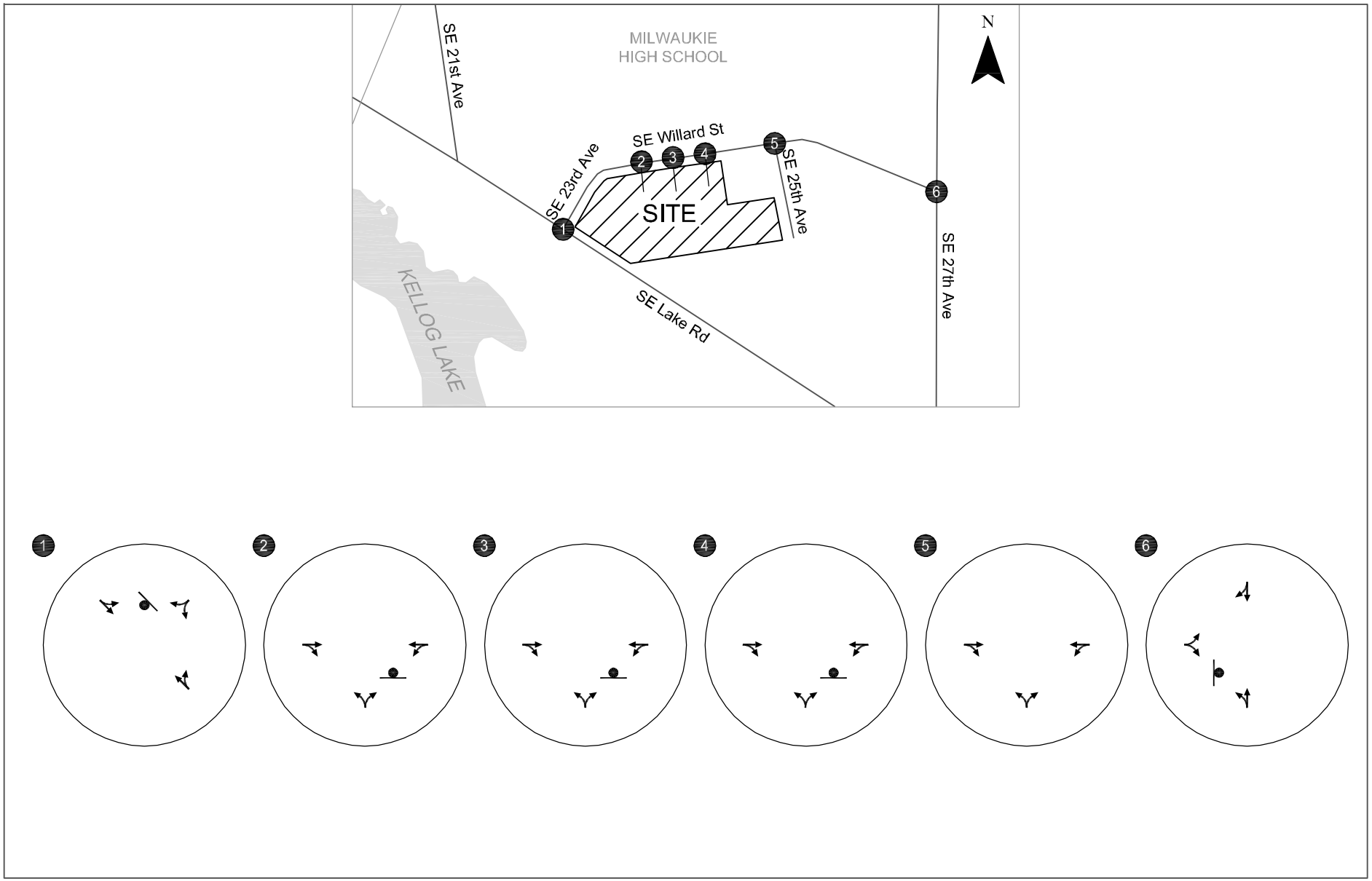
Roadway	TSP Classification	Motor Vehicle Travel Lanes	Posted Speed (mph)	Sidewalks	Striped Bicycle Lanes	On-Street Parking
SE Lake Road	Arterial	2	30	Yes	No	No
SE 27th Avenue	Neighborhood Route	2	20[1]	Yes	No	Yes
SE 23rd Avenue	Local Street	2	20[1]	Yes	No	Yes
SE Willard Street	Local Street	2	20[1]	Yes[2]	No	Yes

[1] School zone speed signs of 20 mph are posted on each of these roadways within the vicinity of the NHA campus. School speed zones are in effect from 7:00 AM to 5:00 PM on school days.
[2] There is a short gap in the sidewalk along the north side of SE Willard Street between SE 25th Avenue and SE 27th Avenue.

Transit Service

Regional transit service is provided adjacent to the existing NHA campus via TriMet bus route 32 (Oatfield). Route 32 provides weekday and Saturday bus service (at approximately 15-30 minute intervals) along SE Lake Road with stops located near SE 23rd Street. A complete sidewalk network is provided on the roadways (SE Willard Street, SE 23rd Avenue, and SE Lake Road) between the NHA campus and these stops on SE Lake Road. Signed and striped crosswalks are also provided along SE Lake Road near the SE 23rd Avenue and SE 27th Avenue intersections.

In addition to Route 32, three other TriMet bus routes (29, 33, and 34) all provide service within close proximity of the NHA campus and are accessible via the local street sidewalk network. Lastly, the new Max Orange Line stops at the Milwaukie/Mail Street Max Station located just west of the site in Downtown Milwaukie. All combined, the NHA campus is well served by local and regional transit and a relatively complete sidewalk network exists on the adjacent street network to access the transit system.



- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations & Traffic Control Devices Milwaukie, Oregon

Figure **3**

Active Transportation

Pedestrian Facilities

As documented in Table 1, sidewalks are provided on all streets that provide direct access to the NHA campus. Beyond the immediate site vicinity, the sidewalk network is fairly comprehensive providing a significant level of local and regional accessibility to the surrounding residential neighborhoods and nearby Downtown Milwaukie.

The NHA campus is located within the Milwaukie Elementary School (approximately 0.15 miles to the east along NE 27th Avenue), Rowe Middle School (approximately 0.6 miles to the southeast along SE Lake Road), and Milwaukie High School (directly across SE Willard Street) school boundaries. The North Clackamas School District has completed "Safe Walk Path Maps" for the transportation network located within each school boundary. A review of the maps indicates that there is a sidewalk and intersection crosswalk network between the NHA campus and all three school sites. Furthermore, the maps and a subsequent field inventory indicated that there are no physical walking barriers between the NHA campus and each school site.

Bicycle Facilities

There is no physical or formally designated bicycle infrastructure on the immediately adjacent SE Lake Road, SE 23rd Avenue, SE 27th Avenue, and SE Willard Street networks. Rather, the vehicular volumes are low enough to enable cyclists to "share the road" with motorists.

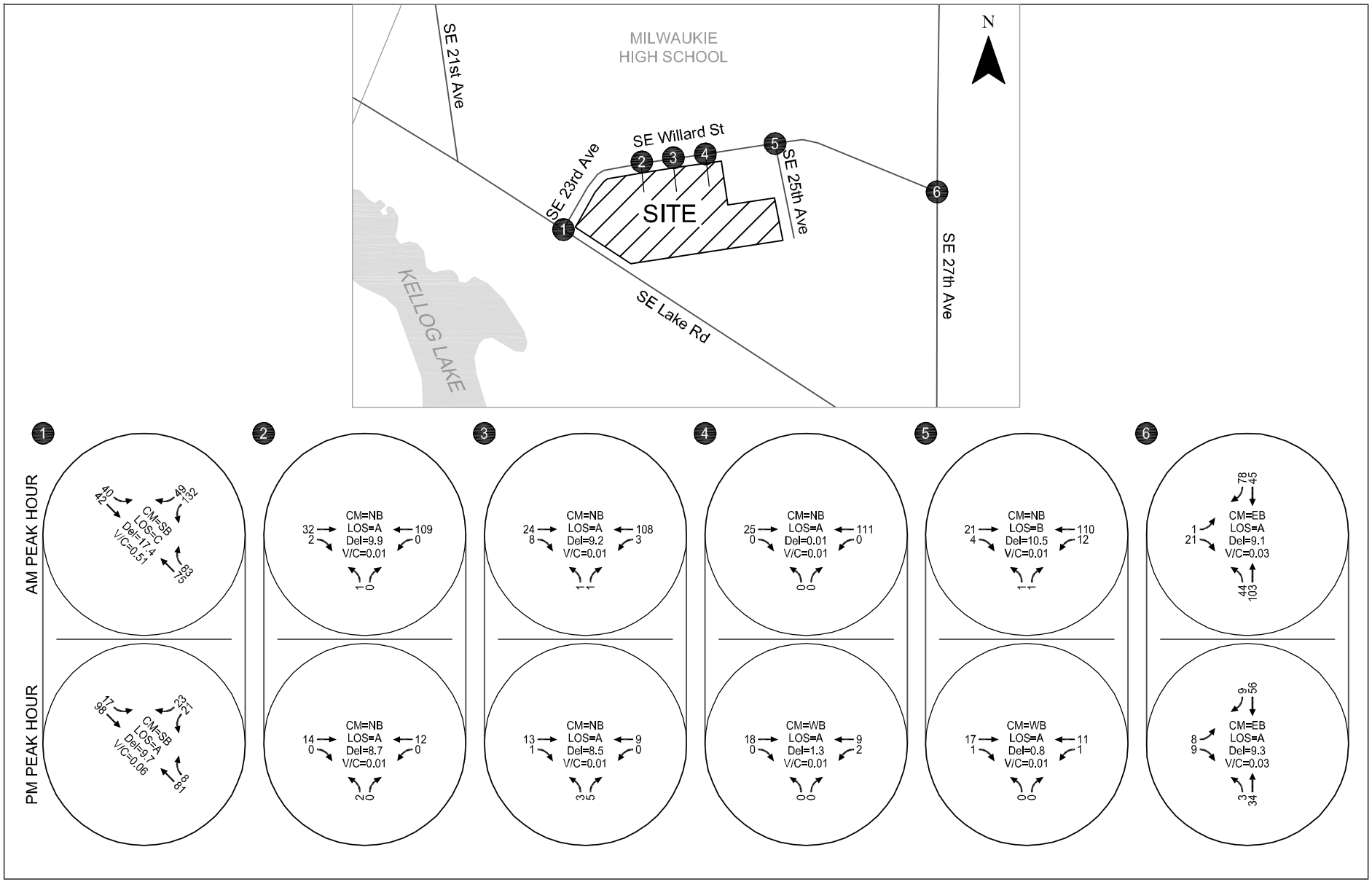
Existing Vehicular Operations

Manual turning movement counts were collected at the study intersections in September 2015 when local schools were in session. Traffic counts were collected during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak time periods. Appendix "B" *contains the traffic count worksheets*. Figure 4 and Table 2 summarizes the operational analysis for the study intersections during the weekday AM and PM peak hours. As shown in Table 2, all intersections operate acceptably per the City's standards. *Appendix "C" contains the 2015 existing conditions operational worksheets.*

Table 2 – 2015 Existing Traffic Conditions

Intersection	Minimum Acceptable Measure of Effectiveness[1]	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS	V/C	LOS	V/C
Unsignalized Intersections[2]					
SE Lake Road/SE 23rd Avenue	LOS D	C	0.51	A	0.06
SE Willard Street/SE 25th Avenue	LOS D	B	0.01	A	0.01
SE Willard Street/SE 27th Avenue	LOS D	A	0.03	A	0.03

[1] Milwaukie Municipal Code, Section 19.1407.4(A).
[2] LOS and V/C for unsignalized intersections reported for the highest delay or critical movement.



CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (AWSC) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWC = TWO-WAY STOP CONTROL
AWSC= ALL-WAY STOP CONTROL

Existing AM & PM Peak Hour Traffic Operations Milwaukie, Oregon

Figure 4

Crash History Analysis

Intersection crash histories were reviewed in an effort to identify potential intersection safety issues. Crash data for the study intersections were obtained from the Oregon Department of Transportation (ODOT) for the five-year period from January 1, 2009 through December 31, 2013. Table 3 illustrates the crashes reported at the study intersections. *Appendix "D" contains the ODOT crash data*.

Table 3 - Intersection Crash History (January 1, 2009 through December 31, 2013)

Intersection	Collision Type						Total Crashes
	Angle	Turning	Rear End	Side-swipe	Ped/ Bike	Other	
SE Lake Road/SE 23rd Avenue	0	0	0	0	0	0	0
SE Willard Street/SE 25th Avenue	0	0	0	0	0	0	0
SE Willard Street/SE 27th Avenue	0	0	0	0	1	0	1

As summarized in Table 3, the only reported crash occurred at the SE Willard Street/SE 27th Avenue intersection. A review of this crash indicates that it involved a vehicle-pedestrian collision where the vehicle was cited for making an illegal left-turn and failing to yield the right-of-way to a pedestrian. No other safety-related issues were identified through a review of this crash data. Based on review of the crash history, no safety-related mitigation measures are needed as a part of site redevelopment.

TRAFFIC IMPACT ANALYSIS

The traffic impact analysis identifies how the study area's transportation system will operate upon redevelopment of the campus. The impact of site-generated weekday AM and PM peak hour trips was examined as follows:

- Planned developments and transportation improvements in the site vicinity were identified and reviewed;
- Year 2019 background traffic conditions (build-out year of the proposed development without site-generated traffic) were analyzed at the study intersections;
- Future peak hour site-generated trips were estimated for build-out of the site;
- A trip distribution pattern was prepared and the site-generated trips were distributed to the study area intersections;
- Existing traffic patterns were adjusted to account for new roadway infrastructure;
- Forecast year 2019 total traffic conditions were analyzed during the weekday AM and PM, peak hours with build-out of the site;
- On-site circulation and site-access operations were evaluated; and
- On-street parking adequacy was reviewed.

2019 BACKGROUND CONDITIONS

The year 2019 background traffic analysis identifies how the study area's transportation system will operate without the proposed development but within the anticipated buildout period. This analysis accounts for traffic attributed to planned developments within the study area and includes general growth in the region, but does not include traffic from the proposed redevelopment.

Planned Developments and Transportation Improvements

Per discussions with City staff, there are no approved in-process developments in the immediate site vicinity that would impact the study intersections. There are also no transportation improvements identified for any of the study intersections or roadways within the specific time-frame of this study that would have a measurable impact on the future operations analysis.

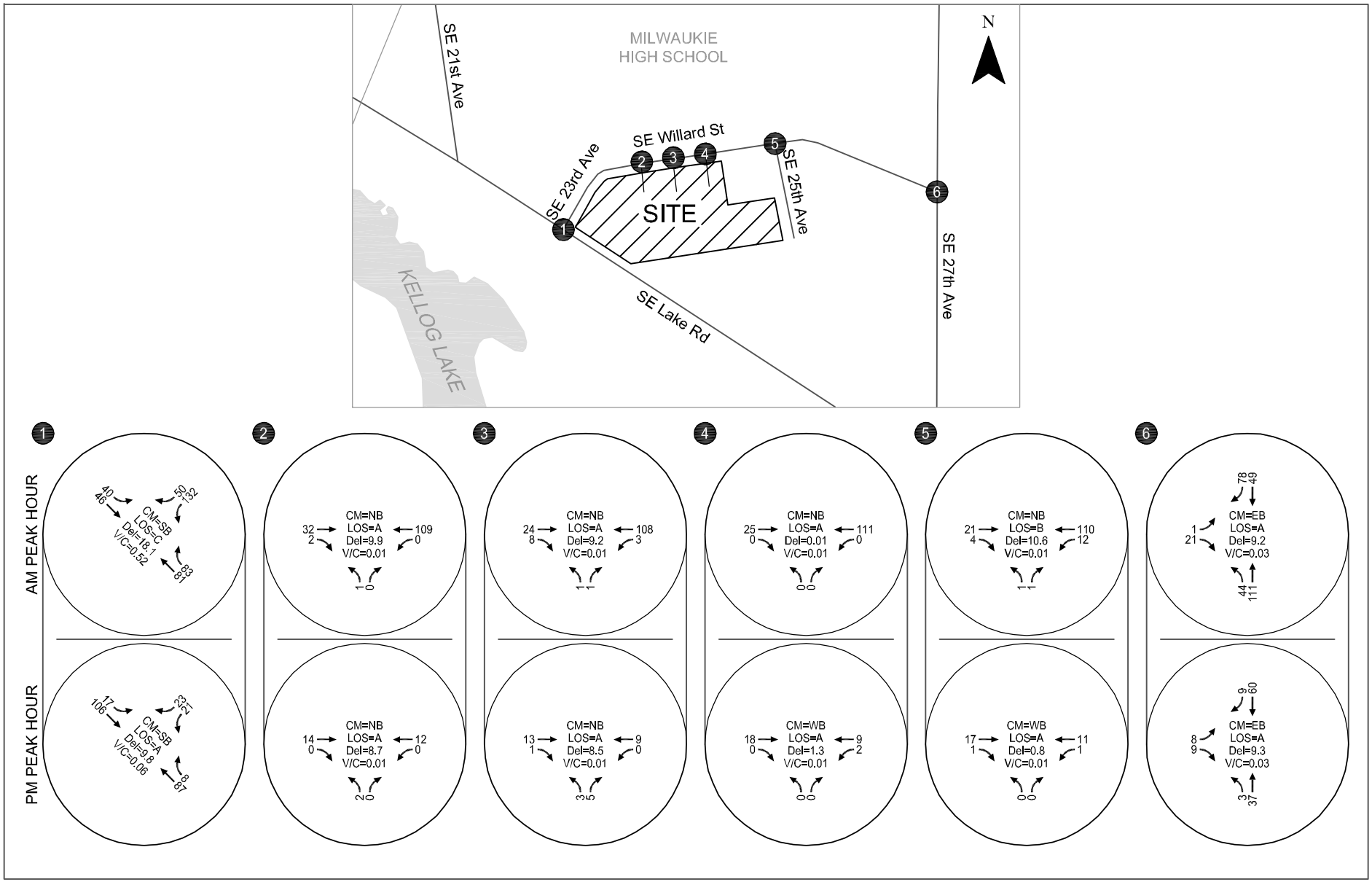
2019 Background Operations

To account for future through traffic growth in the region, a 2 percent annual growth rate was used to forecast the future background traffic volumes. This growth rate is generally consistent with the rates used in the City's Transportation System Plan. Figure 5 and Table 4 summarize the resulting forecast 2019 background traffic conditions for the study intersections during the weekday AM and PM peak hours. As shown, all intersections are forecast to continue to operate acceptably. *Appendix "E" contains the 2019 background operations worksheets.*

Table 4 – 2019 Background Traffic Conditions

Intersection	Minimum Acceptable Measure of Effectiveness[1]	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS	V/C	LOS	V/C
Unsignalized Intersections[2]					
SE Lake Road/SE 23rd Avenue	LOS D	C	0.52	A	0.06
SE Willard Street/SE 25th Avenue	LOS D	B	0.01	A	0.01
SE Willard Street/SE 27th Avenue	LOS D	A	0.03	A	0.03

[1]Milwaukie Municipal Code, Section 19.1407.4(A).
[2] LOS and V/C for unsignalized intersections reported for the highest delay or critical movement.



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2019 Background Weekday AM & PM Peak Hour Traffic Conditions Milwaukie, Oregon

Figure 5

PROPOSED REDEVELOPMENT PLAN

As previously described and illustrated in Figure 2, NHA is proposing campus redevelopment that will include:

- Construction of a new 12,500 square foot office building to replace NHA's existing 5,365 square foot office. This building will be designed to more efficiently accommodate NHA's 35 existing office staff while providing room for future employee growth.
- Construction of a new Annie Ross House that will provide up to 8 shelter rooms for families needing emergency shelter or who are experiencing temporary homelessness.
- Construction of 28 affordable housing apartments.

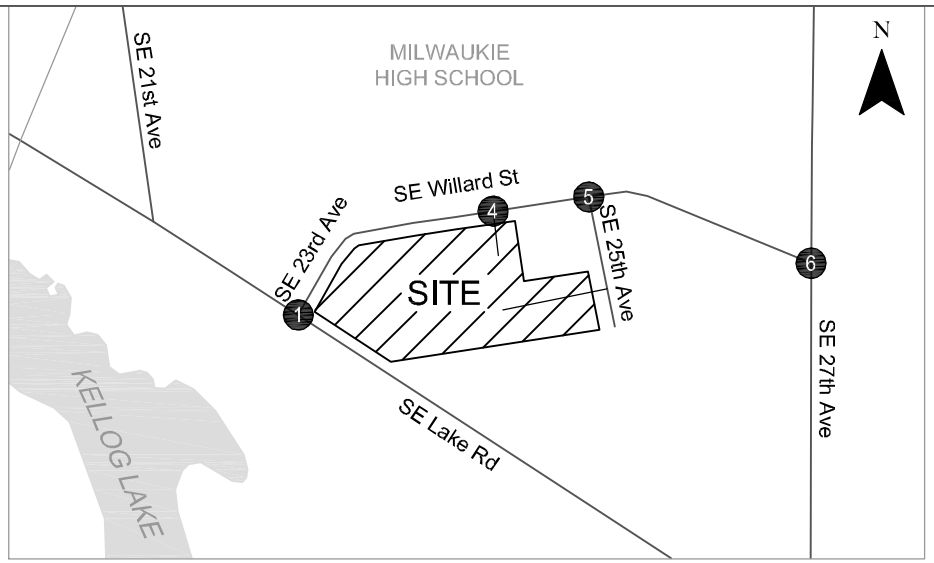
From a circulation perspective, the redevelopment will consist of the following:

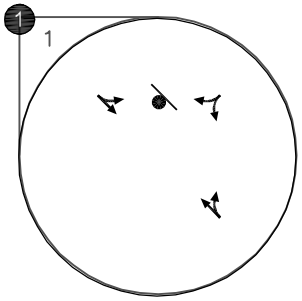
- All three existing site access driveways on SE Willard Street will be closed.
- A new site access driveway will be constructed at the eastern edge of the SE Willard Street frontage (approximately the same location as the existing easternmost driveway). This driveway will provide access to a 50-stall off-street parking lot that will be shared by NHA office staff, residents of the affordable housing units, and those individuals/families staying at the Annie Ross House.
- A second site access driveway will be constructed on SE 25th Street which will provide secondary access to the 50-stall parking lot.
- Pedestrian walkways will connect the campus to SE Willard Street and SE 23rd Avenue.
- Dedicated bicycle parking areas located throughout the campus will accommodate a total of 36 bikes.

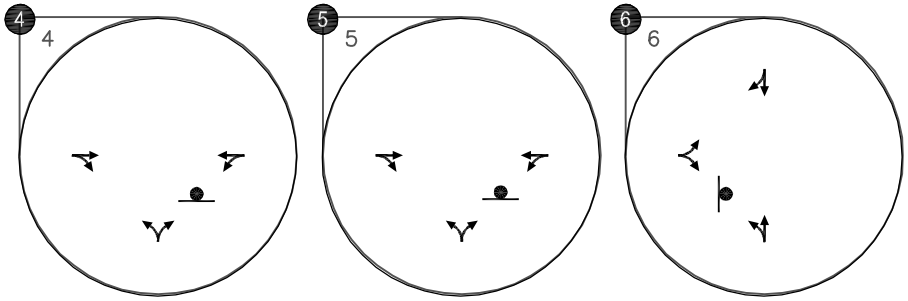
Figure 6 illustrates the proposed/assumed lane configurations and traffic control devices at all of the study intersections and new site driveways.

Re-Routing of Existing Site Access Trips

Assuming the proposed site driveway reconfiguration, the existing AM and PM site driveway trips associated with the existing NHA campus operations were rerouted to the proposed SE Willard Street driveway. The rerouting is documented in Figure 7.



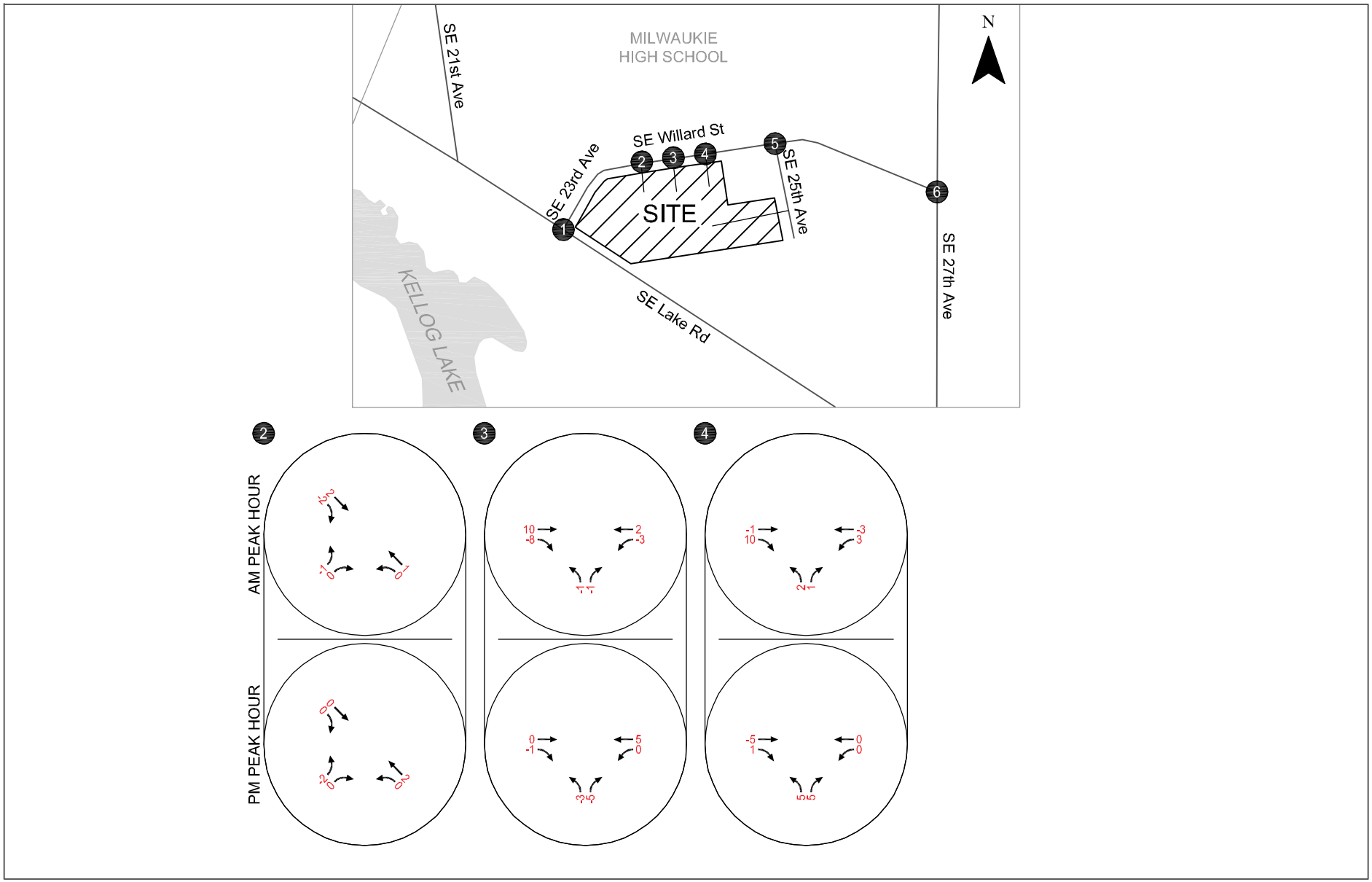




- STOP SIGN
- TRAFFIC SIGNAL

Proposed Site Driveway Configurations & Traffic Control Devices Milwaukie, Oregon

Figure **6**



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2019 Re-routed Site Driveway trips AM & PM Peak Hour Traffic Conditions Milwaukie, Oregon

Figure 7

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Trip Generation

In order to develop a trip generation rate for the proposed campus redevelopment, the individual campus components were broken out and analyzed individually given the unique services that NHA provides to the surrounding community.

NHA Office Trip Generation

Detailed site-generated driveway and on-street parking trips were quantified for the existing NHA campus on a mid-week day while local schools were in session. Based on a review of this data, only the existing NHA office component generates vehicle trips during the weekday AM and PM peak hours. As shown in Table 5, 16 vehicle trips were generated during the weekday AM peak hour and 13 vehicle trips were generated during the weekday PM peak hour. These results were reviewed by NHA staff and were found to be representative of typical peak hour commuting patterns[1].

As part of their long-term growth projections, NHA is anticipating a need for up to 15 additional employees. To account for the new trips that could be generated by the 15 employee increase, a proportional increase was calculated based on the site's current trip profile. The resulting weekday AM and PM peak period trip ends are summarized in Table 5. Based on these rates, the 15 additional staff would generate approximately 7 weekday AM and 6 weekday PM peak hour trips.

Table 5 - NHA Office Trip Generation Estimate

	Weekday AM Peak Hour[1]			Weekday PM Peak Hour[2]		
	Total	In	Out	Total	In	Out
Existing NHA Office						
Existing (35 employees)	16	13	3	13	3	10
Trip Rate/Employee	0.45	81%	19%	0.37	23%	77%
Anticipated NHA Office Employee Growth						
Net New Trips (additional 15 employees)	7	6	1	6	1	5
Future NHA Office						
Total Office Trips (50 employees)	23	19	4	19	4	15

[1] Weekday AM peak hour of 7:45 – 8:45 AM
[2] Weekday PM peak hour of 4:50 - 5:50 PM

NHA Affordable Housing Trip Generation

As previously documented, the existing site driveway and on-street parking counts did not reveal any vehicle trips generated specifically by the NHA's existing 9 affordable housing units and the five shelter rooms in the Annie Ross House. However, recognizing there is a potential for the redevelopment to

[1] Of the 35 staff currently employed by NHA, not all maintain a typical 8:00 AM to 5:00 PM work hours and not all commute via single occupancy vehicles.

generate housing-related trips, a conservative trip generation estimate was calculated using the "Apartment" land use code in the Institute of Transportation Engineers (ITE) *Trip Generation.* The apartment rate was applied to both the affordable housing units and the emergency shelter rooms. The resulting weekday AM and PM peak period trip ends are summarized in Table 6.

Table 6 - Affordable Apartment Housing and Annie Ross Shelter Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Apartments	220	36 units[1]	240	18	4	14	22	14	8

[1] Consists of the planned 28 affordable apartment units and the 8 shelter rooms in the Annie Ross House

Site Trip Distribution/Trip Assignment

The site-generated trips shown in Tables 5 and 6 were distributed onto the study area roadway system based on a combination of existing traffic counts at the site driveways and observed traffic patterns within the site vicinity. Figure 8 illustrates the trip distribution pattern and the assignment of new site-generated trips to the study area intersections during the weekday AM and PM peak hours. It should be noted that the trips generated by the existing office users and reflected in Table 5 are not included in Figure 8.

2019 Total Traffic Operations

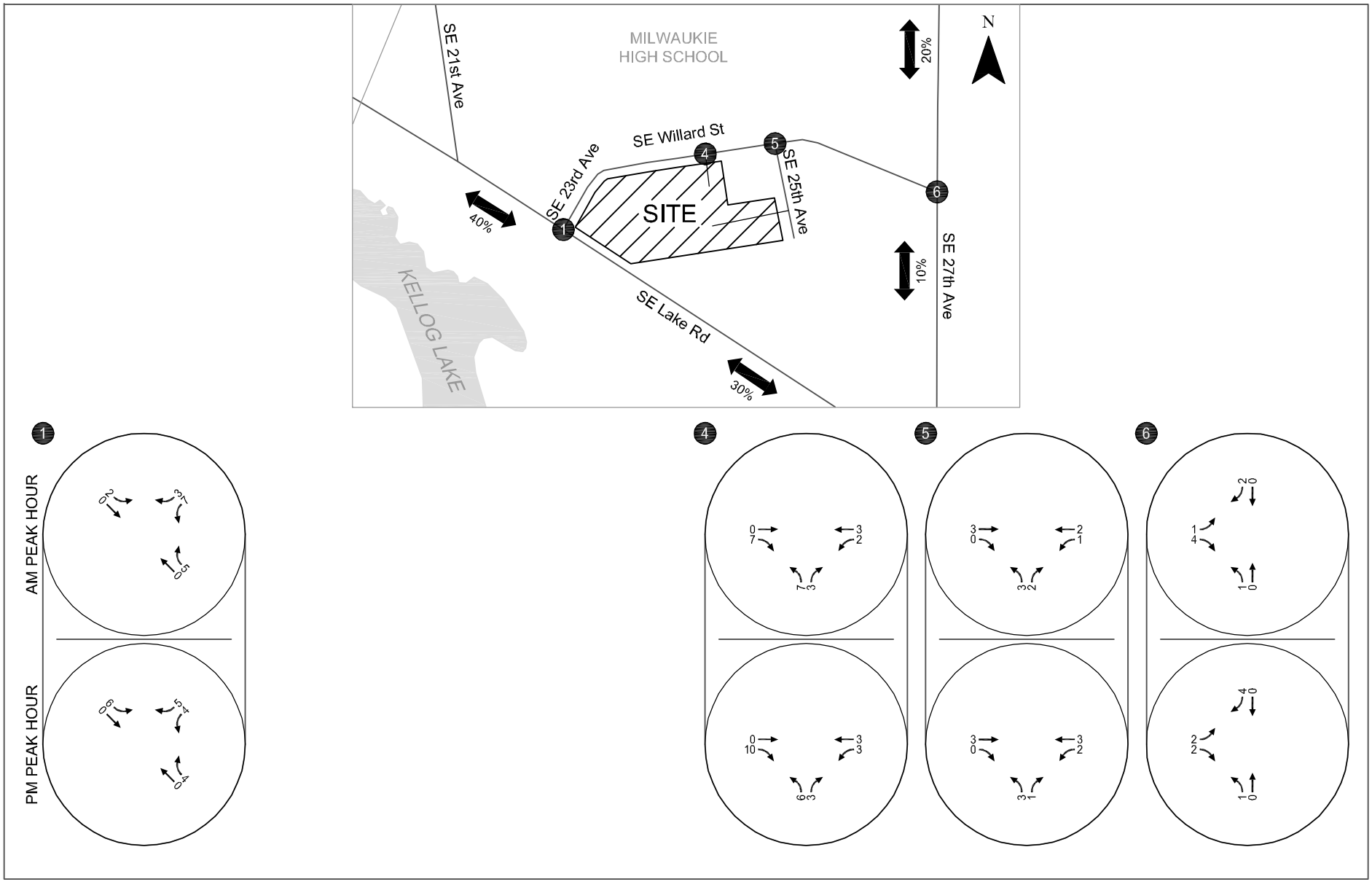
The year 2019 background traffic volumes for the weekday AM and PM peak hours (shown in Figure 5) were combined with the re-routed driveway volumes (shown in Figure 7) and the site-generated traffic (shown in Figure 8) to arrive at the total traffic volumes that are shown in Figure 9.

Figure 9 and Table 7 summarize the forecast 2019 total traffic conditions for the study intersections during the weekday AM and PM peak hours. As shown, all study intersections and site driveways are forecast to operate acceptably. As such, no capacity-based mitigation measures are needed to support site redevelopment. *Appendix "F" contains the 2019 total traffic conditions operational worksheets.*

Table 7 – 2019 Total Traffic Conditions

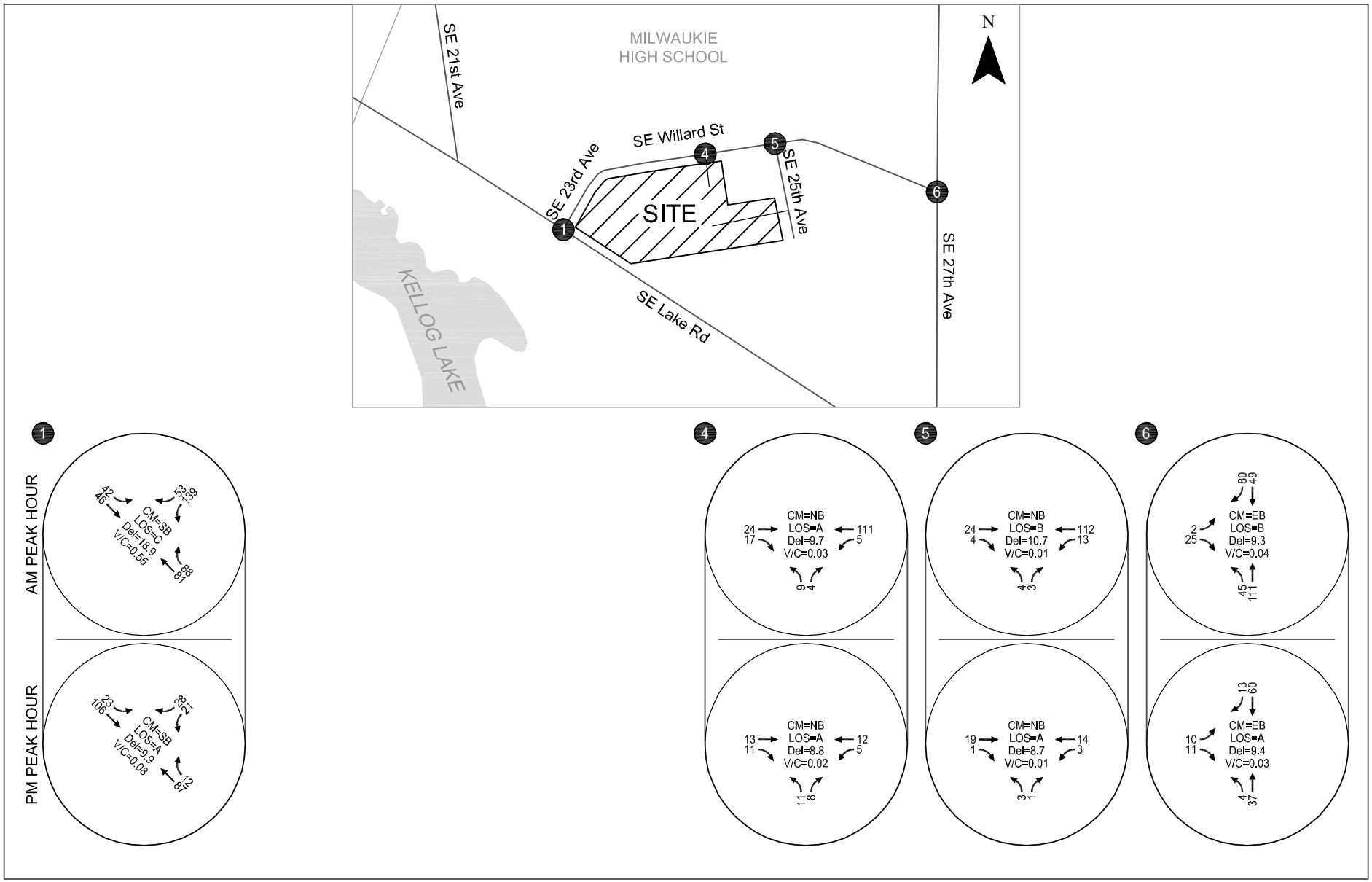
Intersection	Minimum Acceptable Measure of Effectiveness[1]	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS	V/C	LOS	V/C
Unsignalized Intersections[2]					
SE Lake Road/SE 23rd Avenue	LOS D	C	0.55	A	0.08
SE Willard Street/Proposed Site Driveway	LOS D	A	0.03	A	0.02
SE Willard Street/SE 25th Avenue	LOS D	B	0.01	A	0.01
SE Willard Street/SE 27th Avenue	LOS D	A	0.04	A	0.03

[1] Milwaukie Municipal Code, Section 19.1407.4(A).
[2] LOS and V/C for unsignalized intersections reported for the highest delay or critical movement.



Trip Distribution & Assignment
Weekday AM & PM Peak Hour Traffic Conditions
Milwaukie, Oregon

Figure **8**



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2019 Total Weekday AM & PM Peak Hour Traffic Conditions Milwaukie, Oregon

Figure 9

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Site Driveway Location Assessment

The existing NHS campus has three site driveways on SE Willard Street. As previously described, all three of these SE Willard Street driveways are proposed to be closed and replaced with a single site driveway that would be located at the easternmost edge of the SE Willard Street property frontage. This proposed location would be located approximately 100 feet west of the SE Willard Street/SE 25th Avenue intersection and 400 feet east of the SE Lake Road/SW 23rd Avenue intersection. This driveway location meets the City of Milwaukie's accessway location spacing requirements as outlined in Section 5.0082 in Milwaukie's Public Works Standards.

In addition to the SE Willard Street driveway, a second site driveway is proposed off of SE 25th Avenue. This driveway would be located approximately 175 feet south of the SE Willard Street/SE 25th Avenue intersection.

Preliminary Driveway Sight Distance Assessments

Intersection sight distance measurements were made at the proposed SE Willard Street driveway. Using field measurements, it was preliminarily determined that there is approximately 250 feet of intersection sight distance when looking east along SE Willard Street and approximately 300 feet of intersection sight distance when looking west along SE Willard Street. These distances are sufficient to meet the 225-foot (left-turn from stop) and 195-foot (right-turn from stop) intersection sight distance requirements for a 20 mph roadway as outlined in the American Association of State Highway Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*.

Parking Analysis

Weekday Parking Needs Assessment

The proposed 50-space parking lot will be shared by NHA office staff, residents of the 28 affordable housing apartments, and temporary occupants of the Annie Ross House. In addition to the proposed off-street parking lot, there are 19 on-street parking spaces located along the south side of SE 23rd Avenue/SE Willard Street between SE Lake Road and SE 25th Avenue that are typically utilized by NHA during a normal weekday. To gauge the adequacy of this total parking supply, a weekday estimate of parking needs was prepared for the site as outlined in the following sections.

Based on conversations with NHS staff, guests at the existing Annie Ross House typically only bring a vehicle 30-40 percent of the time. Assuming a similar rate of vehicle ownership, the expanded Annie Ross House is anticipated to generate a weekday daily parking demand of 3 spaces. For the proposed affordable housing units, studies at other affordable housing facilities in the Metro area[2] have found

[2] The Town Center Station affordable housing apartment complex in Happy Valley and the City Center affordable apartment complex in Hillsboro were found to have an average weekday parking demand of 0.47 spaces per unit.

average weekday parking demands to be significantly less than one space per unit. Based on an assessment of historical and anticipated use of the affordable housing apartments, NHA staff is anticipating weekday parking demand of approximately 0.70 spaces per unit. As such, it is assumed that the 28 apartments will generate a weekday daily parking demand of 20 spaces. All combined, the housing units are assumed to need approximately 23 parking spaces during a typical weekday.

Based on conversations with NHA staff, approximately 15 percent of their existing staff regularly commute via transit, cycling and/or walking. With the nearby MAX Orange Line now open, NHA anticipates this number could go up to approximately 25 percent in the foreseeable future. With an anticipated maximum employment figure of approximately 50 staff, the office-related parking demand is estimated to be approximately 38 spaces assuming 75 percent of staff commute via automobile.

Combining the estimated 23-space housing-related demand and the 38-space office-related parking demand results in a total weekday demand of 61 parking spaces. The proposed 50-stall parking lot and the 19 on-street spaces along SE Willard Avenue provide sufficient parking to accommodate typical NHA-related weekday needs based on the analyses conducted as part of this report.

Transportation Demand Management Measures

NHA is committed to encouraging the use of alternative forms of transportation by their employees and visitors. Programs and incentives that are already in place and are envisioned to continue with the proposed campus redevelopment include:

- Transit Incentive Plan: under this plan, NHA employees are reimbursed for expenses associated with using Mass Transit for commuting to NHA's office.
- Full reimbursement of transit costs for employees when public transportation is used to travel to off-site meetings.
- Monthly prize drawing for those eligible employees who turn in their alternative commute tracking log.
- A secure, sheltered bicycle parking area is provided for all NHA employees who bike to work. Upon campus redevelopment, additional secure bicycle parking areas will be included for use by NHA employees, visitors, and future residents.

TRANSPORTATION IMPACT FINDINGS AND RECOMMENDATIONS

Based on the results of this transportation impact analysis, the proposed NHA campus redevelopment project can be developed while maintaining acceptable levels of service at the study intersections. The findings and recommendations of this analysis are summarized below.

Existing Conditions

- All study intersections currently operate at acceptable levels of service during the weekday AM and PM peak hours.

Year 2017 Background Conditions

- With the assumed local and regional traffic growth, all study intersections are forecast to continue to operate acceptably.

Proposed Development Plan

- The proposed campus redevelopment is estimated to generate up to 25 additional weekday AM peak hour trips and 28 additional weekday PM peak hour trips.

Year 2019 Total Traffic Conditions

- With the campus redevelopment, all study intersections and site driveways are forecast to continue to operate acceptably.
- The proposed site driveways on SE Willard Street and SE 25th Avenue meet City of Milwaukie's accessway location spacing standards.
- There is sufficient intersection sight distance at the proposed SE Willard Street site driveway.
- The proposed 50-space parking lot and the 19 on-street spaces along SE Willard Avenue provide sufficient parking to accommodate typical NHA-related weekday parking needs based on the analysis provided herein.

RECOMMENDATIONS

The following list summarizes improvements recommended in conjunction with site development:

- Any new landscaping, signage or above-ground utilities along the SE Willard Street and SE 25th Avenue Avenue site frontage should be installed and maintained to ensure they do not interfere with the vision clearance triangles at the two proposed site driveways.

We trust this letter adequately addresses the traffic impacts associated with the proposed NHA campus redevelopment. Please contact us if you have any questions.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Matt Hughart, AICP
Associate Planner

Julia Kuhn, P.E.
Senior Principal Engineer

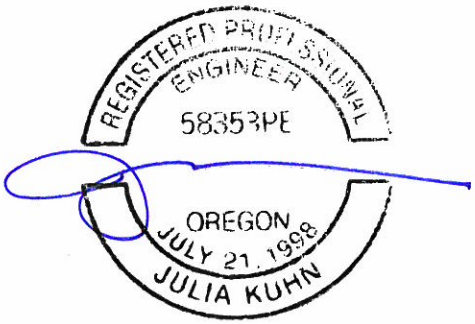

Exhibit D: Bicycle Parking Product Sheets

landscapeforms®

bike racks

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ride

Who says bike racks have to be boring? Landscape Forms offers seven artful solutions for bicycle storage and security with options in function, form and finish.

flo

pi

Landscape Forms takes bike racks seriously. We collaborate with landscape architects and designers to develop beautiful forms that also provide exceptional function. Pi, designed by landscape architect and cyclist Bob Chipman, is a graceful vertical rack with powdercoat finish on which bikes are hung by their frames. Bola, Flo and Ring, designed by Brian Kane, are fluid forms in handsome stainless steel that store bikes in the horizontal position. Bicilínea and Key, from Santa & Cole, provide robust side-by-side stainless steel storage for multiple cycles and droll, colorful one-on-one accommodation for a single bike. Ride, from the Metro40 Collection designed by BMW Group DesignworksUSA, is an elegant loop that echoes the Metro40 signature ribbon frame. All are made of robust steel, are strong, durable and weather resistant, and meet APBP (Association of Pedestrian and Bicycle Professionals) recommendations.

Our Purpose Is To Enrich Outdoor Spaces

We believe in the power of design and its ability to influence and elevate the quality of public space. High quality products and outstanding customer experience makes us one of the world's premier designers and manufacturers of outdoor commercial furnishings.

Bike Rack Specifications

Bicilinea: Bike racks available in 10' and 20' lengths. 10' accommodates 8 bicycles, and 20' holds 16 bicycles. Stainless steel horizontal tube connects to support posts and curved tubes. Bicilinea must be embedded, and needs some assembly.

Bola® and Ring®: Bike racks made of 1.5" o.d., .120" wall stainless steel tubing, with a #4 satin electropolish finish on bare stainless steel. Ring and Bola are also available in powdercoated steel. Both Ring and Bola must be embedded. Ring and Bola can secure two bicycles parked parallel to the rack. The bicycles can be headed in opposite directions, or in the same direction. The rack provides two- point contact to prevent the bicycle from tipping over. A standard D-shaped bike lock can secure both a wheel and the frame.

Flo: Bike rack is made of 1.5" o.d., .120" wall stainless steel tubing, with a #4 satin electropolish finish on bare stainless steel. Flo is also available in powdercoated steel. Nylon glides cushion the two intermediate loops. Flo may be surface mounted or embedded. Flo can secure three bicycles parked parallel to the rack. The bicycles must alternate directions, so access is required from both ends. If access is limited to one direction, the capacity is reduced to two bicycles. The rack provides two-point contact to prevent the bicycles from tipping over. A standard D-shaped bike lock can secure both a wheel and the frame.

Key: Bike rack is made of red or grey polyurethane plastic molded over galvanized finish on internal steel tubing. Aluminum base comes standard in silver powdercoat. Key must be embedded, and ships fully assembled. Supports bike upright by its frame in two places, and holds two bicycles. Standard D-shaped bike lock can be placed to secure both a wheel and the frame.

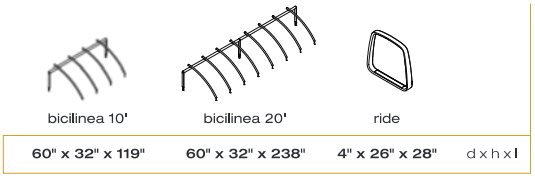
Pi™ Rack: Horizontal bar and legs are 2" o.d., .120" wall tubular steel, powdercoated with Pangard II, a polyester powdercoat. Surface mount plate is 5" deep x 10" wide. Pi Rack can secure two bicycles.

Ride™: Ride can be surface mount or embedded, and ships fully assembled. Must be spaced 30' apart, and 24' from wall. Provides bicycle support with capability for attachment at two points and holds two bicycles. Cover plate over bike rack base provides seamless appearance. Aluminum casting finished with Pangard II® powdercoat, offered in selection of colors.

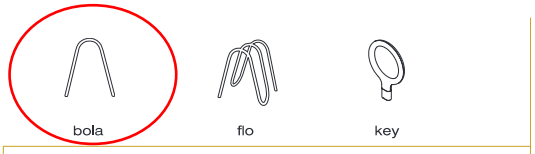
All Landscape Forms bike racks meet guidelines established by the Association of Pedestrian and Bicycle Professionals.

Finishes

All metal parts are finished with Landscape Forms' proprietary Pangard II® polyester powdercoat, a hard yet flexible finish that resists rusting, chipping, peeling and fading. Call for standard color chart.



60" x 32" x 119"	60" x 32" x 238"	4" x 26" x 28"	d x h x l



1.42" x 27.42" x 32"	1.5" x 25" x 27"	28" x 26" x 32"	d x w x h

5" x 21.5" x 43"	1.5" x 25" x 27"	d x w x h

To Specify
Bicilinea: Specify collection and product name.
Bola and Ring: Select bike rack style. Specify powdercoat color or stainless steel.
Flo: Specify powdercoat color or stainless steel.
Key: Specify grey or red.
Pi and Ride: Select surface mount or embedded style. Specify powdercoat color.

landscapeforms.com
Visit our website for product details, pricing, color charts, technical sheets, sales office locations. Download JPG images, brochure PDF, CAD details, CSI specifications, and assembly instructions.

SANTA & COLE®

Bicilinea and Key are Santa & Cole products.
Specifications are subject to change without notice.
Bola, Flo and Ring are designed by Brian Kane, IDSA.
Pi is designed by Robert Chipman, ASLA.
Ride is designed by BMW Group DesignWorksUSA.
Protected by U.S. Patend Nos – Pi: D374,849. Flo: D529,433
Landscape Forms supports the LAF at the Second Century level.

Metal is the world's most recycled material and is fully recyclable. Consult our website for recycled content for this product. Powdercoat finish on metal parts contains no heavy metals, is HAPS-free and has extremely low VOCs.

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Exhibit E

Preliminary

Stormwater Drainage Report

NHA Campus Redevelopment

Prepared for: MWA Architects
Project Engineer: Joshua Lighthipe, PE

February 2016 | KPFF Project #315048

kpff

KPFF'S COMMITMENT TO SUSTAINABILITY

As a member of the US Green Building Council, a sustaining member of Oregon Natural Step, and a member of the Sustainable Products Purchasers Coalition, KPFF is committed to the practice of sustainable design and the use of sustainable materials in our work.

When hardcopy reports are provided by KPFF, they are prepared using recycled and recyclable materials, reflecting KPFF's commitment to using sustainable practices and methods in all of our products.

Designer's Certification and Statement

"I hereby certify that this Stormwater Management Report for the NHA Campus Redevelopment project has been prepared by me or under my supervision and meets minimum standards of the City of Milwaukie 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."

Joshua A. Lighthipe, PE

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Table of Contents

Tables and Figures

Appendices

*Will be included in final storm report

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Project Overview and Description

Existing Conditions

On-site

The project site consists of approximately 1.7 acres of land in the City of Milwaukie, Oregon. See Figure 1 below for the Vicinity Map and Appendix 5 for the Existing Conditions plan sheet.

In the Lake Road right-of-way, along the southwestern edge of the site, there is an 18-inch storm-only sewer, a 12-inch sanitary sewer and an 8-inch public water main, as well as other franchised utilities.

Figure 1: Vicinity Map

Public Right-of-Way

The site has frontage along four public streets: SE Willard Street, SE 23rd Avenue, SE 25th Avenue and Lake Road. Public improvements include street widening along Lake Road and new frontage sidewalks along each frontage.

Proposed Conditions

On-site

The project will construct three multi-family residential buildings, a shelter and an office building for Northwest Housing Authority (NHA) administrative use. Additionally, the development will include an internal courtyard plaza area and surface parking lot.

The grades for the majority of the site are level, but the site drops off steeply by about 12-feet at the western property. Stormwater will be routed to the west to mimic existing conditions and to facilitate gravity drainage to the new stormwater treatment and detention facilities.

All on-site work will require a building permit from the City of Milwaukie. Also, since the total disturbed area will be greater than one acre, a DEQ 1200c permit will be required.

Total impervious areas for the existing and post-construction on-site areas are shown below in Table 1.

Table 1: On-site Pre- and Post-Development Areas

	Impervious Surface Area (sf)	Impervious Roof Area (sf)	Total Impervious Area (sf)	Pervious Area (sf)	Total Site Area (sf)
Existing				73,537	73,537
Post-Development	23,498	23,512	47,010	26,527	73,537

Public Right-of-Way

The existing frontages on SE Willard Street, SE 23rd Avenue and SE 25rd Avenue meet the sidewalk corridor widths as required by the City; however, the frontage on Lake Road must be reconfigured to include a street widening and a property dedication. All frontages except SE 25th Avenue will require new sidewalks to be constructed and new street trees. SE 25th Avenue will only require installation of a new driveway that partially overlaps an existing driveway to be removed.

Additionally, to accommodate the street widening impacts on Lake Road, a green street planter will be installed in the landscape strip to treat public stormwater.

Methodology

At a minimum, the City of Milwaukie requires that the post-development runoff rate does not exceed the pre-development runoff rate, and that all stormwater quality facilities meet design requirements of the current City of Portland's Stormwater Management Manual (SWMM). Therefore, the initial design investigations followed those required by the SWMM, which were to determine if it was possible to fully infiltrate on-site runoff through vegetated surface facilities or via sub-surface infiltration facilities, such as drywells or soakage trenches.

A geotechnical study and infiltration tests were performed at the project site by Carlson Geotechnical. Three infiltration tests were performed on-site at 4, 4.5 and 20-feet below grade, which yielded rates

ranging from 0.01 to 3/8-inches per hour. The soils at the various locations and depth consisted of clayey sand, sandy lean clay and clayey sand. See Appendix 2 for the complete geotechnical report.

These results are extremely poor, making it impractical to infiltrate on-site as a method for managing stormwater runoff. This means that the site is not well suited to meeting the full infiltration requirements of Hierarchy Category 1 or 2 of the City of Portland's Stormwater Management Manual (SWMM). There is an available 18-inch storm-only sewer in Lake Road. Therefore, Hierarchy Category 3 was selected as the stormwater disposal method, which will be to discharge off-site to the public storm main.

The City of Milwaukie Public Works Design Standards, Section 2.0013.A Minimum Design Criteria for Storm Detention Facilities states the requirements for detention facilities are to provide storage for up to the 25-year event, and allow post-development runoff discharge rates of less than or equal to the pre-developed (Lewis & Clark era) rates for the 2-, 5-, 10- and 25-year events. Also, the stormwater quality facilities must be designed to meet the most current version of the City of Portland Stormwater Management Manual.

The stormwater management plan includes vegetated flow-through planters and basins that allow stormwater from all the proposed impervious surfaces (roofs, sidewalks and parking area pavements) to filter vertically through the imported stormwater topsoil to a sub-drainage layer with underdrain, which drains to an underground detention gallery. On the downstream side of the detention gallery there is a flow-control manhole to slowly release stormwater at a rate less than or equal to pre-developed conditions.

The proposed site (on-site & off-site) has been divided into four main basin areas (A, B, C & D), based on the stormwater facility or discharge point to which they drain. The remaining impervious areas that were unable to practically drain to a storm water facility are lumped into an area called Area X. See Appendix 1: Exhibit A.

- **Basin A (On-site)** includes the northern portion of the site, including two building roofs, internal courtyards and the northern half of the parking lot at the east edge of the site. Surface runoff from the parking lot will be collected by a trapped catch basin for pre-treatment. All of the runoff from this basin daylights into a flow-through planter (FTP-A) on the northwest and west edges of the site at the bottom of the hill. This FTP will provide treatment for the runoff, before it is collected via an underdrain and routed to the underground detention gallery (DG). The detention gallery will reside beneath the soil layer of FTP-A and next to the foundation of the office building and will consist of plastic chambers that have 95%+ void space, such as EcoRain® or R-Tank™. They will temporarily provide storage volume for excess stormwater that is restricted from release off-site by the flow-control manhole connected to the detention gallery. The flow-control manhole will discharge to a storm lateral that will connect to the 18-inch storm main in Lake Road.

- **Basin B (On-site)** is the southern portion of the internal courtyard area and three buildings, which will be collected and conveyed to the southwest where it daylights to FTP-B. FTB-B will contain an overflow inlet and underdrain pipes, which will drain to the shared detention gallery (DG).
- **Basin C (On-site)** includes the east portion of the new parking lot. Surface runoff will be collected by a trapped catch basin before discharging into FTP-C, which will provide treatment for the runoff. The flow-through planter will include an overflow inlet and underdrain system, which will be piped to the underground detention gallery (DG).

- **Basin D (Off-site)** includes most of the improved areas along SE Lake Road, which will include widening of the street by roughly 8-feet and installing a 6-foot sidewalk behind a 5-foot landscape strip. The runoff from this basin will drain to a green street storm planter facility built into the landscape strip near the intersection with SE 23rd Avenue. The facility will include periodic check dams, which will provide temporary detention to allow some water to infiltrate down into the ground. Heavy rain events will over top the check dams and ultimately overflow back out into the street and into the street gutter where it will be collected at a relocated public catch basin at the corner of Lake Road and SE 23rd Avenue. This facility will be sized to handle all the stormwater draining to it, which includes runoff from nearly 500 feet of upstream roadway. This "credit" area, managing so much existing impervious area, will more than offset the unmanaged Area X.

- **Area X (On-site& Off-site)** is composed of the remaining small impervious areas around the site that are not directly connected to any of the other basins. Most are relatively small impervious areas, such as stairs that cannot be practically managed by a stormwater facility and drain directly into the right-of-way. Also, this Area X includes portions of the redeveloped right-of-way, mostly SE 23rd, SE Willard and SE 25th, which do not drain to stormwater facilities. As discussed with Chrissy Dawson from the City of Milwaukie Engineering Department, as long as this project manages a total amount of existing and new impervious area that is greater than the total new impervious area the project storm management strategy is considered to have met the intent of the stormwater management requirements.

Analysis

Storm Facility Sizing

On-site

The site grading and building design constraints controlled, to some extent, where things drained and where stormwater facilities could be located. This led to breaking the on-site area into three main basins. The Presumptive Approach Calculator (PAC) was used to size flow through planters/basins for pollution reduction. See Appendix 4A: Water Quality (PAC) Calculations and Table 2 for a summary of drainage and facility areas.

These stormwater planters are too small to meet the flow-control requirements by themselves. Therefore, a detention facility was necessary to meet the flow-control requirement.

The detention gallery and flow-control manhole (FC) will be sized to reduce the post-developed 2-, 5-, 10- and 25-year runoff rate to pre-developed levels for the three basins (A, B and C). Calculations were performed using the Santa Barbara Urban Hydrograph (SBUH) method in Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016. The CN number (73) used to calculate the pre-developed rate was based on hydrologic soil group C and a ground cover of woods in fair condition. The detention system reduces the post-developed peak runoff rates to or below pre-developed levels, as required. See Appendix 4B: Flow Control Calculations and Table 3 for a summary of these results.

Table 2: On-site Catchment and Facility Table

Basin	Ownership	Storm Facility	Source (Roof, Road or Other)	Total Imp. Area (sf)	New Imp. Area (Non-Roof) (sf)	New Imp. Area (Roof) (sf)	Facility Area (sf)	Facility Sizing Factor (Facility Area/ Total Imp. Area)
Basin A	Private	FTP-A	Building Roof/Plaza/ Sidewalks	22,984	13,377	9,607	563	2.4%
Basin B	Private	FTB-B	Building Roof/Plaza/ Sidewalks	15,171	1,266	13,905	327	2.2%
Basin C	Private	FTP-C	Parking/ Sidewalks	8,855	8,855	-	425	4.8%
Basin D	Public	FTP-D	Street & Sidewalk	9,824	1,690	-	374	3.8%
Area X	Private	N/A	Sidewalk/ Stairs	7,341	7,341	-	N/A	N/A
			Totals:	**64,175**	**32,529**	**23,512**		

Total Extra Managed Area from Basin D: **9,824 - 1,690 = 8,134 sf**
Total Unmanaged Area from Area X: **7,341 sf**
Total Extra Imp. Area Managed (Beyond Required): **793 sf**

Table 3: On-site Pre vs. Post Construction Flow Rates

Ownership	Catchment/ Facility ID	Peak Flow Rate (cfs)								Time of Concentration (minutes)	
		2-Year		5-Year		10-Year		25-Year			
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Private	Basin A, B, C	**0.104**	**0.102**	**0.221**	**0.125**	**0.356**	**0.257**	**0.505**	**0.484**	**5**	**5**

Conveyance

Stormwater conveyance pipes are sized to carry the 10-year storm event using the rational method. These calculations will be included in the final version of the report.

Engineering Conclusions

The stormwater system has been designed in accordance with City of Milwaukie Stormwater detention requirements and the 2014 City of Portland Stormwater Management Manual. The proposed stormwater facilities will meet the pollution reduction and flow control requirements for the new impervious areas. The facilities and components have enough capacity to handle the required storm events. Therefore, this preliminary stormwater system design meets the City of Milwaukie requirements and should be approved as designed.

Appendix 1

Exhibits

A. Stormwater Basin Map

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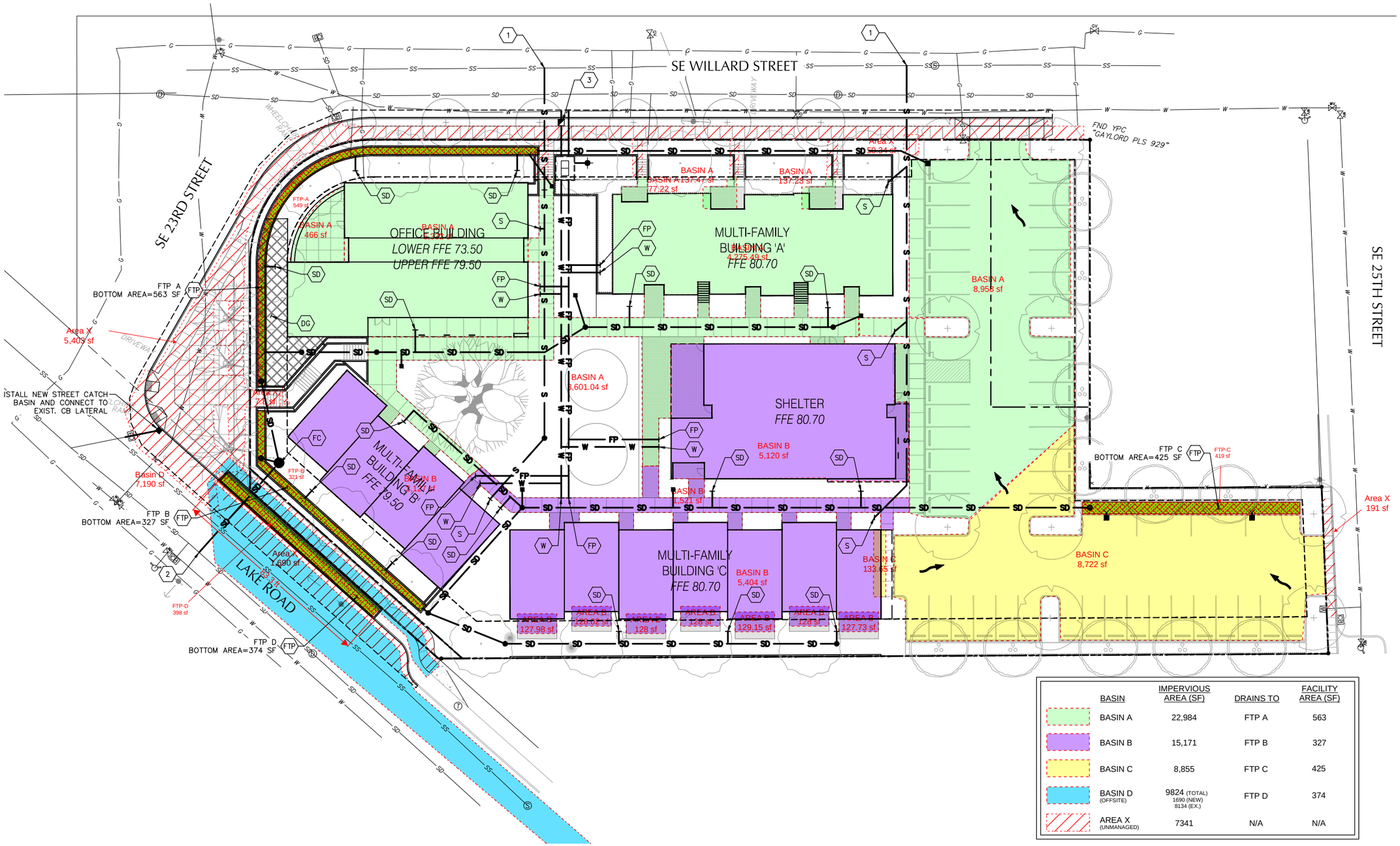


BASIN	IMPERVIOUS AREA (SF)	DRAINS TO	FACILITY AREA (SF)
BASIN A	22,984	FTP A	563
BASIN B	15,171	FTP B	327
BASIN C	8,855	FTP C	425
BASIN D (OFFSITE)	9824 (TOTAL) 1690 (NEW) 8134 (EX.)	FTP D	374
AREA X (UNMANAGED)	7341	N/A	N/A

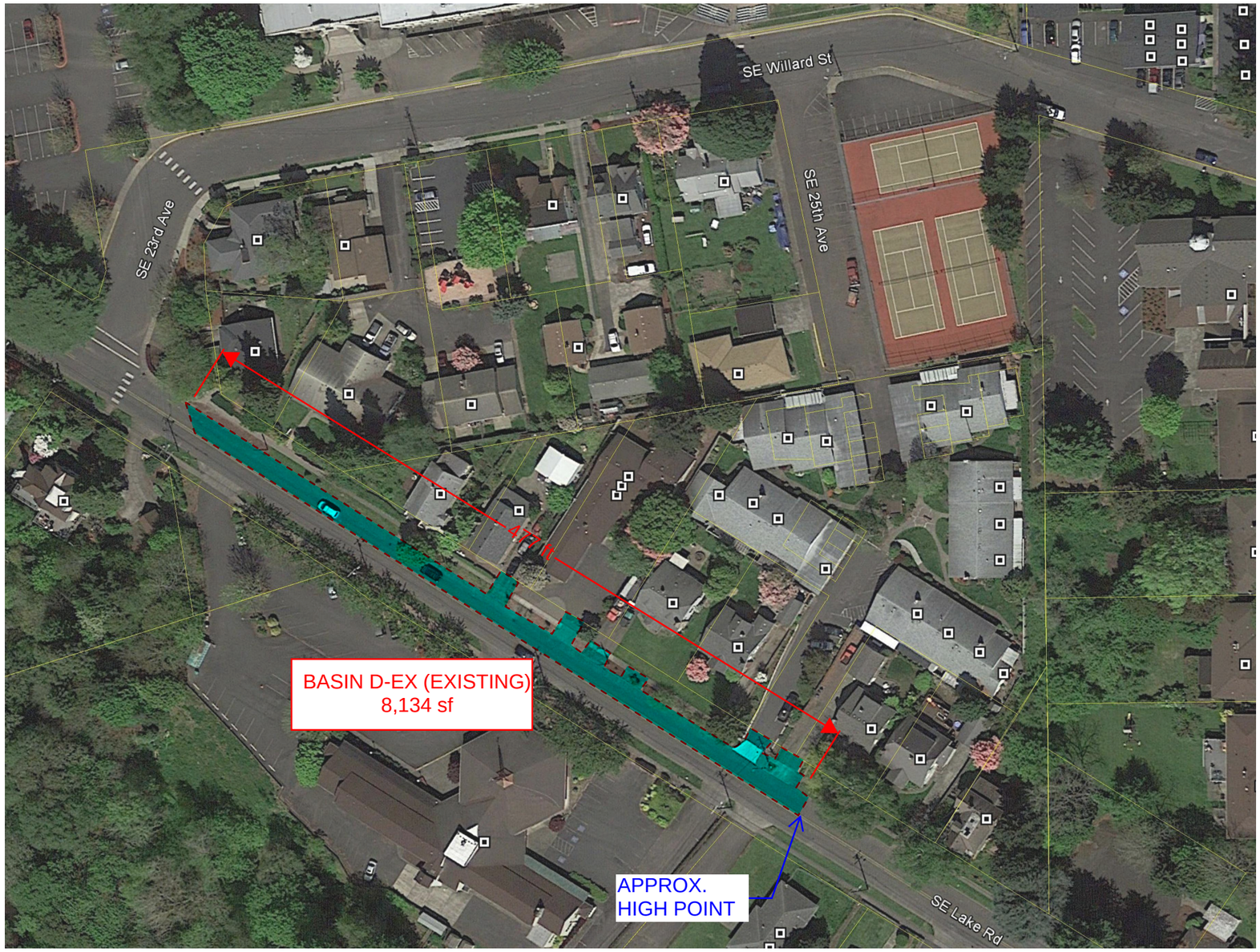
SCALE: 1" = 40'
0 40'

kpff

STORMWATER BASIN MAP (POST-DEVELOPED) FOR NHA CAMPUS REDEVELOPMENT

EXH-A

2/5/2016



SCALE: 1" = 80'
0 80'

kpff

SE LAKE ROAD - UPSTREAM BASIN MAP

FOR NHA CAMPUS REDEVELOPMENT

EXH-B

2/5/2016

Appendix 2

Geotechnical Investigation Report

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Carlson Geotechnical

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Report of
Geotechnical Investigation
Northwest Housing Alternatives Campus Redevelopment
2316 SE Willard Street
Milwaukie, Oregon

CGT Project Number G1504158

Prepared for

Mr. Stephen McMurtrey
Northwest Housing Alternatives
2316 SE Willard Street
Milwaukie, Oregon 97222

May 12, 2015

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May 12, 2015

Mr. Stephen McMurtrey
Northwest Housing Alternatives
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Report of
Geotechnical Investigation
Northwest Housing Alternatives Campus Redevelopment
2316 SE Willard Street
Milwaukie, Oregon

CGT Project Number G1504158

Mr. McMurtrey:

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our geotechnical investigation for the proposed Northwest Housing Alternatives Campus Redevelopment project. The site is located at 2316 SE Willard Street in Milwaukie, Oregon. We performed our work in general accordance with CGT Proposal GP6625, dated March 24, 2015. Written authorization for our services was provided on April 7, 2015.

We appreciate the opportunity to work with you on this project. Please contact us at 503.601.8250 if you have any questions regarding this report.

Respectfully Submitted,
CARLSON GEOTECHNICAL

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TABLE OF CONTENTS

ATTACHMENTS

1.0 INTRODUCTION

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our geotechnical investigation for the proposed Northwest Housing Alternatives Campus Redevelopment project. The site is located at 2316 SE Willard Street in Milwaukie, Oregon, as shown on the attached Figure 1.

1.1 Project Information

CGT developed an understanding of the proposed project based on correspondence with you and the provided "Infiltration Test Request Exhibit (EXH-A)", prepared by KPFF Consulting Engineers (KPFF), dated March 17, 2015. Based on our review, we understand the project will include:

- Construction of:
  - A 3-story office building on the northwest portion of the site.
  - Two, 3-story apartment buildings.
  - A 1-story community building.
  - Although no architectural plans have been provided, we have assumed each structure will be wood-framed, and not include any below-grade levels. We anticipate the living space of the structures will incorporate post-and-beam floors (crawlspaces) or slab-on-grade floors.
- Construction of new paved parking areas between the new buildings.
- Construction of infiltration swales and a drywell for disposal of stormwater collected from new roofs and hardscaped areas. The referenced KPFF plan indicates three locations and depths for proposed infiltration tests.
- Although no grading plans have been provided, we anticipate permanent grade changes at the site will be relatively minimal (i.e., less than 3 feet or cut or fill).

1.2 Scope of Services

Our scope of work included the following:

- Contact the Oregon Utilities Notification Center and subcontract a private utility locating service to mark the locations of public and private utilities within a 20-foot radius of our explorations at the site.
- Explore subsurface conditions at the site by observing the advancement of three drilled borings to depths of up to about 51½ feet below ground surface (bgs) and advancing six hand auger borings and four dynamic cone penetrometer (DCP) tests to depths of up to about 8½ feet bgs.
- Classify the materials encountered in the explorations in general accordance with American Society for Testing and Materials (ASTM) D2488 (Visual-Manual Procedure).
- Perform three infiltration tests (in two the hand auger borings and in one of the drilled borings) in general accordance with the Encased Falling Head test method described in Appendix E of the Stormwater Standards, Clackamas County Service District No. 1, dated July 1, 2013. Infiltration test results are presented in Appendix A of this report.
- Collect representative, disturbed samples of the soils encountered within the explorations in order to perform laboratory testing and to confirm our field classifications.
- Perform laboratory testing on selected samples collected during our subsurface exploration.
- Provide a technical narrative describing surface and subsurface deposits, and local geology of the site, based on the results of our explorations and published geologic mapping.

- Provide a site vicinity map and a site plan showing the locations of the explorations relative to existing site features.
- Provide logs of the explorations, including observed groundwater levels and results of laboratory testing on selected soil samples.
- Provide geotechnical recommendations for site preparation and earthwork.
- Provide geotechnical engineering recommendations for design and construction of retaining walls and flexible pavements.
- Perform a quantitative liquefaction analyses to estimate liquefaction-induced settlements at the site for design-level earthquake(s) using the industry standard "simplified procedure". Results of our liquefaction analyses are presented in Appendix B.
- Provide preliminary foundation recommendations for mitigating excessive liquefaction-induced settlement.
- Provide recommendations for the Seismic Site Class, mapped maximum considered earthquake spectral response accelerations, and site seismic coefficients.
- Provide a qualitative evaluation of seismic hazards at the site, including earthquake-induced landsliding and surface rupture due to faulting or lateral spread.
- Provide this written report summarizing the results of our geotechnical investigation and recommendations for the project.

2.0 SITE DESCRIPTION

2.1 Site Geology

Available geologic mapping[1,2] indicates the site is underlain by approximately 100 feet of Pleistocene catastrophic flood deposits originating from glacial outburst floods of Lake Missoula. The Pleistocene Missoula Lake catastrophic flood deposits were produced by the periodic failure of glacial ice dams, which impounded Lake Missoula between 21,000 and 12,000 years ago. The flood deposits are typically split into three different facies; the coarse-grained facies, the fine-grained facies, and the channel facies, which consists of silts, sands, and gravels deposited within the flood channel. The channel facies deposits are mapped in the vicinity of the site. Pliocene to Holocene undifferentiated sediments underlie the Pleistocene channel facies unit. The sediments are typically fine-grained, massive to finely bedded, and mantle the bedrock in the area. The sediments range in thickness from approximately 15 feet to over 200 feet in the vicinity of the site.

2.2 Site Surface Conditions

The site consists of nine adjacent tax lots totaling approximately 1.6 acres in size. The proposed buildings will be located on the western six tax lots. Development on the eastern tax lots may consist of construction of infiltration facilities. The site is bounded by SE Willard Street to the north and northwest, SE 25th Avenue and offsite residences to the east, offsite residences to the south, and SE Lake Road to the southwest. Eight of the existing tax lots were developed with single-family or multiple-family

[1] Beeson, M.H., and others, 1989. Geologic Map of the Lake Oswego Quadrangle, Clackamas, Multnomah, and Washington Counties, Oregon. Oregon Department of Geology and Mineral Industries. GMS-59.

[2] Ma, Madin, Duplantis, and Williams, 2012, Lidar-based Surficial Geologic Map and Database of the Greater Portland, Oregon, Area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington Oregon Department of Geology and Mineral Industries Open-File Report O-12-02.

structures. The western end of the site was elevated approximately 8 feet above SE Lake Road and SE Willard Street. The base of the 3H:1V (Horizontal to Vertical) slope between these streets and the site was supported by a 3-foot-high retaining wall. The remainder of the site was relatively level, with less than about 3 feet of total vertical relief. Vegetation on the site consisted of grasses and scattered coniferous and deciduous trees.

3.0 FIELD INVESTIGATION

3.1 Drilled Borings

CGT observed the advancement of three drilled borings (B-1 through B-3) at the site on April 23 and 24, 2015, to depths ranging from about 20 to 51½ feet bgs. The approximate boring locations are shown on the attached Site Plan, Figure 2. The boring locations shown therein were determined based on measurements from existing site features (property corners, etc.) and should be considered approximate. The borings were conducted using a Deidrich D-50 truck-mounted drill rig provided and operated by our subcontractor, Subsurface Technologies of North Plains, Oregon. Borings B-1 and B-2 were advanced using the hollow stem auger technique to the full depths explored. Boring B-3 was advanced using the mud rotary technique to the full depths explored. Upon completion, the borings were backfilled with granular bentonite and the asphalt surfaces were patched with cold-patch asphalt (at borings B-1 and B-3).

Standard Penetration Tests (SPTs) were conducted within the borings using a standard split-spoon sampler in general accordance with ASTM D1586. Since the primary purpose of boring B-1 was to identify a potential groundwater level, only one SPT sample was collected at the bottom of this boring (at about 25 feet bgs). In boring B-2, SPTs were conducted at 5-foot intervals to 15 feet bgs, and then at a depth of 18½ feet (immediately above the infiltration test depth). In boring B-3, SPTs were conducted at 2½-foot intervals to depths of 15 feet bgs, and then at 5-foot intervals to the termination depth of 51½ feet bgs. The drill rig was equipped with a 140-pound, automatic hammer, which was used to conduct the SPTs. The SPT is performed by driving a 2-inch, outside-diameter, split-spoon sampler into the undisturbed formation located at the bottom of the advanced boring with repeated blows of a 140-pound, automatic hammer falling a vertical distance of 30 inches. The number of blows (N-Value) required to drive the sampler the last 12 inches of an 18-inch sample interval is used to characterize the soil consistency or relative density. It should be noted that automatic hammers generally produce lower SPT values than those obtained using a traditional safety hammer (cathead). Studies have generally indicated that penetration resistances may vary by a factor of 0.8 to 1.4 between the two methods[3]. According to the driller, the automatic hammer on the Deidrich D-50 drill rig had a hammer efficiency (ETR_{hammer}) of 79.3 percent, resulting in an efficiency factor of about 1.32. We have considered this in our description of soil relative density and in our evaluation of soil strength and compressibility. Field SPT "raw" values that have not been adjusted for hammer efficiency, as well as N_{60} values that have been adjusted for hammer efficiency are listed on the attached boring logs.

Soil samples were obtained at the indicated intervals during advancement of the drilled borings using the referenced split-spoon sampler. A qualified member of CGT collected the samples and logged the soils in general accordance with the Unified Soil Classification System (USCS). An explanation of the USCS is

[3] Youd, et al. 2002. Liquefaction Resistance of Soils: Summary Report from the NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils. Journal of Geotechnical and Environmental Engineering.

provided on the attached Soil Classification Criteria and Terminology, Figure 3. All SPT and grab samples collected at the site were stored in sealed plastic bags upon completion of our field examination and were transported to our laboratory for further examination and testing. Our geotechnical staff visually examined all samples returned to our laboratory in order to refine the initial field classifications.

3.2 Hand Auger Borings

CGT advanced six hand auger borings (HA-1 through HA-6) at the site on April 23, 2015. HA-5 and HA-6 were advanced to depths up to about 4 feet bgs for the purpose of conducting infiltration tests using a manual 8-inch diameter hand auger. HA-1 through HA-4 were advanced to depths up to about 8 feet bgs using a manual 3-inch diameter hand auger. The approximate locations of the hand auger borings are shown on the attached Site Plan, Figure 2. The hand auger borings were located in the field relative to existing site features shown on the Site Plan and should be considered approximate. The borings were loosely backfilled with cuttings upon completion of testing.

3.3 Wildcat Dynamic Cone Penetrometer Tests

In conjunction with hand auger borings HA-1 through HA-4, CGT performed dynamic cone penetrometer tests to depths of up to about 8½ feet bgs. These tests were performed using a Wildcat Dynamic Cone Penetrometer (WDCP) provided and operated by CGT. The WDCP test consists of driving 1.1-inch diameter, steel rods with a 1.4-inch diameter, cone tip into the ground using a 35-pound drop hammer with a 15-inch, free-fall height. The number of blows required to drive the steel rods is recorded for each 10 centimeters (3.94 inches) of penetration. The blow count for each interval is then converted to the corresponding Standard Penetration Test (SPT) "N60" values, which are used to estimate the soil relative consistency for cohesive soils, or relative density for non-cohesive soils.

3.4 Infiltration Tests

CGT performed infiltration tests IT-1, IT-2, and IT-3 at the site on April 23, 2015, in HA-5, HA-6, and B-2, respectively. The results of the infiltration tests are presented in Appendix A.

3.5 Soil Classification & Sampling

A member of CGT's staff logged the soils observed within the explorations in general accordance with the Unified Soil Classification System (USCS) and collected representative samples of the materials encountered. An explanation of the USCS is presented on the attached Soil Classification Criteria and Terminology, Figure 3. The samples were stored in sealable plastic bags and transported to our laboratory for further examination and testing. Our geotechnical staff visually examined all samples returned to our laboratory in order to refine the field classifications. The logs of the explorations are presented on the attached Exploration Logs, Figures 4 through 12. The surface elevations indicated on the logs were estimated based on the topographic contours (developed by others) shown on the referenced Site Plan. Elevations shown on the logs should be considered approximate.

4.0 LABORATORY TESTING

Laboratory testing was performed on samples collected in the field to refine our initial field classifications and determine in-situ parameters. Laboratory testing included:

- Sixteen moisture content determinations (ASTM D2216).

- Six percentage passing the U.S. Standard No. 200 Sieve tests (ASTM D1140).
- One Atterberg limits (plasticity) tests (ASTM D4318).

Results of the laboratory tests are shown on the attached Exploration Logs, Figures 4 through 12.

5.0 SUBSURFACE CONDITIONS

5.1 Soils

The following paragraphs provide a description of each of the subsurface materials encountered at the site.

Asphaltic Concrete Pavement
Asphaltic concrete (AC) pavement was encountered at the surface of drilled borings B-1 and B-3 and ranged in thickness from about 2 to 4 inches, respectively.

Undocumented Gravel Fill (GW FILL)
Undocumented gravel fill (base rock) was encountered below the asphaltic concrete pavement in drilled borings B-1 and B-3 and extended to depths of about ½ to 1 foot bgs. Undocumented fill refers to materials placed without (available) records of subgrade conditions or evaluation of compaction. The gravel fill was generally medium dense, gray, moist, fine- to coarse-grained, and angular to sub-angular. The gravel fill was relatively well-graded based on visual examination of samples and drill cuttings.

Undocumented Gravelly Silt Fill
Undocumented gravelly silt fill was encountered at the surface in hand auger boring HA-2 (advanced in a landscaped area) and extended to a depth of about 1½ feet bgs, at which point the boring could no longer be advanced due to refusal on gravel. Undocumented fill refers to materials placed without (available) records of subgrade conditions or evaluation of compaction. The gravelly silt fill was generally dark brown, moist, with fine- to coarse-grained, and angular to sub-angular gravel. Frequent fine rootlets (typically less than ¼-inch in diameter) were observed.

Undocumented Silt with Gravel and Debris Fill (ML FILL)
Undocumented silt with gravel and debris fill was encountered below the organic silt topsoil in hand auger boring HA-4 and extended to a depth of about 2 feet bgs, at which point the boring could no longer be advanced due to refusal on gravel/bricks. The silt with gravel and debris fill was generally medium stiff to stiff, brown, moist, with coarse-grained, sub-rounded to rounded gravel. Brick fragments up to about 2 inches in diameter were also observed.

Organic Silt Topsoil (OL)
Organic silt topsoil was encountered below the grass surface of drilled boring B-2 and all hand auger borings, with the exception of HA-2, and typically extended to a depth of about 1 foot bgs. The topsoil was generally soft to medium stiff to stiff, brown, moist, exhibited low plasticity, and contained abundant fine rootlets (typically less than ¼-inch in diameter).

Lean Clay to Fat Clay (CL to CH)

Lean clay to fat clay was encountered below the organic silt topsoil in borings B-3, HA-1, and HA-3, and extended to depths ranging from about 4 to 7½ feet bgs. The lean clay to fat clay was typically medium stiff to stiff, brown, moist, and exhibited medium to high plasticity. It should be noted that a very soft to soft layer of lean clay to fat clay was identified in hand auger boring HA-1, extending to a depth of about 2½ feet bgs.

Sandy Lean Clay (CL)

Sandy lean clay was encountered below the organic silt topsoil in borings B-2 and HA-6 and extended to depths of about 6 feet bgs and 3½ feet bgs (the maximum depth explored in HA-6). Sandy lean clay was encountered below the lean to fat clay in boring HA-3 and extended to a depth of about 6 feet bgs. In boring B-3, sandy lean clay was encountered between 20½ feet and 25½ feet bgs. The sandy lean clay was typically medium stiff to stiff, brown, moist and with fine-grained sand.

Clayey Sand (SC)

Clayey sand was encountered to the maximum depths explored in borings B-1, B-2, and HA-5 (26½, 20, and 4 feet bgs, respectively), and in boring B-3 from 7½ to 20½ feet bgs and from 25½ to 41 feet bgs. The clayey sand was typically loose to medium dense, brown and grey, moist to wet, consisted of fine- to medium-grained sand, and low to medium plasticity fines.

Sandy Silt and Silt with Sand (ML)

Sandy silt was encountered from 41 to 45 feet bgs in boring B-3, and was brown and grey, wet, exhibited low plasticity, and with fine- to medium-grained sand. Silt with sand underlies the sandy silt in boring B-3 and extended to 51½ feet bgs, the maximum depth explored. The silt with sand was blue-grey, wet, exhibited low plasticity, and with fine-grained sand.

5.2 Groundwater

Groundwater was not encountered within the depths explored (about 25 feet bgs) in the hollow stem auger borings (B-1 and B-2) and the hand auger borings (HA-1 through HA-6) on April 23, 2015. Boring B-3 was advanced using the mud rotary drilling technique, which precludes direct observation of groundwater during drilling. However, we inferred a groundwater level of about 26 feet bgs, based on our observation of wet/saturated soil samples below this depth in Boring B-3 on April 24, 2015. To approximate groundwater levels in the area, we researched well logs available at the Oregon Water Resources Department (OWRD)[4] website for wells located within Section 36, Township 1 South, Range 1 East. Our review indicated that groundwater levels ranged from about 15 to 30 feet bgs in the vicinity of the site. It should be noted that groundwater levels vary with local topography. In addition, the groundwater levels reported on the OWRD logs often reflect the purpose of the well, so water well logs may only report deeper, confined groundwater, while geotechnical or environmental borings will often report any groundwater encountered, including shallow, unconfined groundwater. Therefore, the levels reported on the OWRD well logs referenced above are considered generally indicative of local water levels and may not reflect actual groundwater levels at the project site. The depth to groundwater map for the Portland area[5] indicates groundwater is present at about 15 to 20 feet bgs in the vicinity of the site.

[4] Oregon Water Resources Department, 2014. Water well logs obtained from OWRD website http://www.wrd.state.or.us/

[5] Snyder, D.T., 2008, Estimated depth to ground water and configuration of the water table in the Portland, Oregon area: U.S. Geological Survey, Scientific Investigations Report SIR-2008-5059, scale 1:60,000.

We anticipate that groundwater levels will fluctuate due to seasonal and annual variations in precipitation, changes in site utilization, or other factors. Additionally, the native fine-grained soils (CL, ML, SC) are conducive to formation of perched groundwater.

6.0 SEISMIC CONSIDERATIONS

6.1 Seismic Hazards

6.1.1 Liquefaction

The complete results of our liquefaction analyses are presented in the attached Appendix B. As indicated therein, the soils underlying the site are considered susceptible to liquefaction from ground shaking associated with design-level earthquakes recognized by the United States Geological Service (USGS). Based on the two earthquakes modeled, our analyses showed total liquefaction-induced settlements at the site ranging from about 2 to 3½ inches, as presented in the following table.

Table 1 Results of Liquefaction-Induced Settlement Analyses

Modeled Earthquake	Seismic Source	Earthquake Type	M	PGA	Predicted Total Liquefaction Settlement[a]		
					Tokimatsu / Seed Method	Ishihara / Yoshimine Method	Average Settlement from Two Methods
De-Aggregated Seismic Source	1	Interface	M9.0	0.23g	0.58 inches	3.25 inches	1.92 inches
"Aggregated" Seismic Event	2	N/A	M7.27	0.456g	3.12 inches	3.95 inches	3.54 inches

[a] See attached Figures B1 through B4 (Appendix B) for graphical results of the liquefaction analyses.

Mitigation options for liquefaction-induced settlements are presented in Section 7.1 below.

6.1.2 Slope Instability

Due to the relatively minimal planned changes in site grade and relatively gentle topography at the site, the risk of slope instability at the site is considered low.

6.1.3 Surface Rupture

6.1.3.1 Faulting

Although the site is situated in a region of the country with known active faults and historic seismic activity, no known faults exist on or immediately adjacent to the site. Therefore, the risk of surface rupture at the site due to faulting is considered low.

6.1.3.2 Lateral Spread

Surface rupture due to lateral spread can occur on sites underlain by liquefiable soils that are located on or immediately adjacent to slopes steeper than about 3 degrees (20H:1V), and/or adjacent to a free face, such as a stream bank or the shore of an open body of water. During lateral spread, the materials overlying the liquefied soils are subject to lateral movement downslope or toward the free face. A free face (Kellog Lake) is located approximately 500 feet west of the site. Due to the proximity of this adjacent free face, there is a risk of surface rupture from lateral spread at this site if liquefaction of the subsurface

soils were to occur during a seismic event. In order to quantify the risk of lateral spread at this site, an additional subsurface investigation would be required, which is beyond the scope of this assignment.

6.2 Seismic Design

Recognizing the presence of liquefiable soils, the site was initially assigned as Site Class F based on Section 1613.3.2 of the 2012 International Building Code (IBC) and Table 20.3-1 of ASCE 07-10. Designation as Site Class F typically requires a site-specific evaluation of ground response and spectral accelerations. However, ASCE 07-10 includes an exception to this in Section 20.3.1 of that manual. When the sole reason for classifying a site as Site Class F is due to the presence of liquefiable soils and the proposed building(s) have a fundamental period of vibration equal to or less than 0.5 seconds (as anticipated for this project), a site class is permitted to be determined based on standard penetration resistance, undrained shear strength, or shear wave velocity, in accordance with Section 20.3 of that manual. Accordingly, based on review of the N-values from our field exploration, the site was assigned as Site Class D. Earthquake ground motion parameters for the site were obtained based on the United States Geological Survey (USGS) Seismic Design Values for Buildings - Ground Motion Parameter Web Application[6]. The site Latitude 45.44026° North and Longitude 122.63743° West were input as the site location. The following table shows the recommended seismic design parameters for the site.

Table 2 Seismic Ground Motion Values

Parameter		Value
Mapped Acceleration Parameters	Spectral Acceleration, 0.2 second (S_s)	0.981g
	Spectral Acceleration, 1.0 second (S_1)	0.420g
Coefficients (Site Class D)	Site Coefficient, 0.2 sec. (F_A)	1.108
	Site Coefficient, 1.0 sec. (F_V)	1.580
Adjusted MCE Spectral Response Parameters	MCE Spectral Acceleration, 0.2 sec. (S_{MS})	1.087g
	MCE Spectral Acceleration, 1.0 sec. (S_{M1})	0.663g
Design Spectral Response Accelerations	Design Spectral Acceleration, 0.2 seconds (S_{DS})	0.724g
	Design Spectral Acceleration, 1.0 second (S_{D1})	0.442g

7.0 GEOTECHNICAL REVIEW & DISCUSSION

Based on the results of our field explorations and analyses, the site may be developed as described in Section 1.1 of this report, provided the recommendations presented in this report are incorporated into the design and development. We conclude the primary geotechnical considerations at this site include:

- The presence of loose, predominately coarse-grained, and saturated soils that are susceptible to loss in shear strength, liquefaction, and resultant settlement from ground shaking associated with design-level seismic shaking.
- The presence of near-surface, moisture-sensitive soils that are susceptible to disturbance during wet weather.

[6] United States Geological Survey, 2013. Seismic Design Parameters determined using:, "U.S. Seismic Design Maps Web Application - Version 3.1.0," from the USGS website *http://geohazards.usgs.gov/designmaps/us/application.php*. Accessed May 2015.

- The presence of medium to high plasticity, lean to fat clay (CL to CH) that has a high expansion potential.

These considerations are described in more detail in the following sections.

7.1 Liquefaction Potential

As indicated in Section 6.1.1, and discussed in the attached Appendix B, our analyses indicate that total, liquefaction-induced settlements at the site are estimated between about 2 and 3½ inches, with corresponding differential settlements of about 1 to 1¾ inches. Although CGT has not discussed these results with the project structural engineer, the estimated settlements are not expected to be tolerable for the proposed building if supported on conventional, shallow spread foundations (in the absence of ground improvement). Several alternatives for building support are presented in the following table to aid in planning and cost estimating purposes. The following tabulation presents three options for building foundations as they relate to mitigating the hazard presented by liquefaction potential. The options are presented in order of anticipated decreasing cost, and level of increased risk of adverse building performance to be recognized and accepted by owner.

Mitigation Option	Anticipated Benefits[1]	Anticipated Detriments[1]	Further Discussion
1 - Deep Foundations [e.g. driven pipe piles, auger-cast piles, micro-piles]	• Should eliminate the risk of excessive, liquefaction-induced settlements for the new structures. • Soil conditions are favorable for installation of specialty deep foundation systems.	• Relative high cost • Relatively deep installation required (50+ feet bgs)	See Section 8.1.1
2 - Granular Piers[2]	• Designed to improve ground below new building areas to render soils (within depth of improved ground) as non-liquefiable. • Should help reduce total and differential settlements within upper 25 to 35 feet of subsurface profile below new buildings.	• Relative high cost • May not eliminate risk of total, liquefaction-induced settlements, depending on total depth of pier installation (practical limit varies from about 25 to 40 feet, depending on installation equipment available).	See Section 8.1.2
3 - Mat Foundations or Heavily-Reinforced Lattice Foundations[3]	• Should help reduce localized differential settlements of adjacent columns and/or walls of new buildings. • Subject to review of structural engineer, method should help ensure minimum life-safety considerations (i.e. egress) of building occupants are maintained during and following a design-level earthquake. • Anticipated lower cost compared to Options 1 and 2.	• Does not mitigate risk of excessive total settlement of new structures. • Does not mitigate risk of excessive differential settlement ("tilt") across new buildings.	See Section 8.1.3

[1] We recommend cost implications be reviewed with the contractor and design-build firm, as applicable.
[2] Design and installation of system, if considered, would rest with a separate, qualified, design-build firm specialized and experienced in the design of these ground improvement techniques.
[3] Foundation system subject to review of structural engineer based on estimated settlements.

We recommend the options presented above be reviewed and weighed against owner's preferences of building performance following a design-level earthquake. Once a foundation system is chosen, the geotechnical engineer should be consulted to provide specific geotechnical recommendations for design and construction.

7.2 Moisture Sensitive Soils

The native, near-surface fine-grained soils are susceptible to disturbance during wet weather. Trafficability of these soils may be difficult, and significant damage to the subgrade could occur, if earthwork is undertaken without proper precautions at times when the exposed soils are more than a few percentage points above optimum moisture content. In the event that construction occurs during wet weather, we recommend measures be implemented to protect the fine-grained subgrade in areas of repeated construction traffic and in foundation bearing areas. Geotechnical recommendations for wet weather construction are presented in Section 9.3 of this report. If considered, re-use of the on-site fine-grained soils as structural fill during wet times of the year will require special consideration, as discussed in Section 9.4.1 of this report.

7.3 Expansive Soils

As indicated in Section 5.1 of this report, we encountered lean clay to fat clay (CL to CH) beneath the organic silt topsoil in borings B-3, HA-1, and HA-3, and extended to depths ranging from about 4 to 7½ feet bgs. Based on its plasticity characteristics, the lean clay to fat clay has a high expansive potential. This refers to the potential for changes in soil volume (shrinking or swelling) in response to changes in moisture content. Footings and floor slabs directly supported on expansive soils are susceptible to differential movements, possibly resulting in stress cracking, caused by the shrink/swell movements of this soil. Because this soil is expected to be encountered at design foundation and floor slab subgrade elevation, provisions to mitigate the effects of shrink/swell movements of the lean clay to fat clay will need to be undertaken. Geotechnical recommendations for treatment of the lean clay to fat clay are presented in Section 9.1.5 of this report.

8.0 RECOMMENDATIONS: STRUCTURAL DESIGN

8.1 Foundation Systems

Three options for mitigating liquefaction potential at the site and supporting the proposed buildings are presented in Section 7.1, and are discussed in greater detail below. CGT would be pleased to assist the owner and design team in the selection of the appropriate foundation system for the planned building additions. Once the foundation system has been selected, the geotechnical engineer should be consulted to provide specific geotechnical engineering recommendations for design and construction.

8.1.1 Alternative 1 – Deep Foundations

This approach would include installation of deep foundations and supporting the proposed building additions on pile-supported grade beams. Considering the proposed type of construction and subsurface conditions, we anticipate deep foundations could consist of driven pipe piles, auger-cast piles, or micro-piles. Deep foundations would need to penetrate through the liquefiable soils and derive capacity in non-liquefiable silty soils encountered at and below a depth of about 40 feet bgs. CGT would be pleased to provide geotechnical recommendations for use in design of deep foundation systems, upon request, for an additional fee.

8.1.2 Alternative 2 – Granular Piers (Design-Build)

Granular Piers (GPs) are an intermediate foundation system consisting of nominally spaced aggregate piers that provide shallow foundation bearing support and assist with controlling settlement. GPs can

generally be installed to maximum depths of about 25 to 40 feet, depending on installation equipment employed by the pier installer. Accordingly, this approach may not eliminate risk of total, liquefaction-induced settlements, since it is dependent on the total depth of pier installation. If GPs are considered, we recommend a qualified, experienced GP design-build firm be engaged early in the design process to review project goals with regard to limiting settlement below the proposed building additions. The geotechnical engineer should be consulted to provide supplemental recommendations for use in design and subsurface modeling for use in design (by others) of GPs.

8.1.3 Alternative 3 – Shallow Mat Foundations or Heavily-Reinforced Lattice Foundations

This approach would include supporting the building additions on mat foundations or lattice foundations. Mat foundations resemble shallow, heavily reinforced, structural concrete slabs. Lattice foundations consist of reinforced, continuous perimeter foundations with interior grade beams on minimum centers of about 10 feet, or as determined by the structural engineer. For this site, mat or lattice foundations would be designed to help minimize (or eliminate) differential settlements of adjacent (nearby) columns and walls supporting the respective addition. Subject to review of the project structural engineer, this approach should help maintain minimum life-safety considerations (e.g. egress) of building occupants during and following a design-level seismic event. This approach, however, would not eliminate the "design" total and differential, liquefaction-induced settlements indicated in Section 7.1 above. If considered, the geotechnical engineer should be consulted to provide specific recommendations for use in design and construction of these types of foundations.

9.0 RECOMMENDATIONS: SITE PREPARATION & EARTHWORK

The recommendations presented in this report are based on the information provided to us, results of the field investigation, laboratory data, and professional judgment. CGT has observed only a small portion of the pertinent subsurface conditions. The recommendations are based on the assumptions that the subsurface conditions do not deviate appreciably from those found during the field investigation. CGT should be consulted for further recommendations if the design and/or location of the proposed development changes, or variations and/or undesirable geotechnical conditions are encountered during site development.

9.1 Site Preparation

9.1.1 Demolition

Demolition of the existing buildings should include complete removal of all structural elements, including foundations and concrete slabs. Abandoned buried utilities should similarly be removed or grouted full. Concrete debris resulting from demolition may be re-used as structural fill, provided it is processed in accordance with the recommendations presented in Section 9.4.1 of this report. Alternatively, demolition debris should be hauled off site for disposal.

9.1.2 Site Stripping

Existing vegetation, rooted soils, and undocumented fills should be removed from the proposed building pad and pavement areas, and for a 5-foot-margin around such locations. Based on the results of our field explorations, stripping depths at the site are anticipated to extend to approximately 1 to 2 feet bgs across the majority of the site. These materials may be deeper or shallower at locations away from our explorations. The geotechnical engineer or his representative should provide recommendations for actual

stripping depths based on observations during site stripping. Stripped topsoil and rooted soils should be transported off-site for disposal, or stockpiled for later use in landscaped areas. Asphalt and concrete debris as well as undocumented gravel fill (GW Fill) may be stockpiled for later re-use as structural fill, as discussed in Section 9.4.1 of this report.

9.1.3 Grubbing

Grubbing of shrubs and trees should include the removal of the root mass, and roots greater than 1-inch in diameter. Grubbed materials should be transported off-site for disposal. Where root masses are removed, the resulting excavation should be properly backfilled with imported granular structural fill in conformance with Section 9.4.2 of this report, as needed to achieve design subgrade elevations.

9.1.4 Existing Utilities & Below-Grade Structures

All existing utilities at the site should be identified prior to excavation. Abandoned utility lines beneath new structures, pavements, and hardscaping features should be completely removed or grouted full. Soft, loose, or otherwise unsuitable soils encountered in utility trench excavations should be removed and replaced with structural fill as described in Section 9.4 of this report. Buried structures (i.e. footings, foundation walls, retaining walls, slabs-on-grade, tanks, etc.) encountered during site development should be completely removed and replaced with structural fill in conformance with Section 9.4 of this report.

9.1.5 Subgrade Preparation – Building Pads & Pavement Areas

9.1.5.1 Dry Weather Construction

After site preparation as recommended above, but prior to placement of fill and/or base rock, the geotechnical engineer or his representative should observe a proof roll test of the exposed subgrade soils in order to identify areas of excessive yielding. Proof rolling of subgrade soils is typically conducted during dry weather conditions using a fully-loaded, 10- to 12-cubic-yard, tire-mounted, dump truck or equivalent weighted water truck. Areas that appear too soft and wet to support proof rolling equipment should be prepared in general accordance with the recommendations for wet weather construction presented in Section 9.3 of this report. If areas of soft soil or excessive yielding are identified, the affected material should be over-excavated to firm, stable subgrade, and replaced with imported granular structural fill in conformance with Section 9.4.2 of this report.

As indicated in Section 7.3, the native lean clay to fat clay (CL to CH) encountered across the site has a high expansive potential. CGT anticipates this soil will be encountered at design foundation or floor slab subgrade elevation and therefore, we recommend that the material be over-excavated and replaced with a minimum of 12 inches of imported granular structural fill. During excavation, the lean to fat clay subgrade soils should be kept moist, near optimum moisture content, and not allowed to dry out. If allowed to dry below optimum moisture content, to a point where surface cracking appears in the subgrade, the affected material should be over-excavated and replaced with imported granular structural fill.

9.1.5.2 Wet Weather Construction

Preparation of building pad and pavement subgrade soils during wet weather should be in conformance with Section 9.3 of this report. As indicated therein, increased base rock sections and a geotextile separation fabric may be required in wet conditions in order to support construction traffic and protect the

subgrade. Cement amendment may also be considered to help stabilize subgrade soils during wet weather.

9.1.6 Erosion Control

Erosion and sedimentation control measures should be employed in accordance with applicable City, County, and State regulations regarding erosion control.

9.2 Temporary Excavations

9.2.1 Overview

Conventional earthmoving equipment in proper working condition should be capable of making necessary excavations for the anticipated site cuts as described earlier in this report. All excavations should be in accordance with applicable OSHA and state regulations. It is the contractor's responsibility to select the excavation methods, to monitor site excavations for safety, and to provide any shoring required to protect personnel and adjacent improvements. A “competent person”, as defined by OR-OSHA, should be on-site during construction in accordance with regulations presented by OR-OSHA. CGT’s current role on the project does not include review or oversight of excavation safety.

9.2.2 Utility Trenches

Temporary trench cuts should stand near vertical to depths of approximately 4 feet in the native clayey sand (SC) and sandy clay (CL) encountered at the site. Some instability may occur in these soils if groundwater seepage is encountered. If seepage undermines the stability of the trench, or if caving of the sidewalls is observed during excavation, the sidewalls should be flattened or shored. Although not anticipated, depending on the time of year trench excavations occur, trench dewatering may be required in order to maintain dry working conditions, particularly if the invert elevations of the proposed utilities are below the groundwater level. Pumping from sumps located within the trench will likely be effective in removing water resulting from seepage. If groundwater is present at the base of utility excavations, we recommend placing trench stabilization material at the base of the excavations. Trench stabilization material should be in conformance with Section 9.4.3 of this report.

9.2.3 OSHA Soil Type

For use in the planning and construction of temporary excavations up to 8 feet in depth, an OSHA soil type “B” may be used for the native lean clay to fat clay (CL to CH), lean clay with sand (CL), and sandy lean clay (CL). Similarly, an OSHA soil type “C” should be used for the native clayey sand (SC).

9.2.4 Excavations Near Foundations

Excavations near footings should not extend within a 1H:1V (horizontal to vertical) plane projected out and down from the outside, bottom edge of the footings. In the event that excavation needs to extend below the referenced plane, temporary shoring of the excavation and/or underpinning of the subject footing may be required. The geotechnical engineer should be consulted to review proposed excavation plans for this design case to provide specific recommendations.

9.3 Wet Weather Considerations

For planning purposes, the wet season should be considered to extend from late September to late June. It is our experience that dry weather working conditions should prevail between early July and the middle

of September. Notwithstanding the above, soil conditions should be evaluated in the field by the geotechnical engineer or his representative at the initial stage of site preparation to determine whether the recommendations within this section should be incorporated into construction.

9.3.1 General

The near-surface, native clayey soils are susceptible to disturbance during wet weather. Trafficability of these soils may be difficult, and significant damage to subgrade soils could occur, if earthwork is undertaken without proper precautions at times when the exposed soils are more than a few percentage points above optimum moisture content. For construction that occurs during wet weather, site preparation activities may need to be accomplished using track-mounted equipment, loading removed material onto trucks supported on granular haul roads, or other methods to limit soil disturbance. A geotechnical representative from CGT should evaluate the subgrade during excavation by probing rather than proof rolling. Soils that have been disturbed during site preparation activities, or soft or loose areas identified during probing, should be over-excavated to firm, stable subgrade, and replaced with imported granular structural fill.

9.3.2 Geotextile Separation Fabric

We recommend a geotextile separation fabric be placed to serve as a barrier between the prepared fine-grained subgrade and granular fill/base rock in areas of repeated or heavy construction traffic. The geotextile fabric should meet the requirements presented in the current Oregon Department of Transportation (ODOT) Standard Specification for Construction, Section 02320. In accordance with Table 02320-1 of ODOT specifications, the separation fabric should have minimum puncture strength (ASTM D4833) of 80 pounds and an apparent opening size (ASTM D4751) no larger than the U.S. Standard No. 30 sieve. Examples of products that currently meet these requirements include Propex Geotex 200ST and US Fabrics US200. Other products meeting the requirements presented by ODOT may be considered for separation geotextile fabric.

9.3.3 Granular Working Surfaces (Haul Roads & Staging Areas)

Haul roads subjected to repeated heavy, tire-mounted, construction traffic (e.g. dump trucks, concrete trucks, etc.) will require a minimum of 18 inches of imported granular material. For light staging areas, 12 inches of imported granular material should be sufficient. Additional granular material, geo-grid reinforcement, or cement amendment may be recommended based on site conditions and/or loading at the time of construction. The imported granular material should be in conformance with Section 9.4.2 of this report and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. The prepared subgrade should be covered with geotextile fabric prior to placement of the imported granular material. The imported granular material should be placed in a single lift (up to 24-inches deep) and compacted using a smooth-drum, non-vibratory roller until well-keyed.

9.3.4 Footing Subgrade Protection

A minimum of 3 inches of imported granular material is recommended to protect fine-grained footing subgrades from foot traffic during inclement weather. The imported granular material should be in conformance with Section 9.4.2 of this report, have less than 5 percent material passing the U.S. Standard No. 200 Sieve, and have a maximum particle size limited to 1-inch. The imported granular material should be placed in one lift over the prepared, undisturbed subgrade, and compacted using non-vibratory equipment until well keyed.

9.3.5 Cement Amendment

It is sometimes less costly to amend near-surface, moisture-sensitive, fine-grained soils with Portland cement than to remove and replace those soils with imported granular material. Successful use of soil cement amendment depends on use of correct techniques and equipment, soil moisture content, and the amount of cement added to the subgrade (mix design). We anticipate that the native soils are conducive for cement amendment due to their sandy nature and our experience with similar soils. If cement amendment is considered for the project, the geotechnical engineer should be consulted to provide supplemental recommendations for testing (mix design), cement percentage, and other considerations. We recommend project scheduling allow for a minimum of 2 weeks to conduct the mix design and allow for development of specific recommendations.

9.4 Structural Fill

The geotechnical engineer should be provided the opportunity to review all materials considered for use as structural fill (prior to placement). The geotechnical engineer or his representative should be contacted to evaluate compaction of structural fill as the material is being placed. Evaluation of compaction may take the form of in-place density tests and/or proof roll tests with suitable equipment. Structural fill should be evaluated at intervals not exceeding every 2 vertical feet as the fill is being placed.

9.4.1 On-Site Soils – General Use

9.4.1.1 Asphalt & Concrete Debris

Asphalt and concrete debris resulting from the demolition of existing pavements and other features (foundations, floor slabs, sidewalks, etc.) can be re-used as structural fill if processed/crushed into material that is fairly well graded between coarse and fine. The processed/crushed concrete and/or asphalt should contain no organic matter, debris, or particles larger than 4 inches in diameter. Moisture conditioning (wetting) should be expected in order to achieve adequate compaction. When used as structural fill, this material should be placed and compacted in general accordance with Section 9.4.2 of this report.

9.4.1.2 Undocumented Gravel Fill (GW Fill)

Re-use of the gravel fill materials (underlying the existing pavements) as structural fill is feasible, provided they can be kept free of debris, deleterious materials, and particles larger than 4 inches in diameter. If used as structural fill, these materials should be prepared in conformance with Section 9.4.2 of this report.

9.4.1.3 Undocumented Gravelly Silt Fill (ML Fill) Silt with Gravel and Debris Fill (ML Fill)

We do not recommend re-use of these undocumented fill materials as structural fill due to the relatively high fraction of fines, as well as the variable amounts of debris anticipated.

9.4.1.4 Lean Clay with Sand (CL), Lean Clay to Fat Clay (CL to CH), & Clayey Sand (SC)

Re-use of the near-surface, fine-grained, native soils as structural fill may be difficult because these soils are sensitive to small changes in moisture content and are difficult, if not impossible, to adequately compact during wet weather. We anticipate the moisture content of these soils will be higher than the optimum moisture content for satisfactory compaction. Therefore, moisture conditioning (drying) should be expected in order to achieve adequate compaction. If used as structural fill, these soils should be kept (or processed, if required) free of organic matter, debris, and particles larger than 1½ inches. When used as structural fill, these soils should be placed in lifts with a maximum thickness of about 8 inches at moisture contents within –1 and +3 percent of optimum, and compacted to not less than 92 percent of the

material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor).

If the on-site soils cannot be properly moisture-conditioned and/or processed, we recommend using imported granular material for structural fill.

9.4.2 Imported Granular Structural Fill – General Use

Imported granular structural fill should consist of angular pit or quarry run rock, crushed rock, or crushed gravel that is fairly well graded between coarse and fine particle sizes. The granular fill should contain no organic matter, debris, or particles larger than 4 inches, and have less than 5 percent material passing the U.S. Standard No. 200 Sieve. For fine-grading purposes, the maximum particle size should be limited to 1½ inches. The percentage of fines can be increased to 12 percent of the material passing the U.S. Standard No. 200 Sieve if placed during dry weather, and provided the fill material is moisture-conditioned, as necessary, for proper compaction. Granular fill material should be placed in lifts with a maximum thickness of about 12 inches, and compacted to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor). Proper moisture conditioning and the use of vibratory equipment will facilitate compaction of these materials.

Compaction of granular fill materials with high percentages of particle sizes in excess of 1½-inches should be evaluated by periodic proof-roll observation or continuous observation by the CGT geotechnical representative during fill placement, since it cannot be tested conventionally using a nuclear densometer. Such materials should be "capped" with a minimum of 12 inches of 1½-inch-minus (or finer) granular fill under all structural elements (footings, concrete slabs, etc.).

9.4.3 Trench Base Stabilization Material

If groundwater is present at the base of utility excavations, trench base stabilization material should be placed. Trench base stabilization material should consist of a minimum of 1-foot of well-graded granular material with a maximum particle size of 4 inches and less than 5 percent material passing the U.S. Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material, placed in one lift, and compacted until well-keyed.

9.4.4 Trench Backfill Material

Trench backfill for the utility pipe base and pipe zone should consist of granular material as recommended by the utility pipe manufacturer. Trench backfill above the pipe zone should consist of well-graded granular material containing no organic matter or debris, have a maximum particle size of ¾-inch, and have less than 8 percent material passing the U.S. Standard No. 200 Sieve. As a guideline, trench backfill should be placed in maximum 12-inch-thick lifts. The earthwork contractor may elect to use alternative lift thicknesses based on their experience with specific equipment and fill material conditions during construction in order to achieve the required compaction. The following table presents recommended relative compaction percentages for utility trench backfill.

Table 3 Utility Trench Backfill Compaction Recommendations

Backfill Zone	Recommended Minimum Relative Compaction	
	Structural Areas[1]	Landscaping Areas
Pipe Base and Within Pipe Zone	90% ASTM D1557 or pipe manufacturer's recommendation	88% ASTM D1557 or pipe manufacturer's recommendation
Above Pipe Zone	92% ASTM D1557	90% ASTM D1557
Within 3 Feet of Design Subgrade	95% ASTM D1557	90% ASTM D1557
[1] Includes the proposed buildings, pavements, exterior hardscaping, etc.		

9.5 Rigid Retaining Walls

9.5.1 Footings

We recommend retaining walls associated with the proposed structures be supported on the same type of footing that the structure is supported on. However, the structural foundation type has not yet been selected. For stand-alone or landscaping walls, please contact CGT for foundation design recommendations.

9.5.2 Wall Drains

Subject to review of the retaining wall designer, we recommend retaining wall drains consist of a minimum 4-inch diameter, perforated, HDPE (High Density Poly-Ethylene) drainpipe wrapped with a non-woven geotextile filter fabric. The drains should be backfilled with a minimum of 2 cubic feet of open graded drain rock per lineal foot of pipe. The drain rock should be encased in a geotextile fabric in order to provide separation from the surrounding soils. Retaining wall drains should be positively sloped and should outlet to a suitable discharge point. The geotechnical engineer or his representative should be contacted to observe the drains prior to backfilling.

9.5.3 Backfill

Retaining walls should be backfilled with imported granular structural fill in conformance with Section **Error! Reference source not found.** and contain less than 5 percent passing the U.S. Standard No. 200 Sieve. The backfill should be compacted to a minimum of 90 percent of the material's maximum dry density as determined in general accordance with ASTM D1557 (Modified Proctor). When placing fill behind walls, care must be taken to minimize undue lateral loads on the walls. Heavy compaction equipment should be kept at least "H" feet from the back of the walls, where "H" is the height of the wall. Light mechanical or hand tamping equipment should be used for compaction of backfill materials within "H" feet of the back of the walls.

9.5.4 Design Considerations

For rigid retaining walls founded, backfilled, and drained as recommended above, the following table presents parameters recommended for design.

Table 4 Design Parameters for Rigid Retaining Walls

Retaining Wall Condition	Modeled Backfill Condition	Static Equivalent Fluid Pressure (S_A)	Additional Seismic Equivalent Fluid Pressure (S_{AE})	Surcharge from Uniform Load, q, Acting on Backfill Behind Retaining Wall
Not Restrained from Rotation	Level (i = 0)	28 pcf	12 pcf	0.22*q
Restrained from Rotation	Level (i = 0)	50 pcf	6 pcf	0.38*q

Note 1. Refer to the attached Figure 30 for a graphical representation of static and seismic loading conditions. Seismic component of active thrust acts at 0.6H above the base of the wall.

Note 2. Seismic (dynamic) lateral loads were computed using the Mononobe-Okabe Equation as presented in the 1997 Federal Highway Administration (FHWA) design manual.

The above design recommendations are based on the assumptions that:

(1) the walls consist of concrete cantilevered retaining walls (β = 0 and δ = 24 degrees, see Figure 13).
(2) the walls are 12 feet or less in height.
(3) the backfill is drained and consists of imported granular structural fill (ϕ = 38 degrees).
(4) no line load, point, or area load surcharges are imposed behind the walls.
(5) the grade behind the wall is level, or sloping down and away from the wall, for a distance of 12 feet or more from the wall.
(6) the grade in front of the walls is level or sloping up for a distance of at least 5 feet from the wall.

Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project vary from these assumptions.

9.6 Flexible Pavements

9.6.1 Subgrade Preparation

Subgrade preparation of pavements should be in conformance with Section 9.1.5 of this report. Pavement subgrade surfaces should be crowned (or sloped) for proper drainage in accordance with specifications provided by the project civil engineer.

9.6.2 Input Parameters

Design of the flexible pavement sections presented below was based on the parameters presented in the following table and the American Association of State Highway and Transportation Officials (AASHTO) 1993 “Design of Pavement Structures” manual. If any of the items listed need revised, please contact us and we will reassess the provided design sections.

Table 5 Input Parameters Assigned for Pavement Design

Input Parameter	Design Value[1]		Input Parameter		Design Value[1]
Pavement Design Life	20 years		Resilient Modulus[4]	Subgrade	4,500 psi
Annual Percent Growth	0 percent			Crushed Aggregate Base	22,500 psi
Serviceability	4.2 initial, 2.5 terminal		Structural Coefficient[2]	Crushed Aggregate Base	0.10
Reliability[2]	85 percent			Asphalt	0.42
Standard Deviation[2]	0.49		Vehicle Traffic[5]	APAO Level I "Very Light"	Less than 10,000 ESAL
Drainage Factor[3]	1.0			APAO Level II "Light"	Less than 50,000 ESAL

[1] If any of the above parameters are incorrect, please contact us so that we may revise our recommendations, if warranted.
[2] Value based on guidelines presented in Section 5.3 of the 2007 ODOT Pavement Design Manual for flexible pavements.
[3] Assumes good drainage away from pavement, base, and subgrade is achieved by proper crowning of subgrades.
[4] Values based on experience with similar soils prepared as recommended in this report.
[5] ESAL = Total 18-Kip equivalent single axle load. Traffic levels taken from Table 3.1 of APAO manual. If an increased traffic load is estimated, please contact us so that we may refine the traffic loading and revise our recommendations, if warranted.

9.6.3 Recommended Minimum Sections

The following table presents the minimum flexible pavement sections for the traffic levels indicated in the preceding table, based on the referenced AASHTO procedures.

Table 6 Recommended Minimum Pavement Sections

Material	Minimum Thickness (inches)	
	APAO Level I (Passenger Car Traffic Only)	APAO Level II (Entrance/Service Drive Lanes)
Asphalt Pavement (inches)	3	3½
Crushed Aggregate Base (inches) [a]	7	11
Subgrade Soils	Prepared in accordance with Section 9.1.5 of this report.	

[a] Thickness shown assumes dry weather construction. A granular sub-base section and/or a geotextile separation fabric may be required in wet conditions in order to support construction traffic and protect the subgrade. Refer to Section 9.3 for additional discussion.

9.6.4 Asphalt & Base Course Materials

Asphalt pavement and base course material should conform to the most recent State of Oregon Standard Specifications for Highway Construction. Place aggregate base in one lift, and compact to not less than 95 percent of the material's maximum dry density, as determined in general accordance with ASTM D1557 (Modified Proctor). Asphalt pavement should be compacted to at least 91 percent of the material's theoretical maximum density, as determined in general accordance with ASTM D2041 (Rice Specific Gravity).

9.7 Additional Drainage Considerations

Subsurface drains should be connected to the nearest storm drain or other suitable discharge point. Paved surfaces and ground near or adjacent to the residential structures should be sloped to drain away from the structures. Surface water from paved surfaces and open spaces should be collected and routed to a suitable discharge point. Surface water should not be directed into foundation drains or onto site slopes.

10.0 RECOMMENDED ADDITIONAL SERVICES

10.1 Design Review

Geotechnical design review is of paramount importance. CGT recommends the geotechnical design review take place prior to releasing bid packets to contractors.

10.2 Observation of Construction

Satisfactory earthwork, foundation, and pavement performance depends to a large degree on the quality of construction. 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. Subsurface conditions observed during construction should be compared with those encountered during subsurface explorations, and recognition of changed conditions often requires experience. We recommend that qualified personnel visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those observed to date and anticipated in this report.

We recommend the geotechnical engineer or their representative attend a pre-construction meeting coordinated by the contractor and/or developer. The project geotechnical engineer or their representative should provide observations and/or testing of at least the following earthwork elements during construction:

- Site Stripping and Grubbing.
- Subgrade Preparation for Structural Fills, Shallow Foundations, Floor Slabs, and Pavements.
- Compaction of Structural Fill.
- Compaction of Utility Trench Backfill.
- Placement of Foundation Drains and Other Drains.
- Compaction of Base Rock for Pavements.
- Compaction of Asphaltic Concrete for Pavements.

It is imperative that the owner and/or contractor request earthwork observations and testing at a frequency sufficient to allow the geotechnical engineer to provide a final letter of compliance for the earthwork activities.

11.0 LIMITATIONS

We have prepared this report for use by the owner/developer and other members of the design and construction team for the proposed development. The opinions and recommendations contained within this report are not intended to be, nor should they be construed as a warranty of subsurface conditions, but are forwarded to assist in the planning and design process.

We have made observations based on our explorations that indicate the soil conditions at only those specific locations and only to the depths penetrated. These observations do not necessarily reflect soil types, strata thickness, or water level variations that may exist between or away from our explorations. If subsurface conditions vary from those encountered in our site explorations, CGT should be alerted to the change in conditions so that we may provide additional geotechnical recommendations, if necessary.

Observation by experienced geotechnical personnel should be considered an integral part of the construction process.

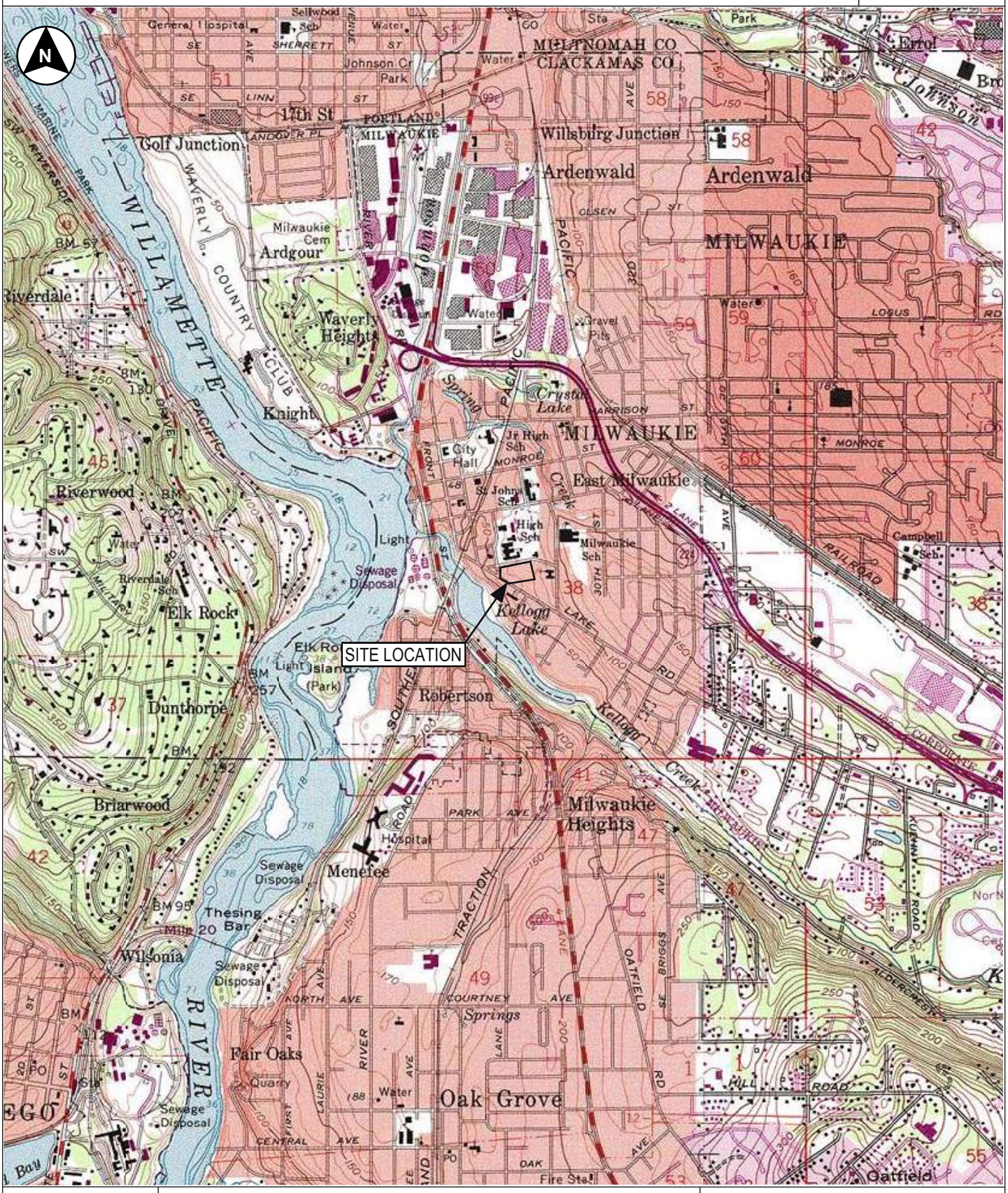
The owner/developer is responsible for ensuring that the project designers and contractors implement our recommendations. When the design has been finalized, prior to releasing bid packets to contractors, we recommend that the design drawings and specifications be reviewed by our firm to see that our recommendations have been interpreted and implemented as intended. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written modification or verification. Design review and construction phase testing and observation services are beyond the scope of our current assignment, but will be provided for an additional fee.

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.

Geotechnical engineering and the geologic sciences are characterized by a degree of uncertainty. Professional judgments presented in this report are based on our understanding of the proposed construction, familiarity with similar projects in the area, and on general experience. 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, expressed or implied, is made. This report is subject to review and should not be relied upon after a period of three years

NORTHWEST HOUSING ALTERNATIVES CAMPUS REDEVELOPMENT - MILWAUKIE, OREGON
Project Number G1504158

FIGURE 1
Site Location



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Map created with TOPO!™, © 2006 National Geographic Holdings
USGS 7.5 Minute Topographic Map Series, Lake Oswego Quadrangle.

Township 1S, Range 1E, Section 36 Willamette Meridian

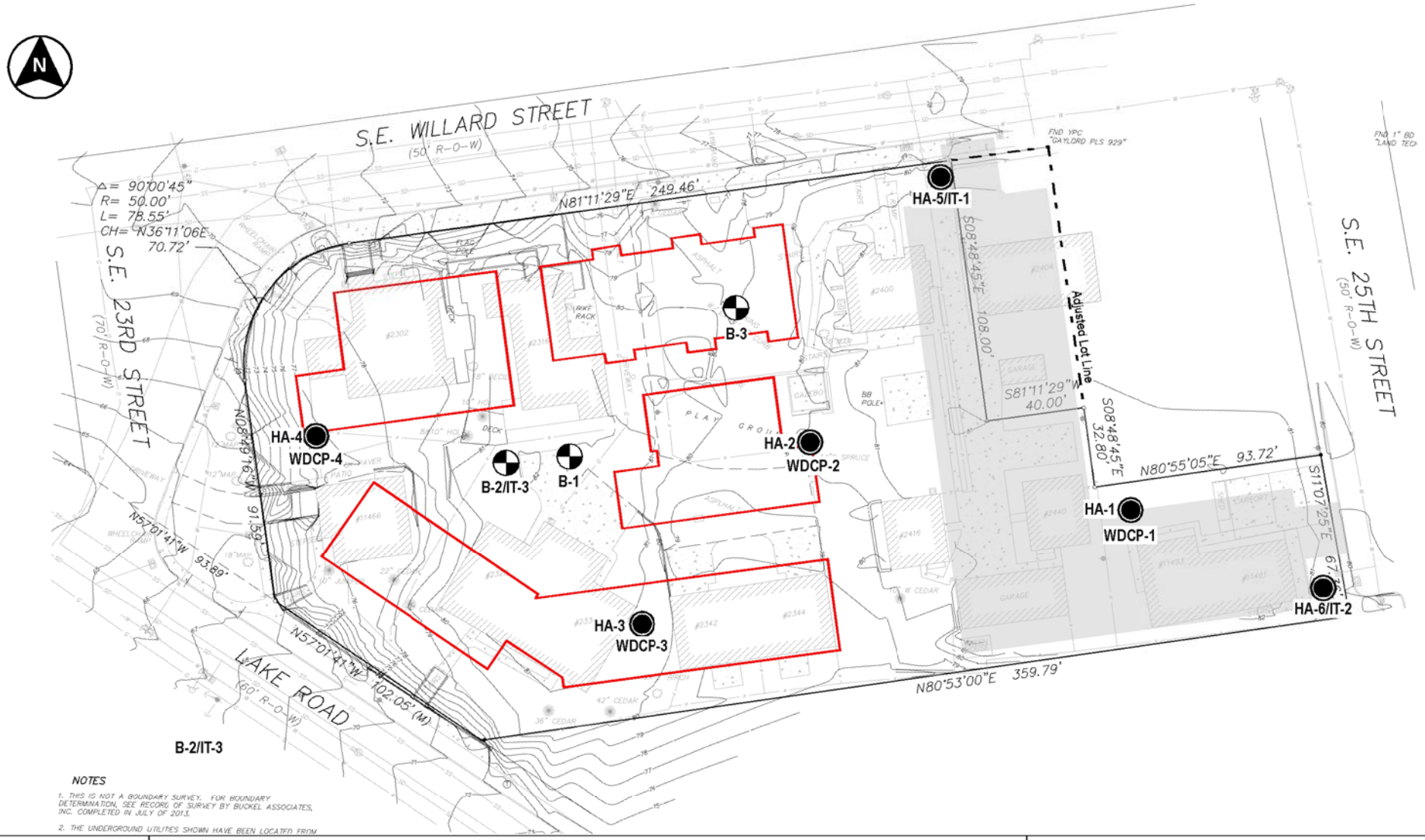
Latitude: 45.440259 North
Longitude: -122.63743 West

1 Inch = 2,000 feet

0 2000 4000

NORTHWEST HOUSING ALTERNATIVES CAMPUS REDEVELOPMENT - MILWAUKIE, OREGON
CGT Project Number G1504158

Figure 2
Site Plan



NOTES

1. THIS IS NOT A BOUNDARY SURVEY. FOR BOUNDARY DETERMINATION, SEE RECORD OF SURVEY BY BUCKEL ASSOCIATES, INC. COMPLETED IN JULY OF 2013.
2. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM

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LEGEND

B-1	Geotechnical boring location.
HA-1	Geotechnical hand auger boring.
WDCP-1	WDCP performed adjacent to hand auger boring.
IT-1	Infiltration test performed in boring.
	Proposed new building.
	Proposed pavements.
	Existing building (to be removed).

1 Inch = 60 Feet

0 60 120

NOTES: Drawing based on Infiltration Test Request Exhibit (EXH-A), prepared by KPFF Consulting Engineers.

NORTHWEST HOUSING ALTERNATIVES CAMPUS REDEVELOPMENT - MILWAUKIE, OREGON
Project Number G1504158

FIGURE 3
USCS

Classification of Terms and Content

NAME: MINOR Constituents (12-50%); MAJOR Constituents (>50%); Slightly (5-12%)
Relative Density or Consistency
Color
Moisture Content
Plasticity
Trace Constituents (0-5%)
Other: Grain Shape, Approximate Gradation, Organics, Cement, Structure, Odor...
Geologic Name or Formation: Fill, Willamette Silt, Till, Alluvium, etc.

USCS Grain Size

Fines		<#200 (.075 mm)
Sand	Fine Medium Coarse	#200 - #40 (.425 mm) #40 - #10 (2 mm) #10 - #4 (4.75)
Gravel	Fine Coarse	#4 - 0.75 inch 0.75 inch - 3 inches
Cobbles		3 to 12 inches; scattered <15% est. numerous >15% est.
Boulders		> 12 inches

Relative Density or Consistency

Granular Material		Fine-Grained (cohesive) Materials				
SPT N-Value	Density	SPT N-Value	Torvane tsf Shear Strength	Pocket Pen tsf Unconfined	Consistency	Manual Penetration Test
		<2	<0.13	<0.25	Very Soft	Thumb penetrates more than 1 inch
0 - 4	Very Loose	2 - 4	0.13 - 0.25	0.25 - 0.50	Soft	Thumb penetrates about 1 inch
4 - 10	Loose	4 - 8	0.25 - 0.50	0.50 - 1.00	Medium Stiff	Thumb penetrates about ¼ inch
10 - 30	Medium Dense	8 - 15	0.50 - 1.00	1.00 - 2.00	Stiff	Thumb penetrates less than ¼ inch
30 - 50	Dense	15 - 30	1.00 - 2.00	2.00 - 4.00	Very Stiff	Readily indented by thumbnail
>50	Very Dense	>30	>2.00	>4.00	Hard	Difficult to indent by thumbnail

Moisture Content

Dry: Absence of moisture, dusty, dry to the touch
Damp: Some moisture but leaves no moisture on hand
Moist: Leaves moisture on hand
Wet: Visible free water, likely from below water table

	Plasticity	Dry Strength	Dilatancy	Toughness
ML	Non to Low	Non to Low	Slow to Rapid	Low, can't roll
CL	Low to Medium	Medium to High	None to Slow	Medium
MH	Medium to High	Low to Medium	None to Slow	Low to Medium
CH	Medium to High	High to Very High	None	High

Structure

Blocky: Cohesive soil that can be broken down into small angular lumps
Fissured: Breaks along definite fracture planes
Homogeneous: Same color and appearance throughout
Laminated: Alternating layers < 6 mm thick
Lenses: Has small pockets of different soils, note thickness
Slickensided: Striated, polished, or glossy fracture planes
Stratified: Alternating layers of material or color >6 mm thick

Unified Soil Classification Chart (Visual-Manual Procedure) (Similar to ASTM Designation D-2487)

Major Divisions			Group Symbols	Typical Names
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: 50% or more *retained* on the No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel/sand mixtures, little or no fines
			GP	Poorly-graded gravels and gravel/sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel/sand/silt mixtures
			GC	Clayey gravels, gravel/sand/clay mixtures
	Sands: More than 50% *passing* the No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly-graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand/silt mixtures
			SC	Clayey sands, sand/clay mixtures
Fine-Grained Soils: 50% or more Passes No. 200 Sieve	Silt and Clays Low Plasticity Fines		ML	Inorganic silts, rock flour, clayey silts
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silt and organic silty clays of low plasticity
	Silt and Clays High Plasticity Fines		MH	Inorganic silts, clayey silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

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Additional References:
ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes and
ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

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FIGURE 4

Boring B-1

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** HHP
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR Subsurface Technologies
GROUND ELEVATION 82 ft
EQUIPMENT Diedrich D-50 Truck
SEEPAGE ---
DRILLING METHOD Hollow Stem Auger
GROUNDWATER AT END ---
NOTES Surface Conditions: asphalt pavement
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N_{SPT} VALUE)	N_{60} VALUE ETR_{Hammer} = 79.3%	DRY UNIT WT. (pcf)	▲ SPT N_{SPT} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
82		GW FILL	**ASPHALTIC CONCRETE:** about 2 inches thick. **GRAVEL FILL:** Medium dense, gray, moist, fine to coarse angular gravel, fine- to coarse-grained sand. {Base Rock}		0						
80			**NOTE:** The primary purpose of advancing boring B-1 was to confirm that groundwater was deeper than 25 feet bgs, in order to confirm infiltration testing at a depth of 20 feet bgs in nearby B-2/IT-3 was appropriate. Therefore, no samples were taken in boring B-1 until a depth of 25 feet bgs.		5						
75					10						
70					15						
65					20						
60					25						
57		SC	**CLAYEY SAND:** Medium dense, brown and gray, moist, fine- to medium-grained sand, and fines exhibited low plasticity.			SPT 1	67	5-11-9 (20)	25		●▲ 15
55			•Boring terminated at about 26½ feet bgs. •No groundwater or caving observed within the depth explored. •Backfilled with granular bentonite. •Surface patched with cold patch asphalt.								

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FIGURE 5

Boring B-2/IT-3

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** HHP
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR Subsurface Technologies
GROUND ELEVATION 82 ft
EQUIPMENT Diedrich D-50 Truck
SEEPAGE ---
DRILLING METHOD Hollow Stem Auger
GROUNDWATER AT END ---
NOTES Surface Conditions: grass
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N_{SPT} VALUE)	N_{60} VALUE ETR_{Hammer} = 79.3%	DRY UNIT WT. (pcf)
80		OL	**ORGANIC SILT TOPSOIL:** Soft to medium stiff, brown, moist, low plasticity, trace fine sand, frequent fine rootlets typically less than ¼ inch in diameter.		0					
		CL	**SANDY LEAN CLAY:** Stiff, brown, moist, fine-grained sand, low to medium plasticity.		5	SPT 1	67	1-4-4 (8)	8	
75		SC	**CLAYEY SAND:** Loose to medium dense, brown-gray, moist, fine- to medium-grained sand, low to medium plasticity fines.		10	SPT 2	78	2-4-4 (8)	8	
70					15	SPT 3	89	4-4-8 (12)	13	
65					20	SPT 4	67	3-7-7 (14)	16	
60			• Boring terminated at a depth of about 20 feet bgs. • No groundwater or caving observed within the depth explored. • Infiltration test IT-3 conducted at 20 feet bgs. See Appendix A for test results. • Boring loosely backfilled with spoils upon completion.							
55										

▲ SPT N_{SPT} VALUE ▲
PL LL MC
☐ FINES CONTENT (%) ☐
0 20 40 60 80 100

CGT BOREHOLE FIGURES 5-7.GPJ GINT US.GDT 5/12/15

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FIGURE 6
Boring B-3

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/24/15 **LOGGED BY** HHP
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR Subsurface Technologies
GROUND ELEVATION 79 ft
EQUIPMENT Diedrich D-50 Truck
SEEPAGE 26.0 ft / El. 53.0 ft
DRILLING METHOD Mud Rotary
GROUNDWATER AT END ---
NOTES Surface Conditions: asphalt pavement
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N_{SPT} VALUE)	N_{60} VALUE ETR_{Hammer} = 79.3%	DRY UNIT WT. (pcf)	▲ SPT N_{SPT} VALUE ▲ / PL LL MC / □ FINES CONTENT (%) □
		GW FILL	**ASPHALTIC CONCRETE:** about 4 inches thick.		0						0 20 40 60 80 100
			GRAVEL FILL: Medium dense, gray, moist, fine to coarse angular gravel, fine- to coarse-grained sand. {Base Rock}								
75		CL-CH	**LEAN CLAY TO FAT CLAY:** Medium stiff to stiff, brown, moist, medium to high plasticity, trace fine-grained sand, trace hard red clay nodules typically less than ¼-inch in diameter.			SPT 1	56	3-2-4 (6)	6		29
			No hard clay nodules observed below about 5 feet bgs.		5	SPT 2	78	4-5-6 (11)	11		27 52 36
70			**CLAYEY SAND:** loose to medium dense, brown and gray, moist, fine-grained sand, low to medium plasticity fines, occasional rootlets (typically less than ¼-inch diameter).			SPT 3	44	4-5-3 (8)	8		31
					10	SPT 4	78	4-3-4 (7)	7		32
65		SC				SPT 5	78	4-5-5 (10)	11		32
					15	SPT 6	56	5-4-4 (8)	9		24
60			Fine- to medium-grained sand observed below about 16 feet bgs.								
					20	SPT 7	61	3-3-6 (9)	11		31 □ 63
55		CL	**SANDY LEAN CLAY:** Stiff, brown and gray, moist fine-grained sand, low to medium plasticity.								
					25	SPT 8	100	6-3-2 (5)	6		33 34
50		SC	**CLAYEY SAND:** Loose to medium dense, brown and gray, wet, fine- to medium-grained sand.	≈							
					30						

(Continued Next Page)

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FIGURE 6

Boring B-3

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N_{SPT} VALUE)	N_{60} VALUE ETR_{Hammer} = 79.3%	DRY UNIT WT. (pcf)	▲ SPT N_{SPT} VALUE ▲ PL LL MC ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
45		SC	**CLAYEY SAND:** Loose to medium dense, brown and gray, wet, fine- to medium-grained sand. *(continued)*		30	SPT 9	83	9-9-5 (14)	18		☐13 ▲26
					35	SPT 10	94	10-9-8 (17)	22		☐15 ▲26
40			Red and gray below about 36 feet bgs.		40	SPT 11	100	11-11-11 (22)	29		▲29
35		ML	**SANDY SILT:** Very stiff, brown and gray, wet, medium- to coarse-grained sand, low plasticity fines, micaceous.		45	SPT 12	100	17-13-18 (31)	41		▲36
30		ML	**SILT WITH SAND:** Hard, gray-blue, wet, low plasticity, fine-grained, micaceous.		50	SPT 13	100	9-13-21 (34)	45		▲36
25			•Boring terminated at about 51½ feet bgs. •Backfilled with granular bentonite. •Surface patched with cold patch asphalt. •Groundwater depth of about 26 feet bgs inferred from wet/saturated soil samples.								
20											
15											

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FIGURE 7

Boring HA-1

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** MDI
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR CGT
GROUND ELEVATION 81 ft
EQUIPMENT 3-inch diameter hand auger
SEEPAGE ---
DRILLING METHOD
GROUNDWATER AT END ---
NOTES Surface Conditions: grass
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
80		OL	**ORGANIC SILT TOPSOIL:** Soft to medium stiff, brown, moist, low plasticity, trace fine sand, frequent fine rootlets typically less than ¼ inch in diameter.		0			3		
					1			5		
								3		
79		CL-CH	**LEAN CLAY TO FAT CLAY:** Very soft to soft, brown, moist, medium to high plasticity, trace fine-grained sand.		2			1		
								3		
								2		
78			Medium stiff below about 2½ feet bgs.		3	GRAB 1		2		
								5		
								5		
77					4			7		
								6		
								6		
76			•Boring terminated at about 4 feet bgs. •WDCP-1 advanced adjacent to HA-1 and terminated at about 4½ feet bgs. •No groundwater or caving observed. •Boring loosely backfilled with cuttings upon completion.					7		
								8		
75										
74										
73										
72										
71										

▲ WDCP N_{60} VALUE ▲

PL LL MC

☐ FINES CONTENT (%) ☐

0 20 40 60 80 100

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FIGURE 8

Boring HA-2

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** BLN
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR CGT
GROUND ELEVATION 80 ft
EQUIPMENT 3-inch diameter hand auger
SEEPAGE ---
DRILLING METHOD
GROUNDWATER AT END ---
NOTES Surface Conditions: landscape mulch and soil
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
79		ML FILL	**GRAVELLY SILT FILL:** Medium stiff to stiff, dark brown, moist, low plasticity, angular to subangular fine to coarse gravel (up to about 1-inch diameter), frequent fine rootlets typically less than ¼ inch in diameter.		0			7		
					1			10		
78			•Boring terminated at about 1½ feet bgs due to refusal on gravel. •WDCP-2 advanced adjacent to HA-2 and terminated at about 8 feet bgs. •No groundwater or caving observed. •Boring loosely backfilled with cuttings upon completion.		2			12		
								15		
77					3			15		
								10		
76					4			8		
								7		
75					5			6		
								5		
74					6			4		
								4		
73					7			4		
								5		
72					8			7		
								8		
71								11		
								11		
70								10		
								11		
								9		
								10		
								11		

▲ WDCP N_{60} VALUE ▲
PL LL MC
☐ FINES CONTENT (%) ☐
0 20 40 60 80 100

CGT EXPLORATION WITH WDCP FIGURES 5-7.GPJ GINT US.GDT 5/12/15

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FIGURE 9

Boring HA-3

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** BLN
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR CGT
GROUND ELEVATION 80 ft
EQUIPMENT 3-inch diameter hand auger
SEEPAGE ---
DRILLING METHOD
GROUNDWATER AT END ---
NOTES Surface Conditions: grass
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
79		OL	**ORGANIC SILT TOPSOIL:** Soft to medium stiff, brown, moist, low plasticity, trace fine sand, frequent fine rootlets typically less than ¼ inch in diameter.		0			2		
					1			5		
78		CL	**LEAN CLAY TO FAT CLAY:** Medium stiff to stiff, brown, moist, medium to high plasticity, trace fine-grained sand.					5		
					2			6		
77								5		
					3			5		
76						GRAB 1		6		
					4			7		
75		CL	**SANDY LEAN CLAY:** Stiff, brown, moist, low to medium plasticity, fine-grained sand.					10		
					5			10		
74						GRAB 2		6		
					6			7		
73		SC	**CLAYEY SAND:** Loose to medium dense, brown and gray, moist, fine-grained sand.					6		
					7			6		
72								8		
					8	GRAB 3		8		
71			•Boring terminated at about 8 feet bgs. •WDCP-3 advanced adjacent to HA-3 and terminated at about 8 feet bgs. •No groundwater or caving observed. •Boring loosely backfilled with cuttings upon completion.					9		
								9		
								9		
								9		
								11		
								11		
70								11		
								12		

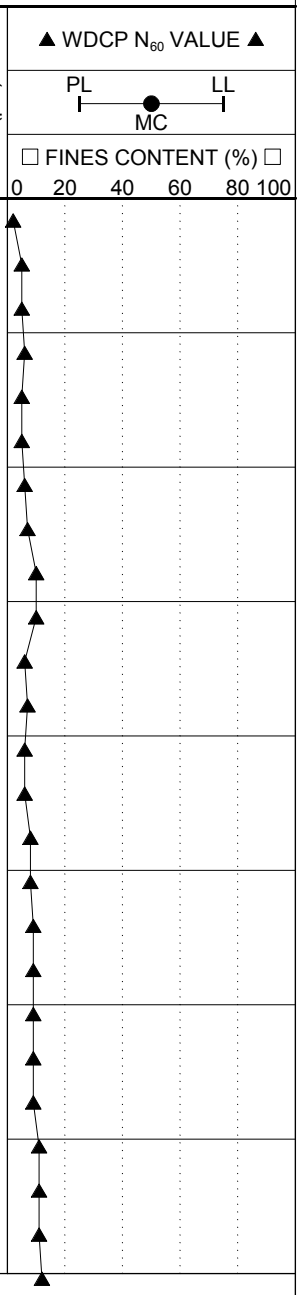

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FIGURE 10

Boring HA-4

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** BLN
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR CGT
GROUND ELEVATION 77 ft
EQUIPMENT 3-inch diameter hand auger
SEEPAGE ---
DRILLING METHOD
GROUNDWATER AT END ---
NOTES Surface Conditions: landscape mulch and soil
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
76		OL	**ORGANIC SILT TOPSOIL:** Soft to medium stiff, brown, moist, low plasticity, trace fine sand, frequent fine rootlets typically less than ¼ inch in diameter.		0			1		
								1		
					1			5		
75		ML FILL	**SILT WITH GRAVEL AND DEBRIS FILL:** Medium stiff to stiff, brown, moist, low plasticity, brick fragments up to about 2 inches in diameter, coarse sub-rounded to rounded gravel up to about 2 inches in diameter.					5		
								5		
					2			6		
74			•Boring terminated at about 2 feet bgs due to refusal on gravel/bricks. •WDCP-4 advanced adjacent to HA-4 and terminated at about 5 feet bgs. •No groundwater or caving observed. •Boring loosely backfilled with cuttings upon completion.					19		
								12		
					3			12		
73								13		
								11		
					4			8		
72								8		
								7		
					5			7		
71								7		
70										
69										
68										
67										

▲ WDCP N_{60} VALUE ▲

PL LL MC

☐ FINES CONTENT (%) ☐

0 20 40 60 80 100

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FIGURE 11

Boring HA-5/IT-1

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** BLN
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR CGT
GROUND ELEVATION 81 ft
EQUIPMENT 8-inch diameter hand auger
SEEPAGE ---
DRILLING METHOD
GROUNDWATER AT END ---
NOTES Surface Conditions: grass
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐
80		OL	**ORGANIC SILT TOPSOIL:** Soft to medium stiff, brown, moist, low plasticity, trace fine sand, frequent fine rootlets typically less than ¼ inch in diameter.		0						0 20 40 60 80 100
79		SC	**CLAYEY SAND:** Loose to medium dense, brown, moist, fine-grained sand, low to medium plasticity fines.		1						
78					2						
77					3						
76			Orange mottling observed at about 4 feet bgs. •Boring terminated at about 4 feet bgs. •No groundwater or caving observed. •Infiltration test IT-1 performed at about 4 feet bgs. See Appendix A for test results.		4	GRAB 1					● 20 ☐ 39
75											
74											
73											
72											
71											

CGT EXPLORATION WITH WDCP FIGURES 5-7.GPJ GINT US.GDT 5/12/15

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FIGURE 12

Boring HA-6/IT-2

CLIENT Northwest Housing Alternatives
PROJECT NAME Northwest Housing Alternatives Campus Redevelopment
PROJECT NUMBER G1504158
PROJECT LOCATION 2316 SE Willard Street, Milwaukie, Oregon
DATE STARTED 4/23/15 **LOGGED BY** BLN
ELEVATION DATUM See Figure 2
DRILLING CONTRACTOR CGT
GROUND ELEVATION 81 ft
EQUIPMENT 8-inch diameter hand auger
SEEPAGE ---
DRILLING METHOD
GROUNDWATER AT END ---
NOTES Surface Conditions: grass
GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	U.S.C.S.	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	WDCP N_{60} VALUE	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ WDCP N_{60} VALUE ▲ / PL LL MC / ☐ FINES CONTENT (%) ☐ 0 20 40 60 80 100
80		OL	**ORGANIC SILT TOPSOIL:** Soft to medium stiff, brown, moist, low plasticity, trace fine sand, frequent fine rootlets typically less than ¼ inch in diameter.		0						
					1						
79		CL	**SANDY LEAN CLAY:** Medium stiff to stiff, brown, moist, low to medium plasticity, fine-grained sand.		2						
78					3	GRAB 1					● 22 ☐ 69
77			•Boring terminated at about 3½ feet bgs. •No groundwater or caving observed. •Infiltration test IT-2 performed at about 3½ feet bgs. See Appendix A for test results. •Boring loosely backfilled with cuttings upon completion.								
76											
75											
74											
73											
72											
71											

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Appendix A: Results of Infiltration Testing

Northwest Housing Alternatives Campus Redevelopment
2316 SE Willard Street
Milwaukie, Oregon

CGT Project No. G1504158

May 12, 2015

Prepared For:

Mr. Stephen McMurtrey
Northwest Housing Alternatives
2316 SE Willard Street
Milwaukie, Oregon 97222

Prepared By:

Carlson Geotechnical

A.1.0 CORRESPONDENCE WITH CLIENT

Our client requested three infiltration tests be performed at the site at a maximum depth of about 20 feet below existing site grades. CGT performed two, 4-foot deep infiltration tests and one, 20-foot deep infiltration test. The tests were located as requested by the project civil engineer, KPFF. The approximate locations of the infiltration tests (designated as IT-1, IT-2, and IT-3) are shown on the Site Plan, which is attached to the Geotechnical report as Figure 2.

A.2.0 TEST PROCEDURE

Three infiltration tests were performed within prepared hand auger and machine-drilled hollow stem auger borings at the site on April 23 and 24, 2015, in general accordance with the Encased Falling Head test method described in Appendix E of the Stormwater Standards, Clackamas County Service District No. 1, dated July 1, 2013. The following table presents the depth of the tests and the subsurface material encountered at the test depths.

Table A1: Infiltration Test Depths & Materials

Infiltration Test	Exploration	Test Depth[1] (feet bgs)	Test Elevation[2] (feet)	Subsurface Material at Test Depth
IT-1	HA-5	4	77	Clayey Sand (SC)
IT-2	HA-6	4½	76½	Sandy Lean Clay (CL)
IT-3	B-2	20	62	Clayey Sand (SC)

[1] Relative to existing site grades. bgs = below ground surface.
[2] Estimated from topographic map provided by KPFF as shown on Figure 2, Site Plan. Elevations should be considered approximate.

The hand auger borings (HA-5 and HA-6) were advanced to the test depths using an 8-inch diameter manual auger. A 6-inch-inner-diameter PVC pipe was inserted into each of the auger holes. The lower 2 inches of the test pipes were filled with open-graded gravel fill up to about ¾-inch in diameter to prevent scouring. The subsurface soils at the base of the pipes were "soaked" for at least four hours, in accordance with the referenced test method by pouring about 12 inches of water (measured vertically) into the test pipes.

The machine-drilled boring (B-2) was advanced to the test depth using a Deidrich D-50 truck-mounted drill rig with 8-inch outside diameter/6-inch inside-diameter hollow stem augers. Once the boring was advanced to the test depth, a garden hose was lowered to the bottom of the boring (i.e., to prevent scouring) and a 12-inch column of water was placed in the boring.

After the soaking period, testing was initiated by recording the drop in water level of an approximate 12-inch column of water on 10- to 20-minute intervals.

A.3.0 TEST RESULTS

The following tables present the raw data and calculated rates of infiltration that we observed from the infiltration tests. Please note the calculated infiltration rates do not include any safety or correction factors.

Table A2: Results of Infiltration Test IT-1

Infiltration Test	Trial	Time Interval (minutes)	Drop in Water Level[1] (inches)	Raw Infiltration Rate (inches per hour)
IT-1	1	20	0	0
	2	20	1/16	3/16
	3	20	1/16	3/16
	4	20	1/16	3/16
[1] Measured to nearest 1/16 inch using a measuring tape and top of pipe as a fixed datum.				

Table A3: Results of Infiltration Test IT-2

Infiltration Test	Trial	Time Interval (minutes)	Drop in Water Level[1] (inches)	Raw Infiltration Rate (inches per hour)
IT-2	1	20	1/16	3/16
	2	20	⅛	3/8
	3	20	1/16	3/16
[1] Measured to nearest 1/16 inch using a measuring tape and top of pipe as a fixed datum.				

Table A4: Results of Infiltration Test IT-3

Infiltration Test	Trial	Time Interval (minutes)	Drop in Water Level[1] (inches)	Raw Infiltration Rate (inches per hour)
IT-3	1	10	0	0
	2	10	0	0
	3	10	0	0
	4	10	0	0
	5	10	0	0
	6	18 hours	3/16	About 0.01
[1] Measured to nearest 1/16 inch using an electronic water level indicator and the top of hollow stem auger casing as a fixed datum.				

A.4.0 DISCUSSION

As indicated in the preceding section, we calculated raw infiltration rates ranging from about 0.01 to 3/8 inch per hour in the borings. These infiltration rates do not include any safety or correction factors. We recommend the stormwater infiltration system designer consult the appropriate design manual in order to assign appropriate safety/correction factors to calculate the design infiltration rate for the infiltration system. Once the design is completed, we recommend the infiltration system design (provided by others) and location be reviewed by the geotechnical engineer. If the location and/or depth of the system(s) change from what was indicated at the time of our fieldwork, additional testing may be recommended.

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Appendix B: Liquefaction Analyses

Northwest Housing Alternatives Campus Redevelopment
2316 SE Willard Street
Milwaukie, Oregon

CGT Project Number G1504158

May 12, 2015

Prepared for

Mr. Stephen McMurtrey
Northwest Housing Alternatives
2316 SE Willard Street
Milwaukie, Oregon 97222

Prepared by
CARLSON GEOTECHNICAL

TABLE OF CONTENTS

ATTACHMENTS

Doc ID: G:\GEOTECH\PROJECTS\2015 Projects\NW Housing Alternatives\008 - Deliverables\Appendix B - Liquefaction Analyses.doc

B.1.0 LIQUEFACTION OVERVIEW

In general, liquefaction occurs when deposits of loose/soft, saturated, cohesionless soils, generally sands and silts, are subjected to strong earthquake shaking. If these deposits cannot drain quickly enough, pore water pressures can increase, approaching the value of the overburden pressure. The shear strength of a cohesionless soil is directly proportional to the effective stress, which is equal to the difference between the overburden pressure and the pore water pressure. When the pore water pressure increases to the value of the overburden pressure, the shear strength of the soil reduces to zero, and the soil deposit can liquefy. The liquefied soils can undergo rapid consolidation or, if unconfined, can flow as a liquid. Structures supported by the liquefied soils can experience rapid, excessive settlement, shearing, or even catastrophic failure.

The susceptibility of sands, gravels, and sand-gravel mixtures to liquefaction is typically assessed based on penetration resistance, as measured using SPTs, CPTs, or Becker Hammer Penetration tests (BPTs). For fine-grained soils, susceptibility to liquefaction is evaluated based on penetration resistance and plasticity, among other characteristics. Criteria for identifying non-liquefiable, fine-grained soils are constantly evolving. Current practice to identify non-liquefiable, fine-grained soils is based on plasticity characteristics of the soils, as follows: (1) liquid limit greater than 47 percent, (2) plasticity index greater than 20 percent, and (3) moisture content less than 85 percent of the liquid limit[1]. Soils identified as susceptible to liquefaction are analyzed using the industry standard "simplified procedure", originally published by Seed and Idriss[2] in 1971 and updated continually since that time.

According to the Oregon Department of Geology and Mineral Industries' Oregon Statewide Geohazards Viewer[3], the site is located in an area mapped as having a high potential for liquefaction-induced settlement.

B.2.0 SUBSURFACE CONDITIONS

As detailed in the geotechnical report, the soils encountered within our borings at the site consisted of a variable mix of clay, silt and sand. Groundwater seepage was encountered at a depth of about 26 feet below ground surface (bgs) in drilled boring B-3. Based on their generally cohesionless behavior, loose to medium dense relative density, and their saturated conditions (i.e., below groundwater level), the clayey sand (SC) and poorly graded sand with clay (SP-SC) encountered in boring B-3 are considered susceptible to liquefaction when adequately saturated and subjected to design-level seismic shaking.

B.3.0 ANALYSES

B.3.1 Overview

The "simplified procedure" for evaluation of soil liquefaction potential and estimating liquefaction-induced settlements requires parameters for soil, groundwater, and scaling factors associated with design-level seismic sources recognized by the USGS. Soil parameters were determined based on the results of the

---

1 Seed, R.B. et al., 2003. Recent Advances in Soil Liquefaction Engineering: A Unified and Consistent Framework. Earthquake Engineering Research Center Report No. EERC 2003-06.

2 Seed, H.B., and Idriss, I.M., 1971, Simplified Procedure for Evaluating Soil Liquefaction Potential, Journal of Geotechnical Engineering Division, ASCE, 97(9), 1249-1273.

3 Oregon Statewide Geohazards Viewer: http://www.oregongeology.org/hazvu/

geotechnical investigation (drilled borings) performed as part of this assignment. Groundwater was modeled at a depth of 25 feet bgs to account for anticipated minor seasonal and annual fluctuation. The seismic scaling factors include earthquake magnitude (M) and ground surface peak ground acceleration (PGA). These scaling factors were assigned for de-aggregated (individual) seismic sources determined from a probabilistic seismic hazard analysis (PSHA) in general accordance with guidelines presented in ODOT (2005)[4]. In addition, we considered scaling factors associated with an aggregated (composite) design seismic event using code-based procedures. The following sections detail the procedures in determining the seismic scaling factors used in our analyses.

B.3.2 De-Aggregated Seismic Sources

The PSHA includes a de-aggregation of the seismic hazards at the site, which breaks the aggregated (composite) seismic hazard for the specific return period into the de-aggregated (component) hazards that represent the specific seismic sources. The specific seismic sources are grouped based on their relative contribution to the aggregate seismic hazard. This allows examination of the seismic sources that represent the greatest potential for impacting the site.

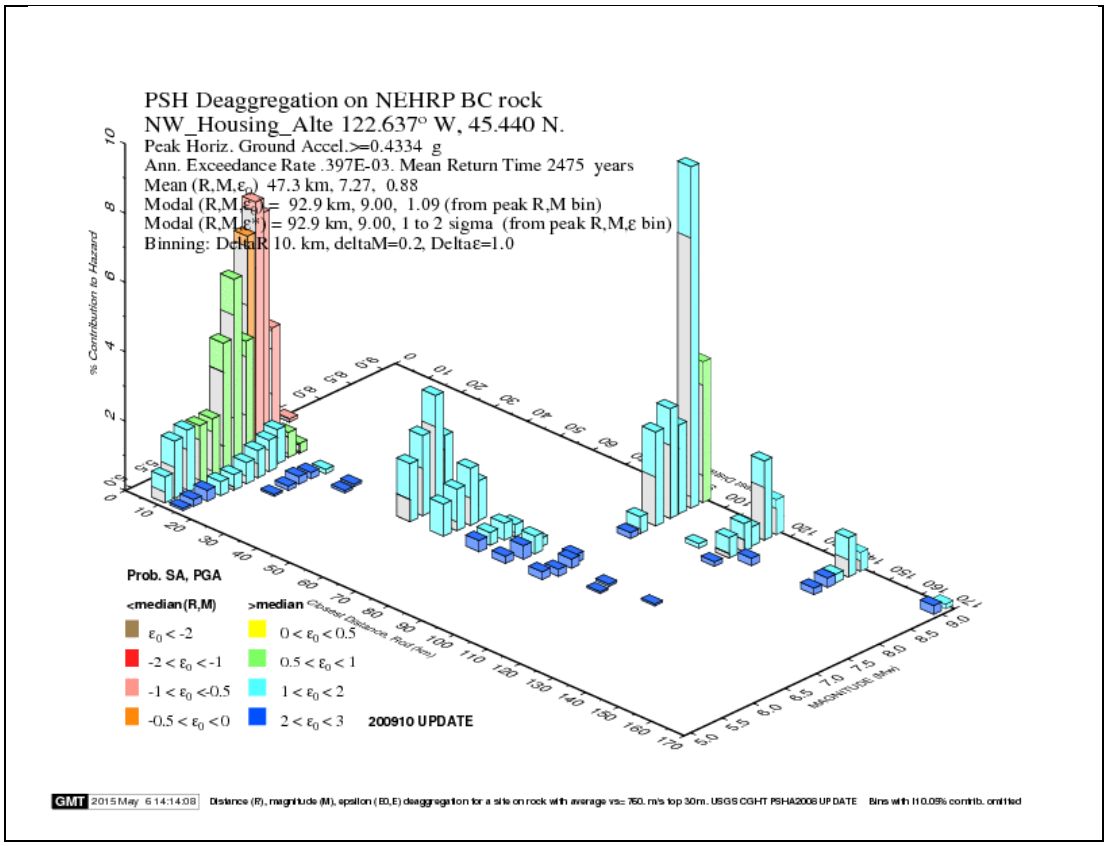
B.3.2.1 Seismic Hazard De-Aggregation

De-aggregations of the cumulative seismic hazard were performed, using tools available on the USGS website[5], to define individual seismic sources that contribute the most hazard at the site considering a probability of exceedance of 2 percent during a 50-year period (2,475 year return period). The site Latitude 45.44026° North and Longitude 122.63743° West were input as the site location in the de-aggregation utility. For the indicated return period of interest, Inset 1 presents the results of the de-aggregation in terms of distance from the site ("x-axis"), percent contribution ("y axis"), and magnitude of discrete seismic sources ("z" axis); the site is located at the left-most corner of the graph.

[4] Dickenson, S.E., et al., June 2005, Recommended Guidelines for Liquefaction Evaluations using Ground Motions From Probabilitistic Seismic Hazard Analyses,

[5] https://geohazards.usgs.gov/deaggint/2008/

INSET 1: Spatial De-aggregation of Seismic Hazard at Project Site



For the purposes of liquefaction evaluation, the "principal seismic source" was defined as the source with the highest contribution to the cumulative seismic hazard at the site. This source is presented in the following table.

Table B1: Seismic Hazard De-Aggregation Data for Principal Seismic Source

Probability of Exceedance	Seismic Source[a]	Source to Site Distance, R (km)	Magnitude, M	All Epsilon[b], ε
2 percent in 50 years (2,475 year return period)	1	93 km	M9.0	9.839

[a] Source contributes the majority of the cumulative seismic hazard at the site. Not all seismic sources indicated by de-aggregation were evaluated.
[b] Total epsilon is analogous with relative percent contribution to the seismic hazard for the M-R pair considered.

B.3.2.2 Bedrock PGA for Modal M-R Pair

Published attenuation relationships, available on-line through the commercial software SHAKE2000 (version 9.99.2), were used to determine median values for bedrock PGAs for the principal seismic source at the site. The selection of attenuation relationships and the averaging of their results were performed in general accordance with the procedures detailed in the documentation for the 2008 update

to the USGS seismic hazard maps[6]. The principal seismic source and corresponding PGA are presented in the following table.

Table B2: Bedrock PGA for Principal Seismic Source

Probability of Exceedance	Seismic Source	Earthquake Type[a]	M,R Pair[b]	Bedrock PGA (g)
2 percent in 50 years (2,475 year return period)	1	CSZ Interface	M9.0, 93 km	0.16g

[a] Identified by observation of magnitude and source-to-site distance.
[b] Data drawn from Table B1.

B.3.2.3 Ground Surface PGA for Modal M-R Pair

The ground surface PGA for the principal seismic source considered was obtained using soil amplification factors drawn from a chart-based approach[7]. This conservative approach was used in the absence of a site-specific evaluation of ground response.

Table B3: Ground Surface PGA for Principal Seismic Source

Probability of Exceedance	Seismic Source	Earthquake Type	M,R Pair	Ground Surface PGA[a] (g)
2 percent in 50 years (2,475 year return period)	1	CSZ Interface	M9.0, 93 km	0.23g

[a] Determined using soil amplification factors (Seed et al, 1994).

B.3.3 "Aggregated" Seismic Event

The 2014 OSSC allows for determination of an "aggregated" ground surface PGA for use in liquefaction analyses. This value is not attributable to a specific seismic source, rather is calculated considering the cumulative effect from all seismic sources in the region for the indicated probability of exceedance (2 percent in 50 years).

B.3.3.1 Ground Surface PGA

Section 11.8.3 of ASCE 7-10 provides guidance for calculation of the "aggregated PGA_{gs}" for use in evaluation of liquefaction potential at the subject project site. The following tabulation presents the parameters determined to calculate this value.

Table B4: Parameters Determined to Calculate Aggregated PGA_{gs}

Parameter	Value	Source
Site Classification	D	Table 4 of geotechnical report
Mapped MCE_G Peak Ground Acceleration, PGA	0.424g	Figure 22-7 of ASCE 7-10
Site Coefficient, F_{PGA}	1.076	Table 11.8-1 of ASCE 7-10
MCE_G Peak Ground Acceleration Adjusted for Site Class Effects	0.456g	Equation 11.8-1 of ASCE 7-10
Note: MCE = Maximum Considered Earthquake		

[6] Petersen, Mark D., Frankel, Arthur D., Harmsen, Stephen C., Mueller, Charles S., Haller, Kathleen M., Wheeler, Russell L., Wesson, Robert L., Zeng, Yuehua, Boyd, Oliver S., Perkins, David M., Luco, Nicolas, Field, Edward H., Wills, Chris J., and Rukstales, Kenneth S., 2008, Documentation for the 2008 Update of the United States National Seismic Hazard Maps: U.S. Geological Survey Open-File Report 2008–1128, 61 p.

[7] Dickenson, S.E., et al., 2002, Assessment and Mitigation of Liquefaction Hazards to Bridge Approach Embankments in Oregon, Final Report to the Oregon Department of Transportation, SPR 361, Report Number FHWA-OR-RD-03-04 (Figure 3.2 and Table 3.5).

B.3.3.2 Earthquake Magnitude

The 2014 OSSC (and ASCE 7-10) does not include guidance for selection of the earthquake magnitude (M) to "couple" with the ground surface PGA determined in accordance with Section 11.8.3 of ASCE 7-10. Recognizing the ground surface PGA was derived using aggregated (composite) probabilistic data for design-level earthquakes, we assigned the "aggregated earthquake magnitude" for this site by taking the mean value identified from the de-aggregation data presented above. By observation of the data, the "aggregated earthquake magnitude" is M7.27.

B.3.4 Settlement Analyses

The commercially available software LiquefyPro, version 5.8H (2009), developed by CivilTech was used to estimate liquefaction-induced settlement at this site for the de-aggregated principal seismic source and the "aggregated" seismic source event discussed above. In addition to subsurface data and earthquake scaling factors, inputs for the analyses include the selection of empirical calculation methods to evaluate liquefaction potential and estimate settlements. For processing of the subsurface data, we selected the Stark \ Olsen method for fines correction in predominately coarse-grained soils. For calculating settlement, we selected two analyses methods: the Tokimatsu / Seed method and the Ishihara / Yoshimine method. The results of our analyses are summarized in the following table and are shown graphically in the attached Figures B1 through B4.

Table B5: Results of Liquefaction-Induced Settlement Analyses

Modeled Earthquake	Seismic Source	Earthquake Type	M	PGA	Predicted Total Liquefaction Settlement[a]		
					Tokimatsu / Seed Method	Ishihara / Yoshimine Method	Average Settlement from Two Methods
De-Aggregated Seismic Source	1	Interface	M9.0	0.23g	0.58 inches	3.25 inches	1.92 inches
"Aggregated" Seismic Event	2	N/A	M7.27	0.456g	3.12 inches	3.95 inches	3.54 inches

[a] See attached Figures B1 through B4 for graphical results of the liquefaction analyses.

B.3.5 Review of Estimated Settlements

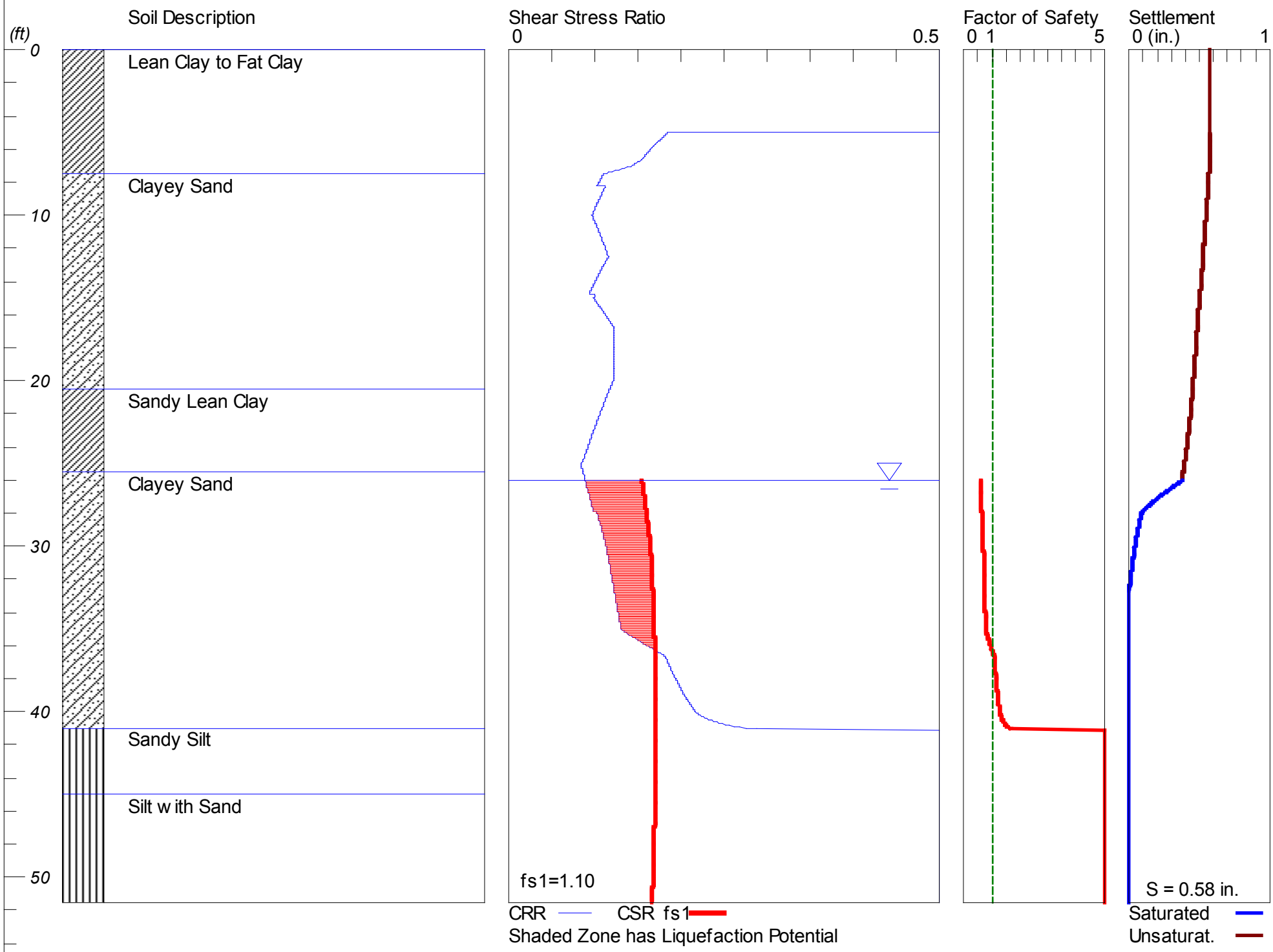
As shown in Table B5 and the attached Figures B1 through B4, our analyses indicated total liquefaction-induced settlements ranging from about 2 to 3½ inches may occur at the site due to a design-level seismic event. Recognizing the relatively flat nature of the site and relatively uniform subsurface conditions encountered, we recommend assuming differential settlements equal to one half of total liquefaction-induced settlements. We recommend the magnitude of this estimated differential settlement be considered appropriate across the shortest axis of the building (i.e. one end of the building to the other).

LIQUEFACTION ANALYSIS

NW Housing Alternatives Campus

Hole No.=Boring B-3 Water Depth=26 ft Surface Elev.=79

Magnitude=9.00
Acceleration=0.23g



CARLSON CGT GEOTECHNICAL 503-684-3460

De-aggregated Seismic Source (Tokimatsu/Seed Method)

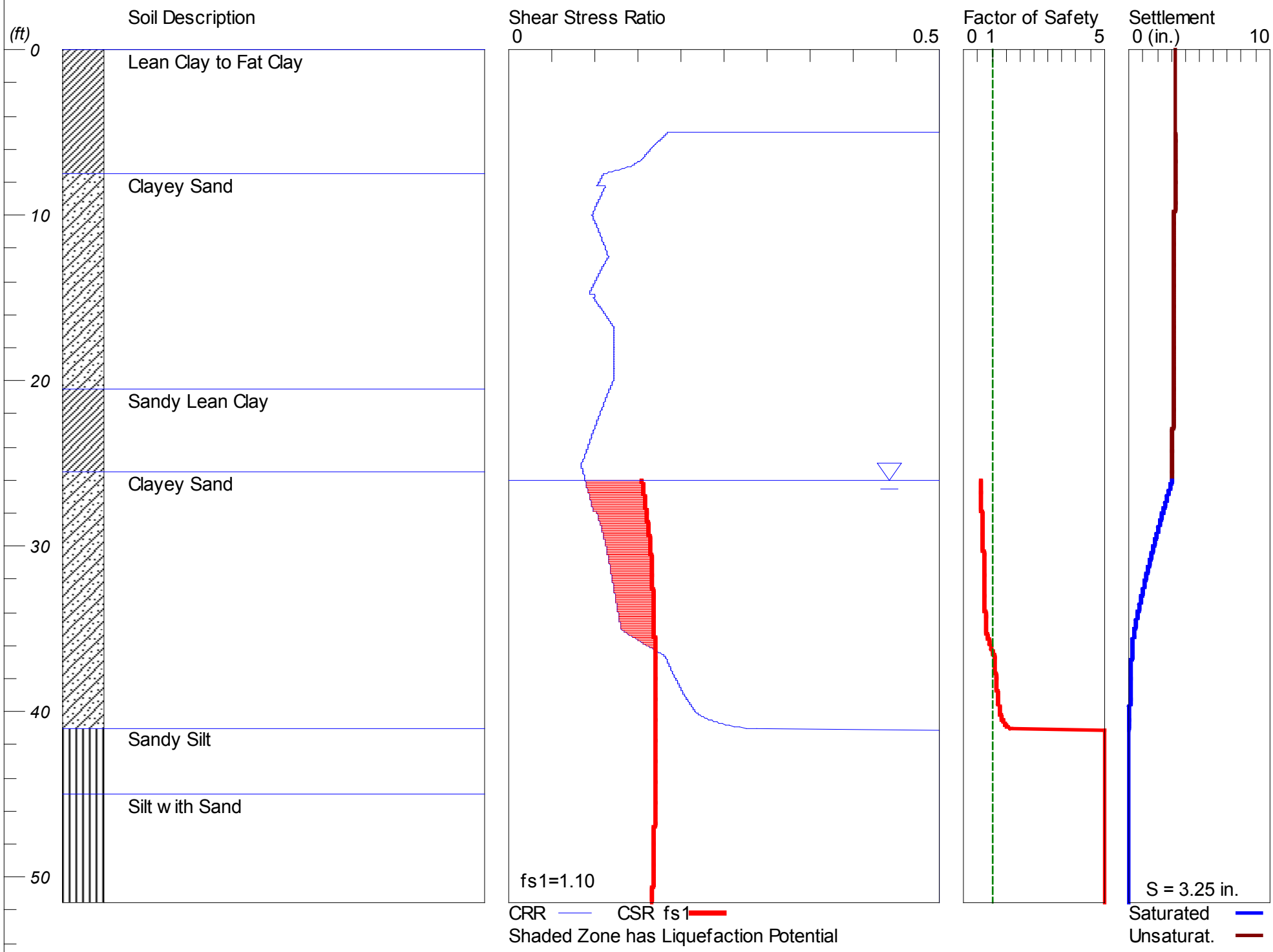
Figure B-1

LIQUEFACTION ANALYSIS

NW Housing Alternatives Campus

Hole No.=Boring B-3 Water Depth=26 ft Surface Elev.=79

Magnitude=9.00
Acceleration=0.23g



CARLSON CGT GEOTECHNICAL 503-684-3460

De-aggregated Seismic Source (Ishahara/Yoshimine Method)

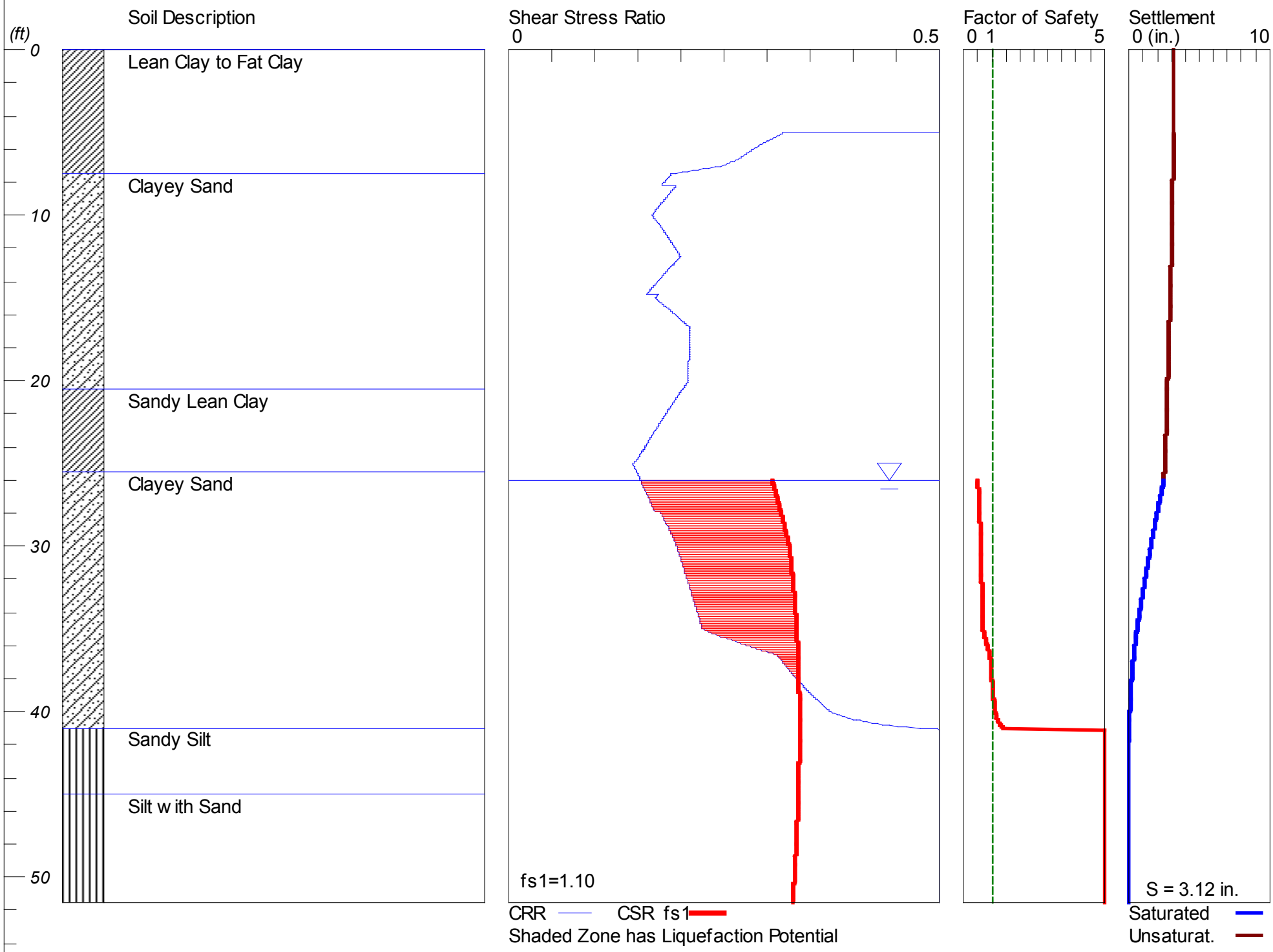
Figure B-2

LIQUEFACTION ANALYSIS

NW Housing Alternatives Campus

Hole No.=Boring B-3 Water Depth=26 ft Surface Elev.=79

Magnitude=7.27
Acceleration=.456g



CARLSON CGT GEOTECHNICAL 503-684-3460

Aggregated Seismic Event (Tokimatsu/Seed Method)

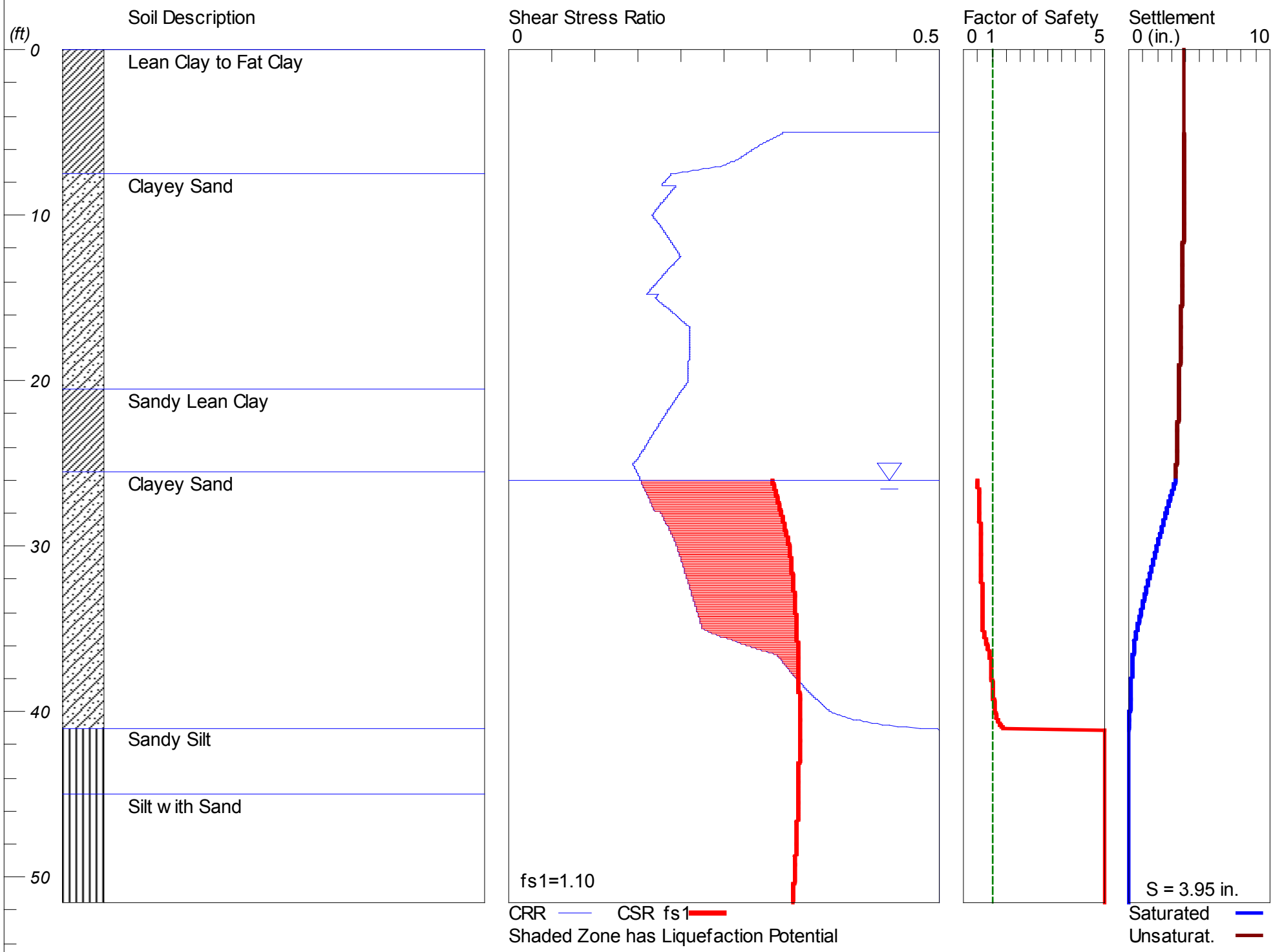
Figure B-3

LIQUEFACTION ANALYSIS

NW Housing Alternatives Campus

Hole No.=Boring B-3 Water Depth=26 ft Surface Elev.=79

Magnitude=7.27
Acceleration=.456g



CARLSON CGT GEOTECHNICAL 503-684-3460

Aggregated Seismic Event (Ishihara/Yoshimine Method)

Figure B-4

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Appendix 3

Assumptions

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Design Storm

The SBUH method also requires a design storm to perform the runoff calculations. For flow control calculations, BES uses a NRCS Type 1A 24-hour storm distribution. This storm is shown in Figure C-1 and Table C-4. The depth of rainfall for the 2 through 100-year storm events is shown below in Table C-1.

Table C-1
24-HOUR RAINFALL DEPTHS AT PORTLAND AIRPORT

Recurrence Interval, Years	2	5	10	25	100
24-Hour Depths, Inches	2.4	2.9	3.4	3.9	4.4

Table C-2
RUNOFF CURVE NUMBERS

Runoff curve numbers for urban areas*

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area	A	B	C	D
		POST-DEVELOPED CONDITION			
Open space (lawns, parks, golf courses, cemeteries, etc.):					
Poor condition (grass cover <50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82

Runoff curve numbers for other agricultural lands*

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range-continuous forage for grazing					
<50% ground cover or heavily grazed with no mulch	Poor	68	79	86	89
50 to 75% ground cover and not heavily grazed	Fair	49	69	79	84
>75% ground cover and lightly or only occasionally grazed	Good	39	61	74	80
Meadow-continuous grass, protected from grazing and generally mowed for hay	-	30	58	71	78
Brush--weed-grass mixture with brush as the major element					
<50% ground cover	Poor	48	67	77	83
50 to 75% ground cover	Fair	35	56	70	77
>75% ground cover	Good	30	48	65	73
Woods-grass combination (orchard or tree farm)	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79

PRE-DEVELOPED CONDITION

Runoff curve numbers for other agricultural lands*

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Woods					
Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.	Poor	45	66	77	83
Woods are grazed but not burned, and some forest litter covers the soil.	Fair	36	60	73	79
Woods are protected from grazing, and litter and brush adequately cover the soil.	Good	30	55	70	77

Runoff curve numbers for Simplified Approaches**

Cover description		Curve numbers for hydrologic soil group			
Simplified Approaches	Hydrologic condition	A	B	C	D
Eco-roof	Good	n/a	61	n/a	n/a
Roof Garden	Good	n/a	48	n/a	n/a
Contained Planter Box	Good	n/a	48	n/a	n/a
Infiltration & Flow-Through Planter Box	Good	n/a	48	n/a	n/a
Pervious Pavement	-	76	85	89	n/a
Trees					
New and/or Existing Evergreen	-	36	60	73	79
New and/or Existing Deciduous	-	36	60	73	79

n/a - Does not apply, as design criteria for the relevant mitigation measures do not include the use of this soil type.
*Soil Conservation Service, *Urban Hydrology for Small Watersheds*, Technical Release 55, pp. 2.5-2.8, June 1986.
**CNs of various cover types were assigned to the Proposed Simplified Approaches with similar cover types as follows:
Eco-roof – assumed grass in good condition with soil type B.
Roof Garden – assumed brush-weed-grass mixture with >75% ground cover and soil type B.
Contained Planter Box – assumed brush-weed-grass mixture with >75% ground cover and soil type B.
Infiltration & Flow-Through Planter Box – assumed brush-weed-grass mixture with >75% ground cover and soil type B.
Pervious Pavement – assumed gravel.
Trees – assumed woods with fair hydrologic conditions.

Note: To determine hydrologic soil type, consult local USDA Soil Conservation Service Soil Survey.

Hydrologic Soil Group—Clackamas County Area, Oregon
(NHA Campus)

Map Scale: 1:1,040 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- 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: http://websoilsurvey.nrcs.usda.gov
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 10, Sep 18, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2014—Sep 5, 2014

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.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Clackamas County Area, Oregon (OR610)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
82	Urban land		1.4	54.3%
91B	Woodburn silt loam, 3 to 8 percent slopes	C	1.2	45.7%
Totals for Area of Interest			**2.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Appendix 4a

Water Quality (PAC) Calculations

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Presumptive Approach Calculator ver. 1.2

Catchment Data

Catchment ID:	**A**
Project Name:	**NHA Campus Redevelopment**
Date:	**02/04/16**
Project Address:	**2316 SE WILLARD ST**
	MILWAUKIE, OR 97222
Permit Number:	**0**
Designer:	**Josh Lighthipe**
Run Time	2/4/2016 9:56:25 PM
Company:	**KPFF**

Drainage Catchment Information

Catchment ID	A	
	Catchment Area	
Impervious Area	22,984	SF
Impervious Area	0.53	ac
Impervious Area Curve Number, CN_{imp}	98	
Time of Concentration, Tc, minutes	5	min.

Site Soils & Infiltration Testing Data

Infiltration Testing Procedure:	Open Pit Falling Head	
Native Soil Field Tested Infiltration Rate (I_{test}):	0.1	in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes	

Correction Factor Component

CF_{test} (ranges from 1 to 3)	2	

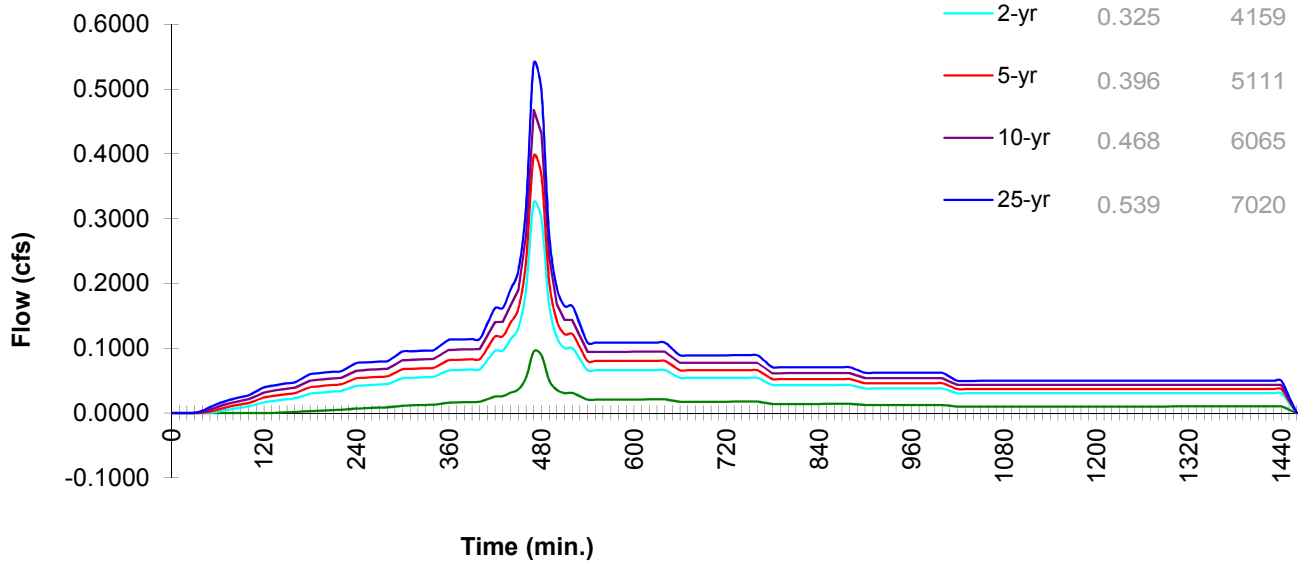
Design Infiltration Rates

I_{dsgn} for Native (I_{test} / CF_{test}):	0.05	in/hr	**Design infiltration rate < 0.5 in/hr**
I_{dsgn} for Imported Growing Medium:	2.00	in/hr	

Execute SBUH

SBUH Results

	Peak Rate (cfs)	Volume (cf)
PR	0.095	1201
2-yr	0.325	4159
5-yr	0.396	5111
10-yr	0.468	6065
25-yr	0.539	7020



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Presumptive Approach Calculator ver. 1.2

Catchment ID: A

Run Time 2/4/2016 9:56:25 PM

Project Name: NHA Campus Redevelopment **Catchment ID:** A **Date:** 2/4/2016

Instructions:

1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

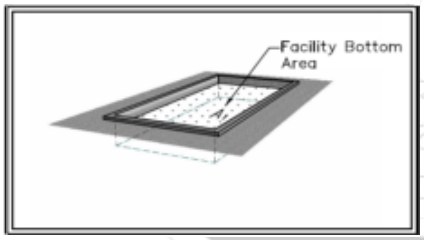
Catchment facility will meet Hierarchy Category: **3**

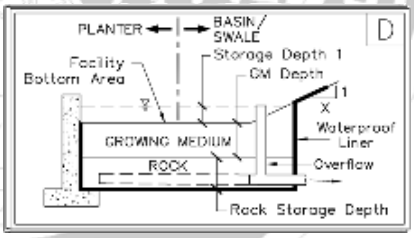
Goal Summary:

Hierarchy Category	SWMM Requirement	RESULTS box below needs to display…	
		Pollution Reduction as a	10-yr (aka disposal) as a
3	Off-site flow to drainageway, river, or storm-only pipe system.	PASS	N/A

Facility Type = Planter (Flat)

Facility Shape: Rectangle/Square **Facility Configuration:** D





Calculation Guide
Max. Rock Stor. Bottom Area
563 SF

DATA FOR ABOVE GRADE STORAGE COMPONENT

Facility Bottom Area =	563	sf
Bottom Width =	3.0	ft
Facility Side Slope =	0	to 1
Storage Depth 1 =	6	in
Growing Medium Depth =	18	in
Freeboard Depth =	N/A	in
Surface Capacity at Depth 1 =	282	cf
GM Design Infiltration Rate =	2.00	in/hr
Infiltration Capacity =	0.026	cfs

BELOW GRADE STORAGE

Rock Storage Capacity =		cf
Native Design Infiltration Rate =		in/hr
Infiltration Capacity =		cfs

RESULTS

Pollution Reduction: **PASS** | Overflow Volume: 0 CF | **47%** Surf. Cap. Used | Run PAC

Output File

	2-yr	5-yr	10-yr	25-yr
Peak cfs	0.325	0.396	0.468	0.539

Current data has been exported:

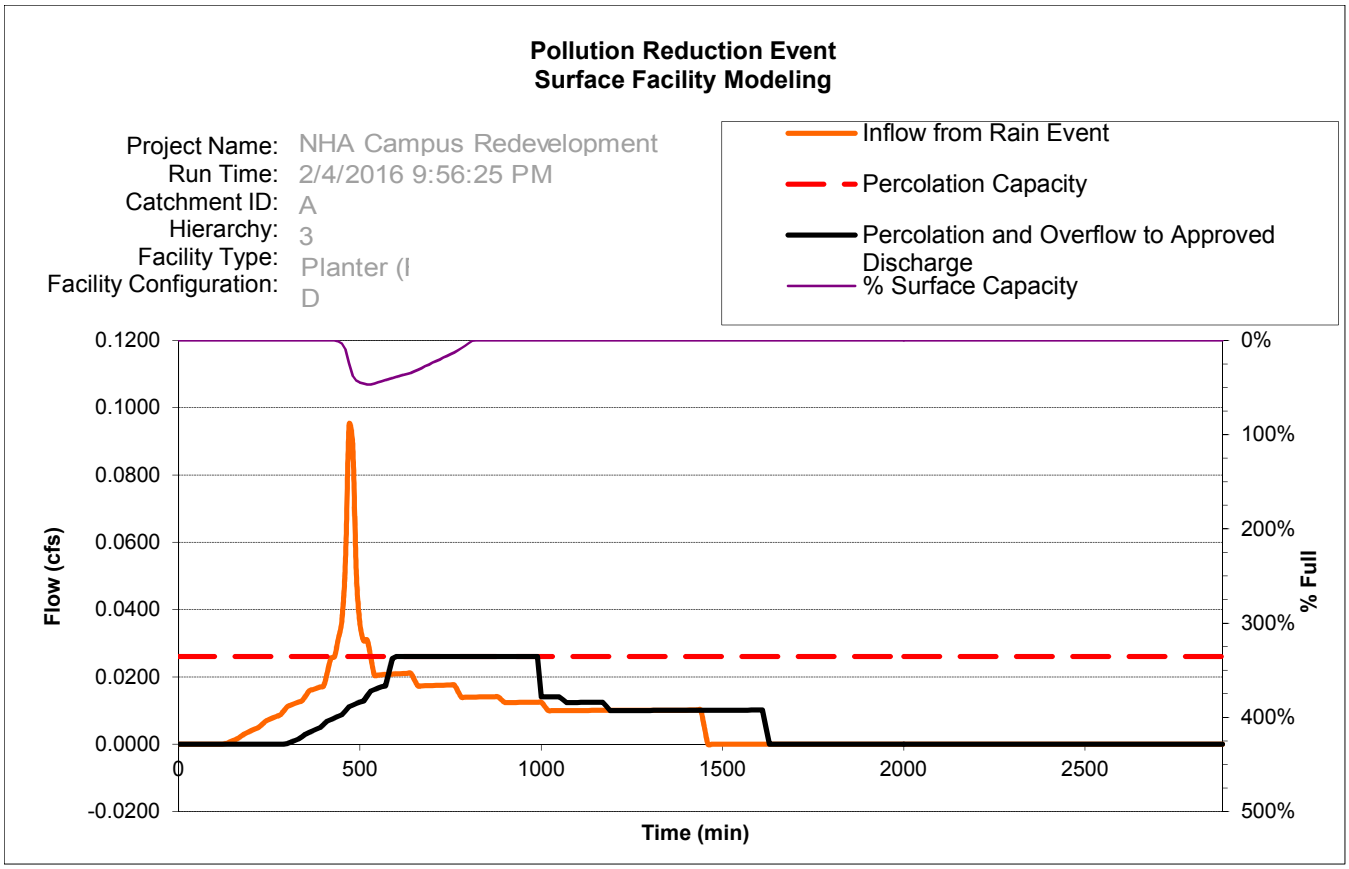
20160205-ftp-a.xls **2/4/2016 9:57:20 PM**

FACILITY FACTS

Total Facility Area Including Freeboard =	563 SF
Sizing Ratio (Total Facility Area / Catchment Area) =	0.024

BES - Presumptive Approach Calculator - Ver 1.2

PR Con-D



Presumptive Approach Calculator ver. 1.2

Catchment Data

Catchment ID:	**B**
Date:	**02/04/16**
Permit Number:	**0**
Run Time	2/4/2016 10:01:11 PM

Project Name:	**NHA Campus Redevelopment**
Project Address:	**2316 SE WILLARD ST**
	MILWAUKIE, OR 97222
Designer:	**Josh Lighthipe**
Company:	**KPFF**

Drainage Catchment Information

Catchment ID	B	
	Catchment Area	
Impervious Area	15,171	SF
Impervious Area	0.35	ac
Impervious Area Curve Number, CN_{imp}	98	
Time of Concentration, Tc, minutes	5	min.

Site Soils & Infiltration Testing Data

Infiltration Testing Procedure:	Open Pit Falling Head	
Native Soil Field Tested Infiltration Rate (I_{test}):	0.1	in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes	

Correction Factor Component

CF_{test} (ranges from 1 to 3)	2	

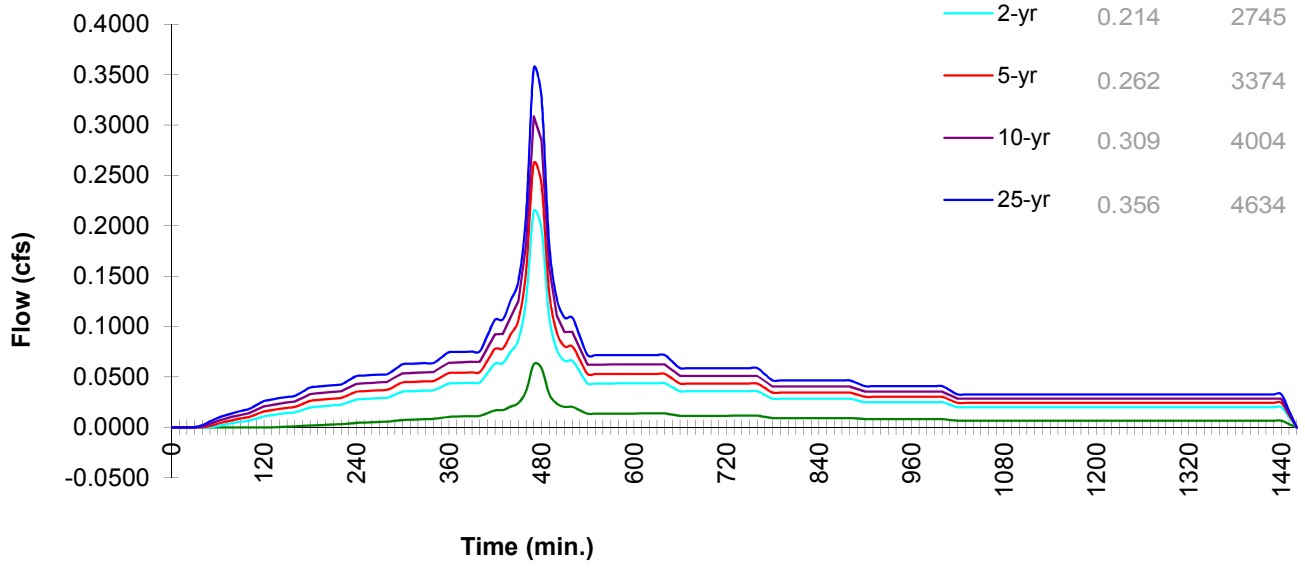
Design Infiltration Rates

I_{dsgn} for Native (I_{test} / CF_{test}):	0.05	in/hr	**Design infiltration rate < 0.5 in/hr**
I_{dsgn} for Imported Growing Medium:	2.00	in/hr	

Execute SBUH

SBUH Results

	Peak Rate (cfs)	Volume (cf)
PR	0.063	793
2-yr	0.214	2745
5-yr	0.262	3374
10-yr	0.309	4004
25-yr	0.356	4634



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Presumptive Approach Calculator ver. 1.2

Catchment ID: B

Run Time: 2/4/2016 10:01:11 PM

Project Name: NHA Campus Redevelopment **Catchment ID:** B **Date:** 2/4/2016

Instructions:

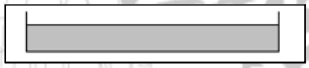
1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

Catchment facility will meet Hierarchy Category: **3**

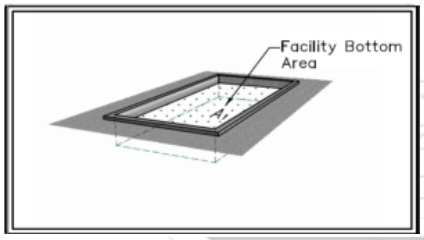
Goal Summary:

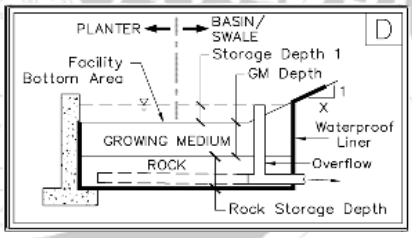
Hierarchy Category	SWMM Requirement	RESULTS box below needs to display…	
		Pollution Reduction as a	10-yr (aka disposal) as a
3	Off-site flow to drainageway, river, or storm-only pipe system.	PASS	N/A

Facility Type = Planter (Flat)



Facility Shape: Rectangle/Square **Facility Configuration:** D





Calculation Guide
Max. Rock Stor. Bottom Area
327 SF

DATA FOR ABOVE GRADE STORAGE COMPONENT **BELOW GRADE STORAGE**

Facility Bottom Area =	327	sf
Bottom Width =	3.0	ft
Facility Side Slope =	0	to 1
Storage Depth 1 =	6	in
Growing Medium Depth =	18	in
Freeboard Depth =	N/A	in

Surface Capacity at Depth 1 =	164	cf
GM Design Infiltration Rate =	2.00	in/hr
Infiltration Capacity =	0.015	cfs

Rock Storage Capacity =		cf
Native Design Infiltration Rate =		in/hr
Infiltration Capacity =		cfs

RESULTS

Pollution Reduction: **PASS** | Overflow Volume: 0 CF | **62%** Surf. Cap. Used | Run PAC

Output File

	2-yr	5-yr	10-yr	25-yr
Peak cfs	0.214	0.262	0.309	0.356

Current data has been exported:

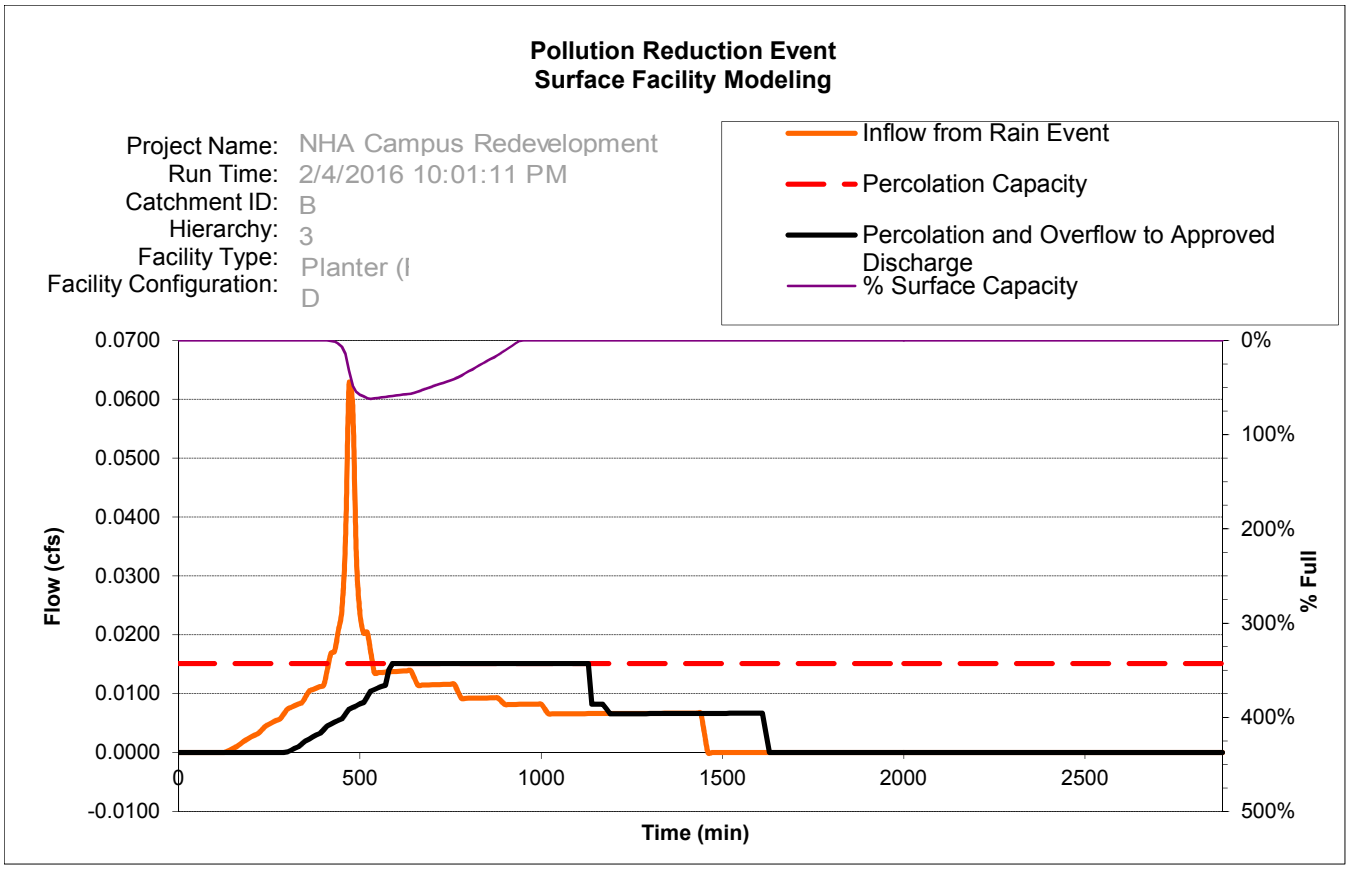
20160205-ftp-b.xls **2/4/2016 10:01:34 PM**

FACILITY FACTS

Total Facility Area Including Freeboard =	**327 SF**
Sizing Ratio (Total Facility Area / Catchment Area) =	**0.022**

BES - Presumptive Approach Calculator - Ver 1.2

PR Con-D



Presumptive Approach Calculator ver. 1.2

Catchment Data

Catchment ID:	**C**
Date:	**02/04/16**
Permit Number:	**0**
Run Time	2/4/2016 10:11:48 PM

Project Name:	**NHA Campus Redevelopment**
Project Address:	**2316 SE WILLARD ST**
	MILWAUKIE, OR 97222
Designer:	**Josh Lighthipe**
Company:	**KPFF**

Drainage Catchment Information

Catchment ID	C	
	Catchment Area	
Impervious Area	8,855	SF
Impervious Area	0.20	ac
Impervious Area Curve Number, CN_{imp}	98	
Time of Concentration, Tc, minutes	5	min.

Site Soils & Infiltration Testing Data

Infiltration Testing Procedure:	Open Pit Falling Head	
Native Soil Field Tested Infiltration Rate (I_{test}):	0.1	in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes	

Correction Factor Component

CF_{test} (ranges from 1 to 3)	2	

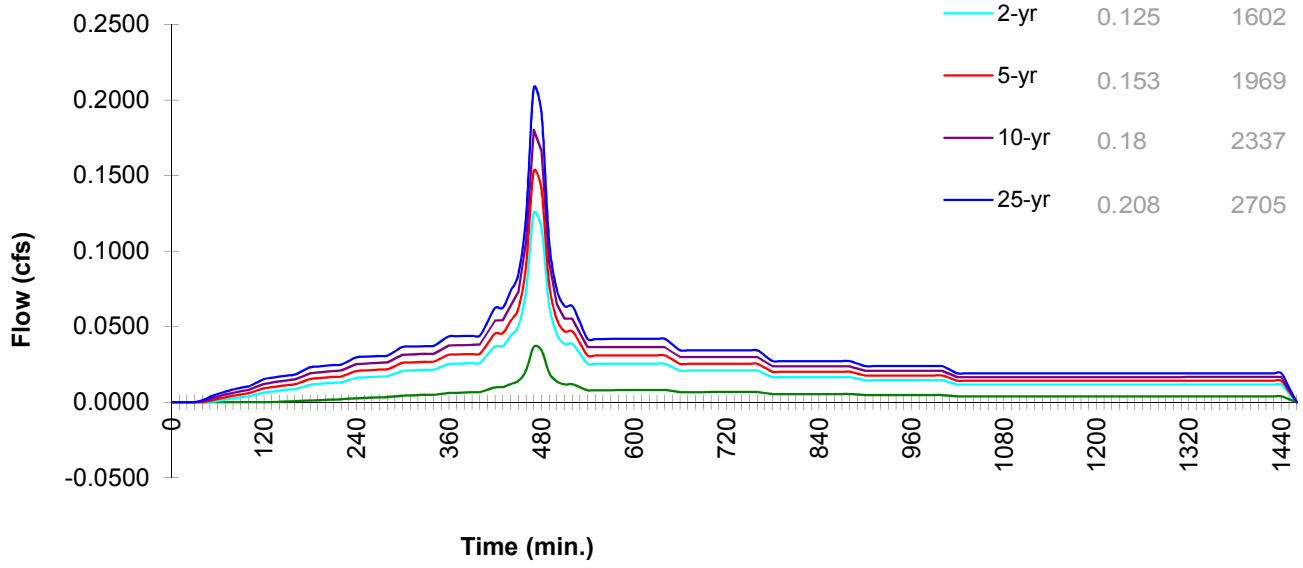
Design Infiltration Rates

I_{dsgn} for Native (I_{test} / CF_{test}):	0.05	in/hr	**Design infiltration rate < 0.5 in/hr**
I_{dsgn} for Imported Growing Medium:	2.00	in/hr	

Execute SBUH

SBUH Results

	Peak Rate (cfs)	Volume (cf)
PR	0.037	463
2-yr	0.125	1602
5-yr	0.153	1969
10-yr	0.18	2337
25-yr	0.208	2705



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Presumptive Approach Calculator ver. 1.2

Catchment ID: C

Run Time: 2/4/2016 10:11:48 PM

Project Name: NHA Campus Redevelopment **Catchment ID:** C **Date:** 2/4/2016

Instructions:

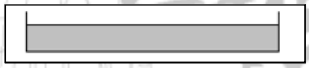
1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

Catchment facility will meet Hierarchy Category: **3**

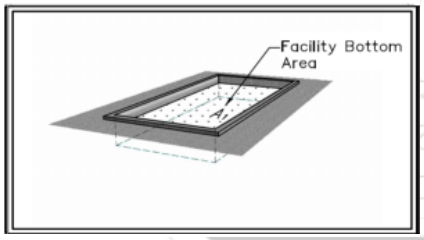
Goal Summary:

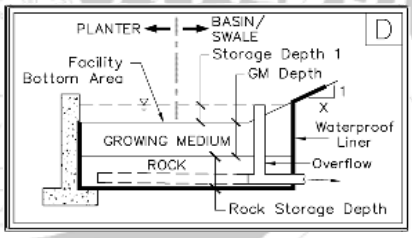
Hierarchy Category	SWMM Requirement	RESULTS box below needs to display…	
		Pollution Reduction as a	10-yr (aka disposal) as a
3	Off-site flow to drainageway, river, or storm-only pipe system.	PASS	N/A

Facility Type = Planter (Flat)



Facility Shape: Rectangle/Square **Facility Configuration:** D





Calculation Guide
Max. Rock Stor. Bottom Area
425 SF

DATA FOR ABOVE GRADE STORAGE COMPONENT

Facility Bottom Area =	425	sf
Bottom Width =	5.0	ft
Facility Side Slope =	0	to 1
Storage Depth 1 =	6	in
Growing Medium Depth =	18	in
Freeboard Depth =	N/A	in

BELOW GRADE STORAGE

Rock Storage Capacity =		cf
Native Design Infiltration Rate =		in/hr
Infiltration Capacity =		cfs

Surface Capacity at Depth 1 =	213	cf
GM Design Infiltration Rate =	2.00	in/hr
Infiltration Capacity =	0.020	cfs

RESULTS

Pollution Reduction	Overflow Volume		
PASS	0 CF	9%	Surf. Cap. Used

Run PAC

Output File

	2-yr	5-yr	10-yr	25-yr
Peak cfs	0.116	0.153	0.180	0.208

Current data has been exported:

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FACILITY FACTS

Total Facility Area Including Freeboard =	425 SF
Sizing Ratio (Total Facility Area / Catchment Area) =	0.048

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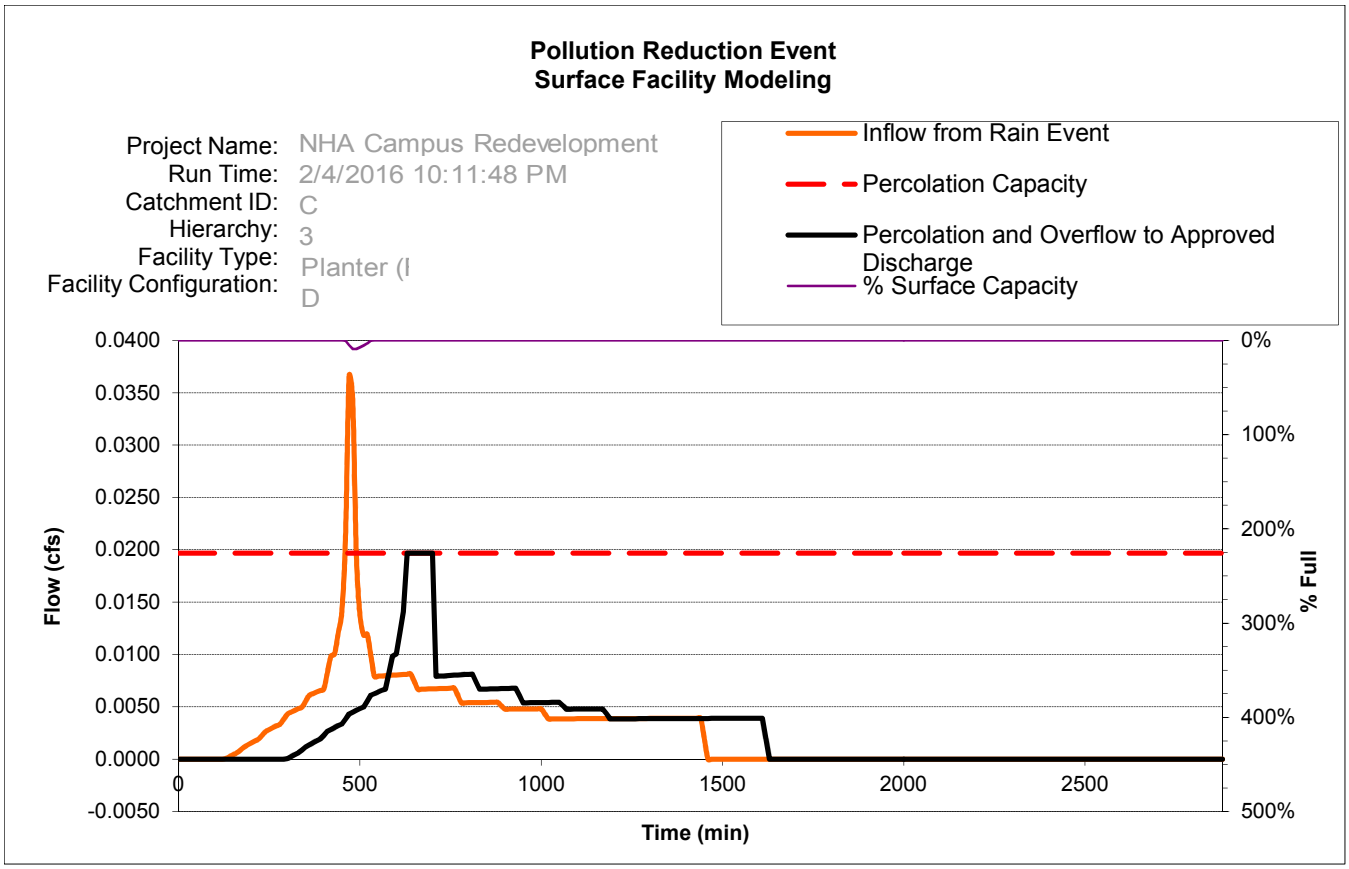
PR Con-D



Presumptive Approach Calculator ver. 1.2

Catchment Data

Catchment ID:	**D**
Date:	**02/04/16**
Permit Number:	**0**
Run Time	2/4/2016 10:47:39 PM

Project Name:	**NHA Campus Redevelopment**
Project Address:	**2316 SE WILLARD ST**
	MILWAUKIE, OR 97222
Designer:	**Josh Lighthipe**
Company:	**KPFF**

Drainage Catchment Information

Catchment ID	D	
	Catchment Area	
Impervious Area	9,824	SF
Impervious Area	0.23	ac
Impervious Area Curve Number, CN_{imp}	98	
Time of Concentration, Tc, minutes	5	min.

Site Soils & Infiltration Testing Data

Infiltration Testing Procedure:	Open Pit Falling Head	
Native Soil Field Tested Infiltration Rate (I_{test}):	0.1	in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes	

Correction Factor Component

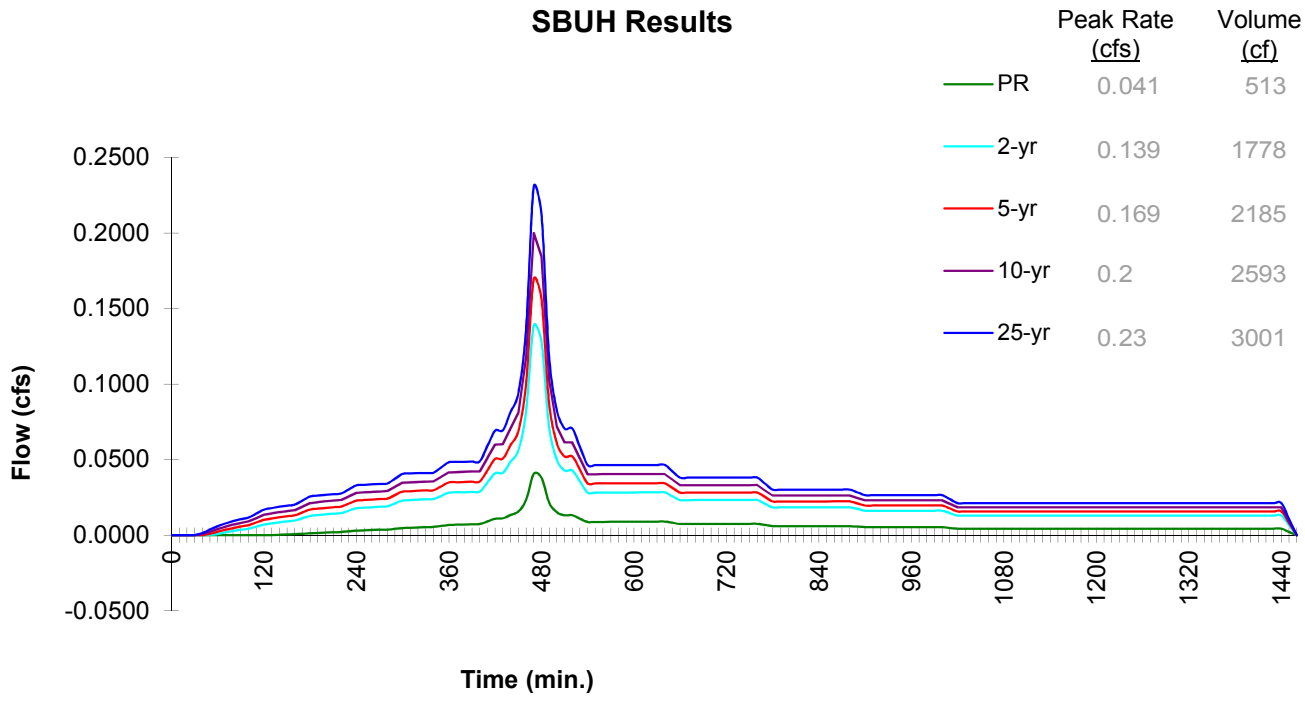
CF_{test} (ranges from 1 to 3)	2	

Design Infiltration Rates

I_{dsgn} for Native (I_{test} / CF_{test}):	0.05	in/hr	**Design infiltration rate < 0.5 in/hr**
I_{dsgn} for Imported Growing Medium:	2.00	in/hr	

Execute SBUH

SBUH Results



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Presumptive Approach Calculator ver. 1.2

Catchment ID: D

Run Time: 2/4/2016 10:47:39 PM

Project Name: NHA Campus Redevelopment **Catchment ID:** D **Date:** 2/4/2016

Instructions:

1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

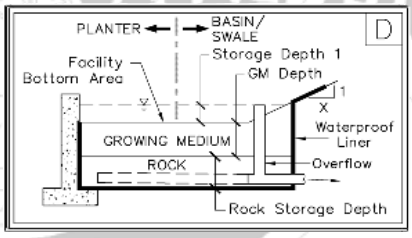
Catchment facility will meet Hierarchy Category: **3**

Goal Summary:

Hierarchy Category	SWMM Requirement	RESULTS box below needs to display…	
		Pollution Reduction as a	10-yr (aka disposal) as a
3	Off-site flow to drainageway, river, or storm-only pipe system.	PASS	N/A

Facility Type = Planter (Sloped)

Facility Configuration: D



Refer to Sloped Facility Worksheet and enter Variable Parameters

Calculation Guide
Max. Rock Stor. Bottom Area
Per Swale Dims

DATA FOR ABOVE GRADE STORAGE COMPONENT

Infiltration Area = 263 sf
Surface Capacity Volume = 132.0 cf

BELOW GRADE STORAGE

Growing Medium Depth = 18 in
Freeboard Depth = N/A in

Surface Capacity at Depth 1 = 132 cf
GM Design Infiltration Rate = 2.00 in/hr
Infiltration Capacity = 0.012 cfs

Rock Storage Capacity = cf
Native Design Infiltration Rate = in/hr
Infiltration Capacity = cfs

RESULTS

Pollution Reduction: **PASS** | Overflow Volume: 0 CF | **39%** Surf. Cap. Used | Run PAC

Output File

	2-yr	5-yr	10-yr	25-yr
Peak cfs	0.139	0.169	0.200	0.230

FACILITY FACTS

Total Facility Area Including Freeboard = **400 SF**
Sizing Ratio (Total Facility Area / Catchment Area) = **0.041**

Presumptive Approach Calculator Ver 1.2

Instructions:

1. Refer to facility graphics on the Graphics tab, then fill in all relevant facility parameters in the Data Entry table below. Data entry cells vary based on Facility Configuration selected on Facility Design Data tab.
2. Delete all facility parameters that may have been entered by the previous iteration that are no longer applicable.

Run Time 2/4/2016 10:47:39 PM

Project Name: NHA Campus Redevelopment **Date:** 2/4/2016 **Catchment ID:** D

Data Entry

Parameters

Facility Segment	Length of facility segment (ft) $L_{segment}$	Downstream Check Dam Length (ft) L_{dam}	Longitudinal Facility Slope (ft/ft) S	Bottom Width (ft) W_{bottom}	Side Slope Right X_{right}:1	Side Slope Left X_{left}:1	Downstream Depth (inches) D_{ds}	Landscape Width (ft) $W_{landscape}$
1	20	1	0.039	4.5	0.1	0.1	9	5
2	20	1	0.039	4.5	0.1	0.1	9	5
3	20	1	0.039	4.5	0.1	0.1	9	5
4	20	1	0.039	4.5	0.1	0.1	9	5
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Rock Storage Parameters

Facility Segment	Rock Storage Width (ft) W_{rock}	Rock Storage Depth (inches) D_{rock}	Rock Void Ratio v
1	8		
2	8		
3	8		
4	8		
5	8		
6	8		
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Error Messages

facility segment with warning message not fully utilized. Create shorter facility segments to increase surface storage capacity and infiltration area.

Warning
Warning
Warning
Warning

Project Name: Depth 2= Depth 3=

Worksheet Calculations

Parameters

Facility Segment	Adjusted Length of facility segment (ft) L_{adjust}	Adjusted Length if D_{up} = 0 (ft) $L_{adjust2}$	Upstream Depth (inches) D_{up}	Downstream Top Width (ft) $W_{top\text{-}ds}$	Upstream Top Width (ft) $W_{top\text{-}up}$	Downstream Cross-sectional Area (sf) A_{ds}	Upstream Cross-sectional Area (sf) A_{up}	**Surface Capacity Volume (cf) $V_{surface}$**	75% of Max. Downstream Depth (inches) $D_{ds75\%}$	75% of Max. Upstream Depth (inches) $D_{up75\%}$	75% of Max. Adjusted Length if $D_{up75\%}$ = 0 (ft) $L_{adjust3}$	75% of Max. Downstream Top Width (ft) $W_{top\text{-}ds75\%}$	75% of Max. Upstream Top Width (ft) $W_{top\text{-}up75\%}$	**Infiltration Area @ 75% Full (sf) $A_{75\%}$**
1	19.50	19.23	0.00	4.65	4.50	3.43	0.00	33	6.75	0.00	14.42	4.61	4.50	66
2	19.50	19.23	0.00	4.65	4.50	3.43	0.00	33	6.75	0.00	14.42	4.61	4.50	66
3	19.50	19.23	0.00	4.65	4.50	3.43	0.00	33	6.75	0.00	14.42	4.61	4.50	66
4	19.50	19.23	0.00	4.65	4.50	3.43	0.00	33	6.75	0.00	14.42	4.61	4.50	66
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0
								132	**$V_{surface}$ @ Depth1**					**263**

Rock Storage Parameters

Facility Segment	Rock Storage Length (ft) L_{rock}	**Rock Storage Bottom Area (sf) A_{rock}**	**Rock Storage Capacity Volume (cf) V_{rock}**
1	20	0	0
2	20	0	0
3	20	0	0
4	20	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
		0	**0**

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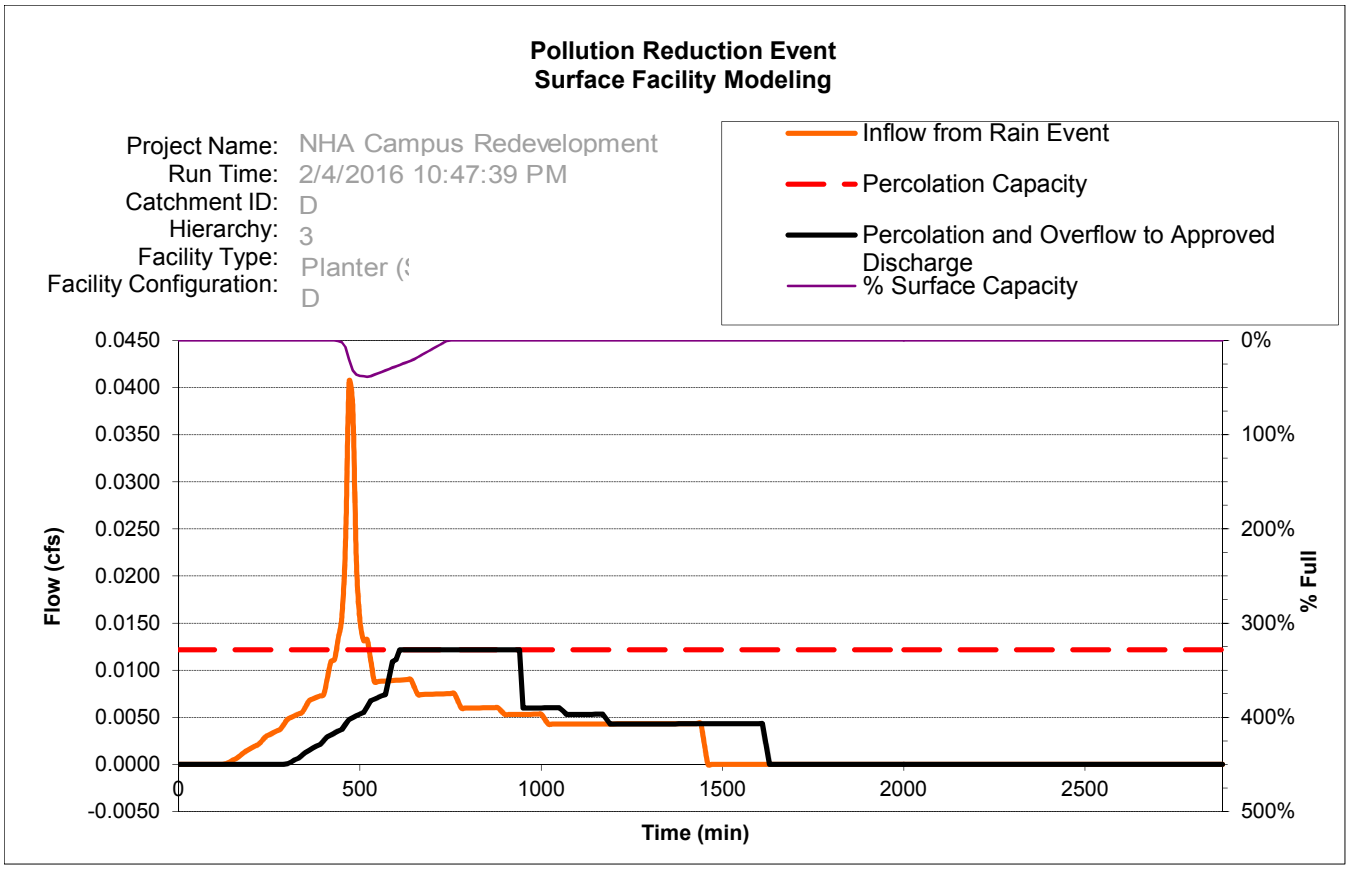
PR Con-D



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Appendix 4b

Flow Control Calculations

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Hydrograph Return Period Recap

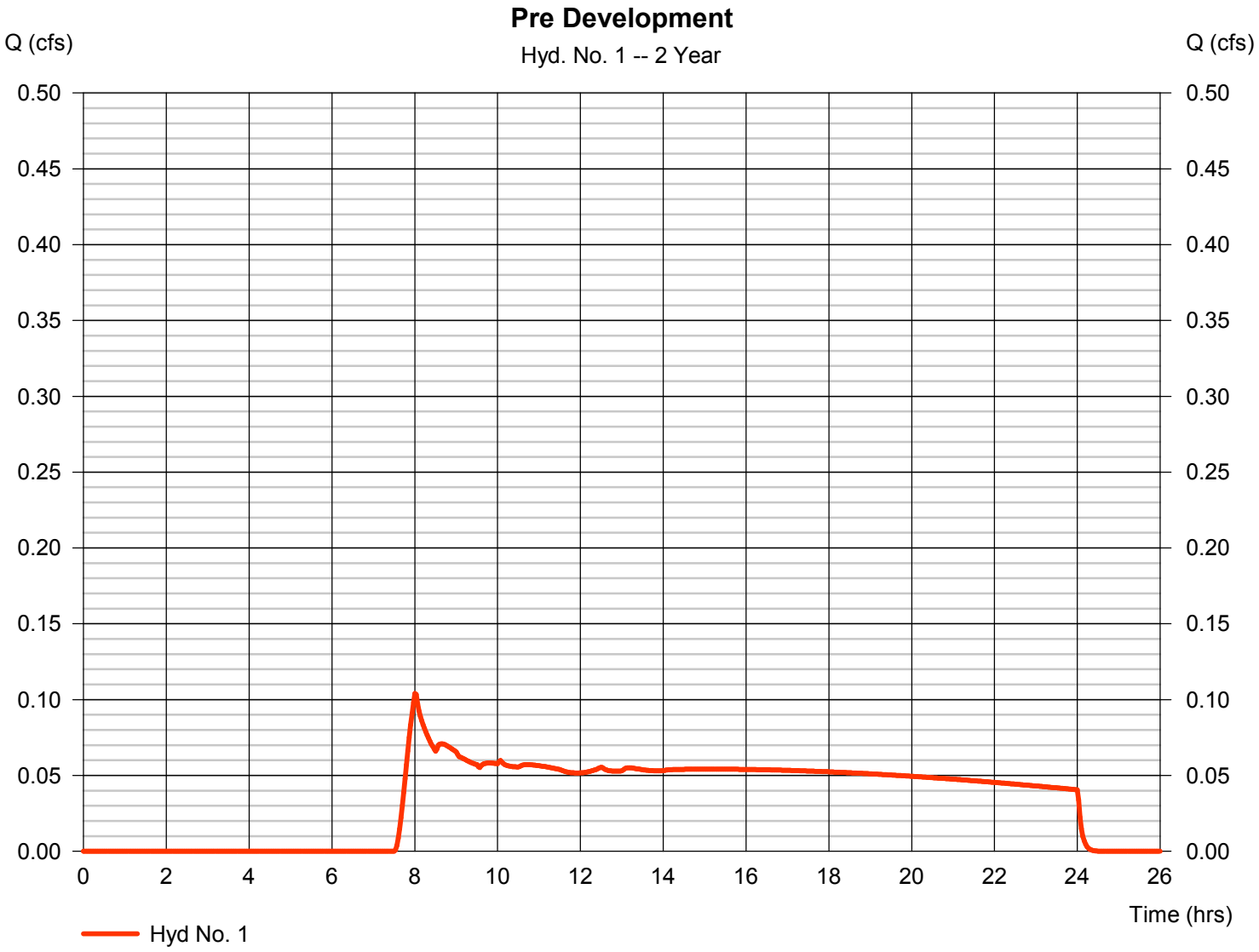
Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SBUH Runoff	------	-------	0.104	-------	0.221	0.356	0.505	-------	-------	Pre Development
3	SBUH Runoff	------	-------	0.563	-------	0.763	0.970	1.180	-------	-------	Post Development
4	Reservoir	3	-------	0.102	-------	0.125	0.257	0.484	-------	-------	Pre to Post

Hydrograph Report

Hyd. No. 1

Pre Development

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.104 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 3,156 cuft
Drainage area	= 1.690 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

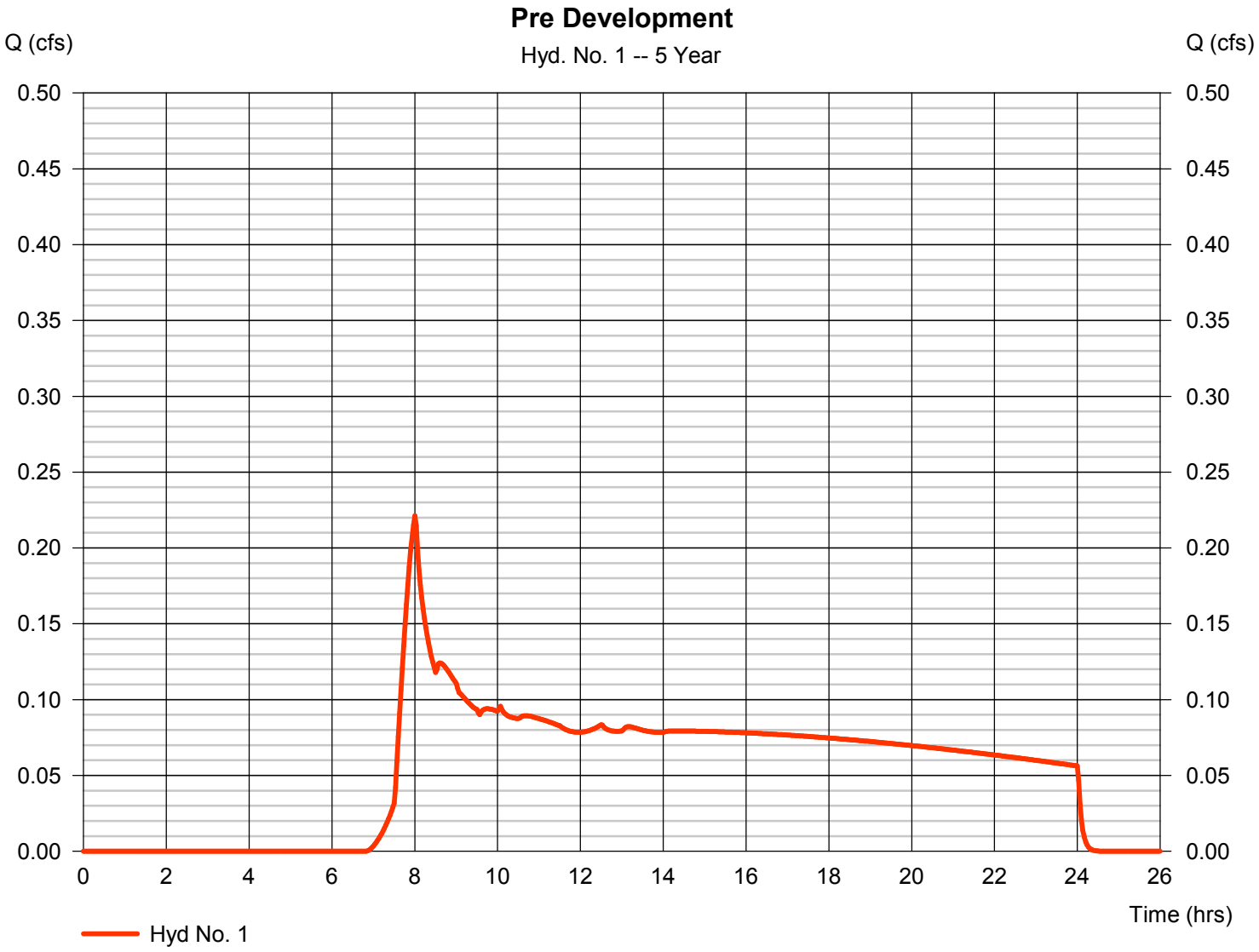


Hydrograph Report

Hyd. No. 1

Pre Development

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.221 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,886 cuft
Drainage area	= 1.690 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

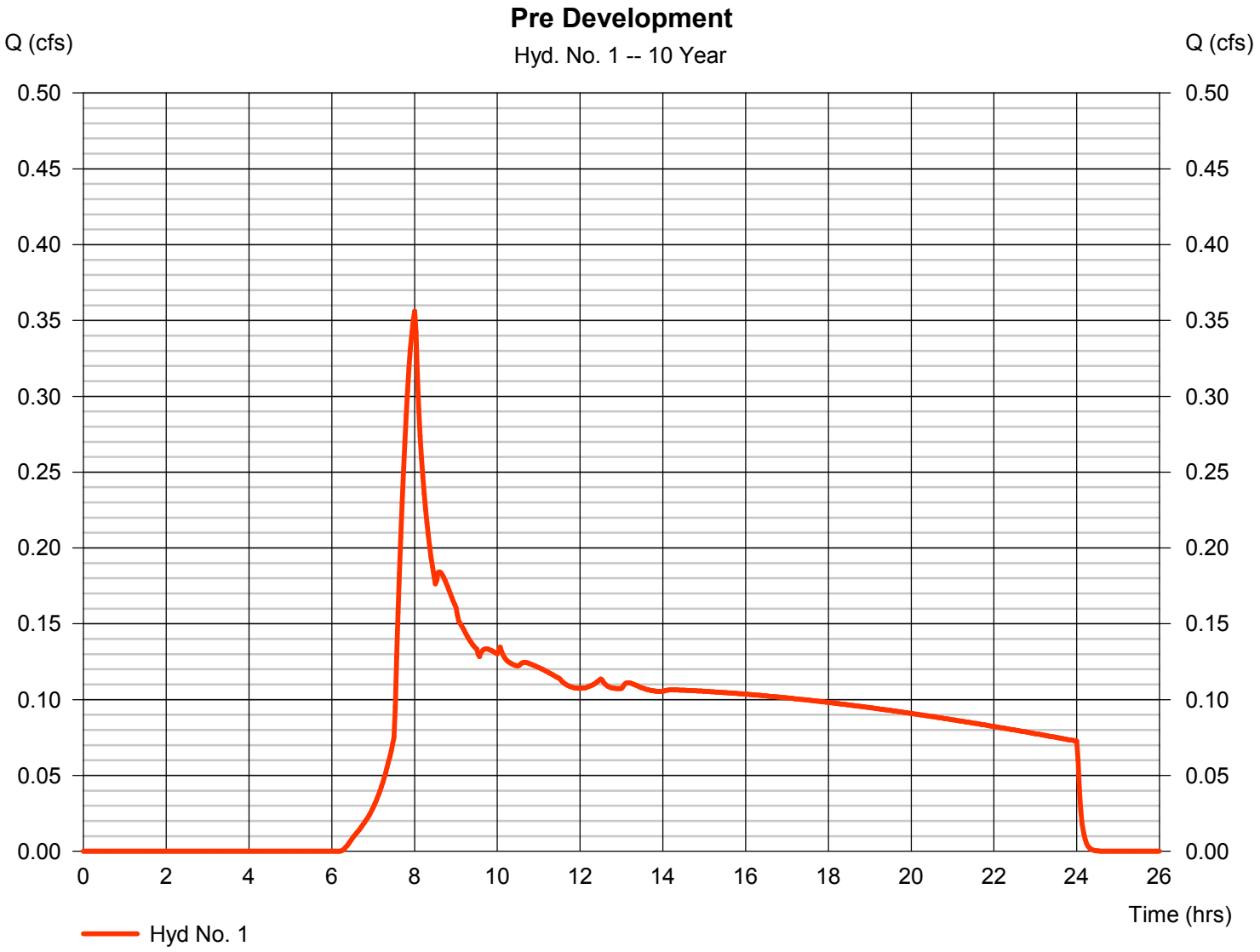


Hydrograph Report

Hyd. No. 1

Pre Development

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.356 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 6,828 cuft
Drainage area	= 1.690 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

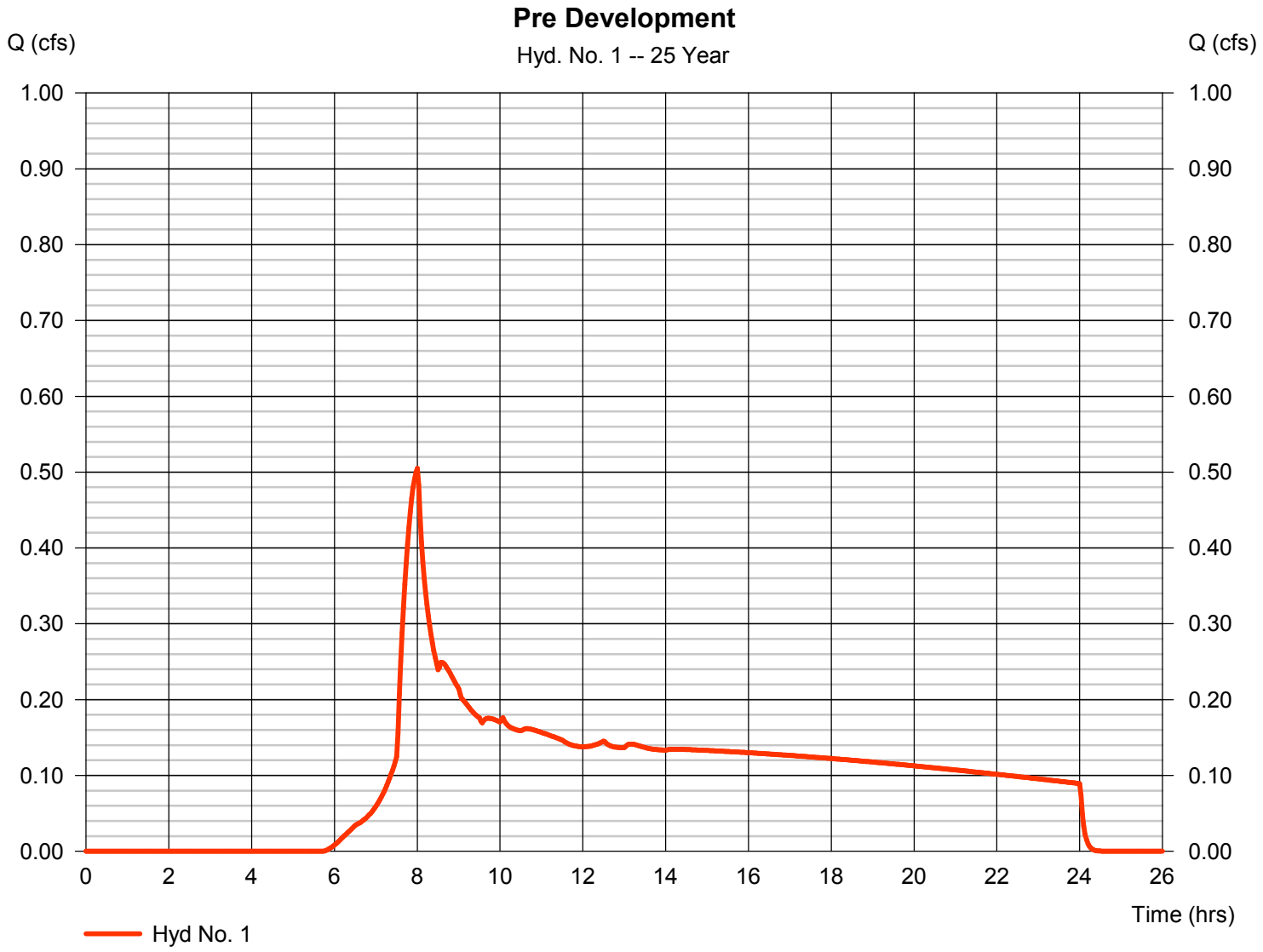


Hydrograph Report

Hyd. No. 1

Pre Development

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.505 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 8,933 cuft
Drainage area	= 1.690 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SBUH Runoff	------	-------	0.104	-------	0.221	0.356	0.505	-------	-------	Pre Development
3	SBUH Runoff	------	-------	0.563	-------	0.763	0.970	1.180	-------	-------	Post Development
4	Reservoir	3	-------	0.102	-------	0.125	0.257	0.484	-------	-------	Pre to Post

Pond Report

Pond No. 1 - Detention Box

Pond Data

UG Chambers -Invert elev. = 0.10 ft, Rise x Span = 5.00 x 12.00 ft, Barrel Len = 75.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	0.10	n/a	0	0
0.50	0.60	n/a	450	450
1.00	1.10	n/a	450	900
1.50	1.60	n/a	450	1,350
2.00	2.10	n/a	450	1,800
2.50	2.60	n/a	450	2,250
3.00	3.10	n/a	450	2,701
3.50	3.60	n/a	450	3,151
4.00	4.10	n/a	450	3,601
4.50	4.60	n/a	450	4,051
5.00	5.10	n/a	450	4,501

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	1.50	0.00	0.00
Span (in)	= 8.00	1.50	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 0.10	0.11	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.09	0.00	0.00	0.00
Crest El. (ft)	= 4.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	0.10	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.50	450	0.60	0.00	0.04 ic	---	---	0.00	---	---	---	---	---	0.039
1.00	900	1.10	0.00	0.06 ic	---	---	0.00	---	---	---	---	---	0.057
1.50	1,350	1.60	0.00	0.07 ic	---	---	0.00	---	---	---	---	---	0.071
2.00	1,800	2.10	0.00	0.08 ic	---	---	0.00	---	---	---	---	---	0.082
2.50	2,250	2.60	0.00	0.09 ic	---	---	0.00	---	---	---	---	---	0.092
3.00	2,701	3.10	0.00	0.10 ic	---	---	0.00	---	---	---	---	---	0.101
3.50	3,151	3.60	0.00	0.11 ic	---	---	0.00	---	---	---	---	---	0.109
4.00	3,601	4.10	0.00	0.12 ic	---	---	0.00	---	---	---	---	---	0.117
4.50	4,051	4.60	0.00	0.12 ic	---	---	0.00	---	---	---	---	---	0.124
5.00	4,501	5.10	0.85 ic	0.13 ic	---	---	0.80 ic	---	---	---	---	---	0.935

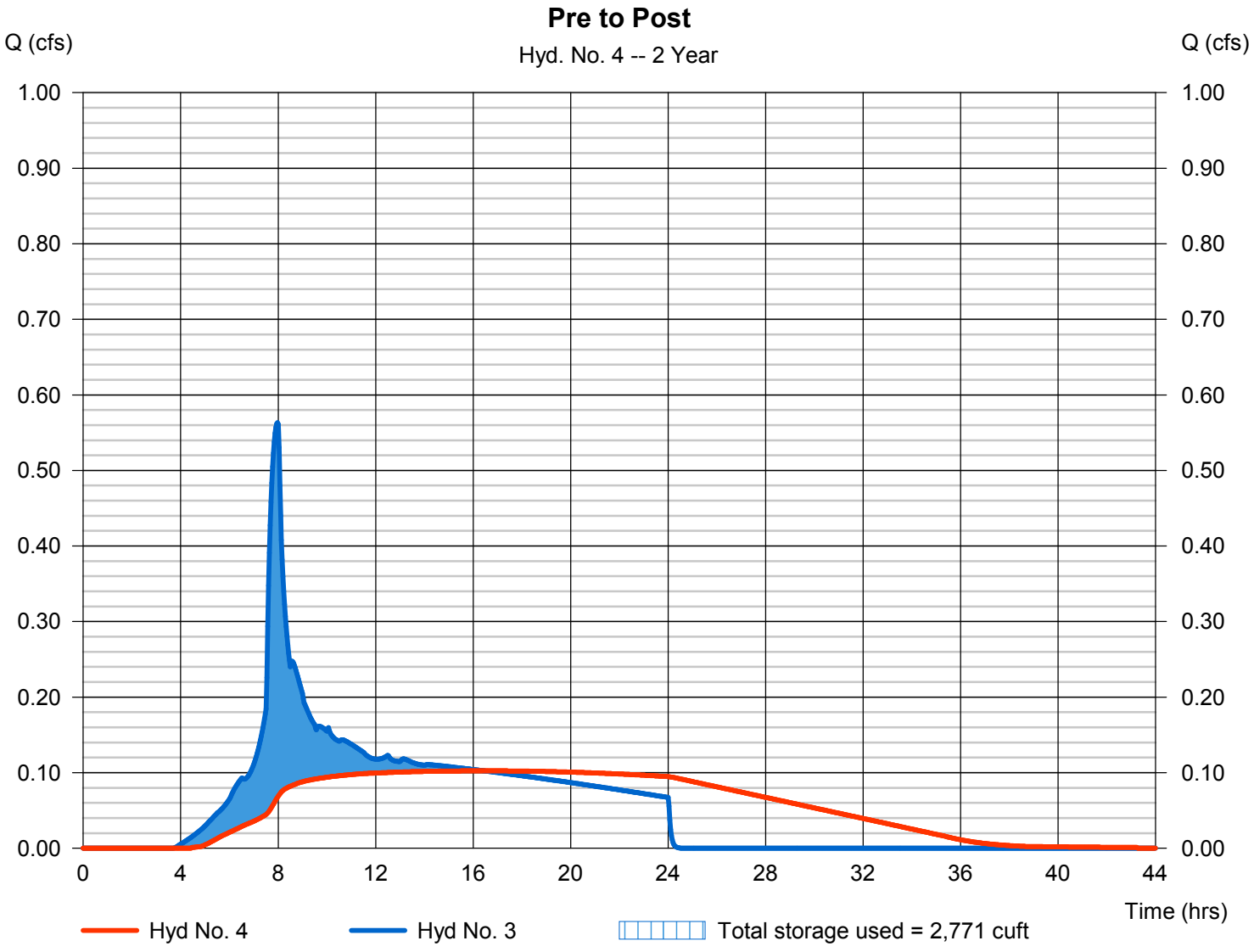
Hydrograph Report

Hyd. No. 4

Pre to Post

Hydrograph type	= Reservoir	Peak discharge	= 0.102 cfs
Storm frequency	= 2 yrs	Time to peak	= 16.43 hrs
Time interval	= 2 min	Hyd. volume	= 8,371 cuft
Inflow hyd. No.	= 3 - Post Development	Max. Elevation	= 3.18 ft
Reservoir name	= Detention Box	Max. Storage	= 2,771 cuft

Storage Indication method used.



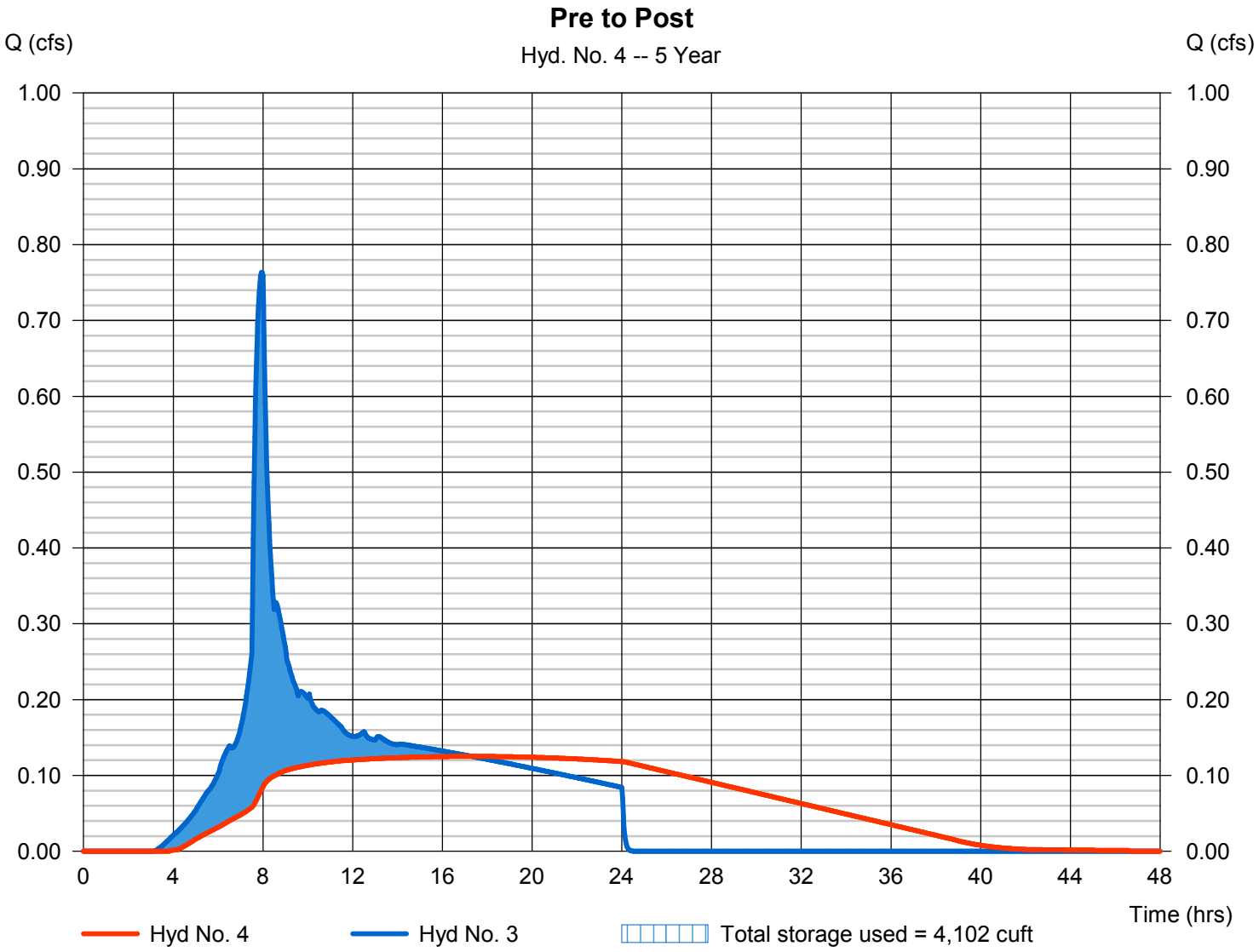
Hydrograph Report

Hyd. No. 4

Pre to Post

Hydrograph type	=	Reservoir	Peak discharge	=	0.125 cfs
Storm frequency	=	5 yrs	Time to peak	=	17.30 hrs
Time interval	=	2 min	Hyd. volume	=	11,082 cuft
Inflow hyd. No.	=	3 - Post Development	Max. Elevation	=	4.66 ft
Reservoir name	=	Detention Box	Max. Storage	=	4,102 cuft

Storage Indication method used.



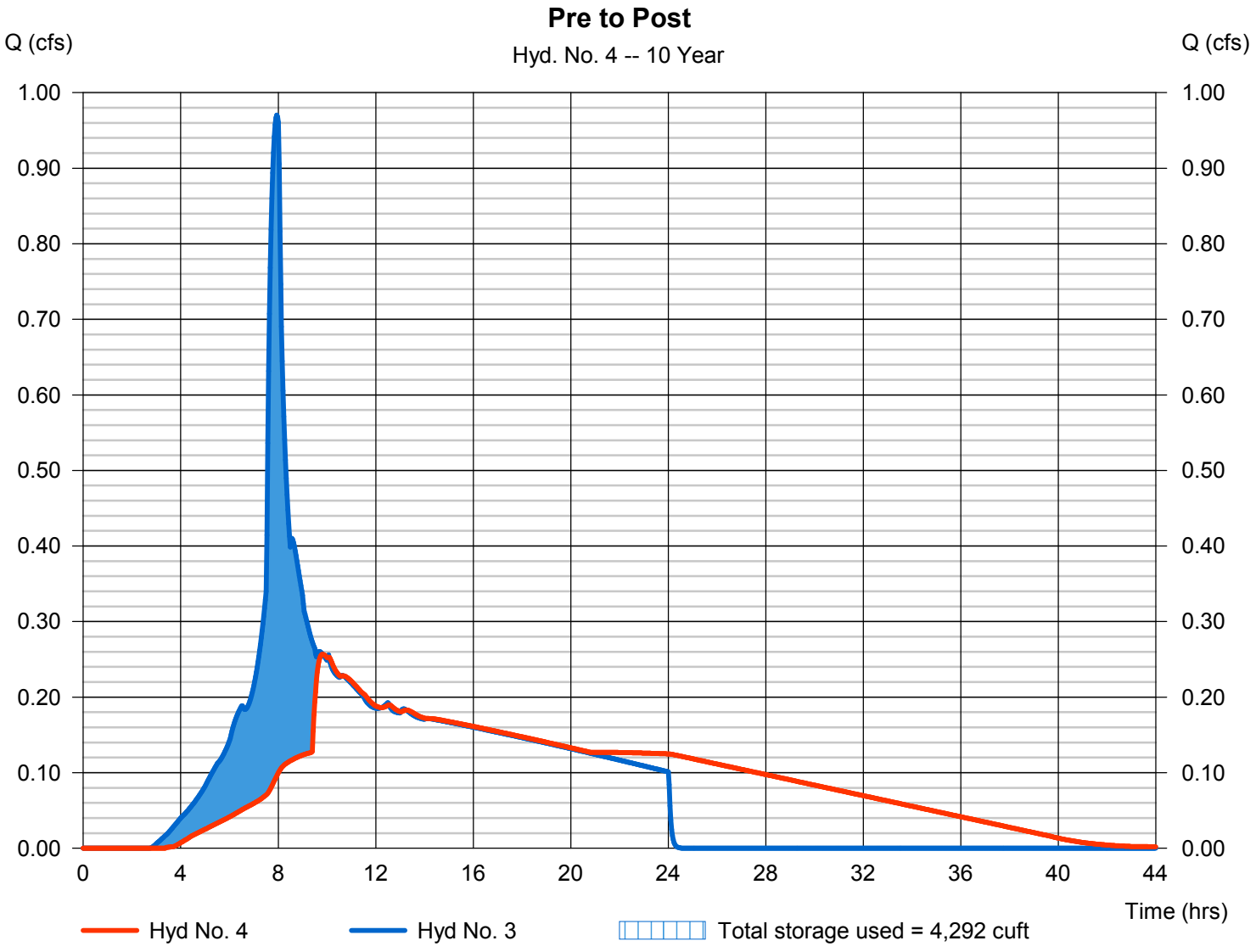
Hydrograph Report

Hyd. No. 4

Pre to Post

Hydrograph type	= Reservoir	Peak discharge	= 0.257 cfs
Storm frequency	= 10 yrs	Time to peak	= 9.83 hrs
Time interval	= 2 min	Hyd. volume	= 13,875 cuft
Inflow hyd. No.	= 3 - Post Development	Max. Elevation	= 4.87 ft
Reservoir name	= Detention Box	Max. Storage	= 4,292 cuft

Storage Indication method used.



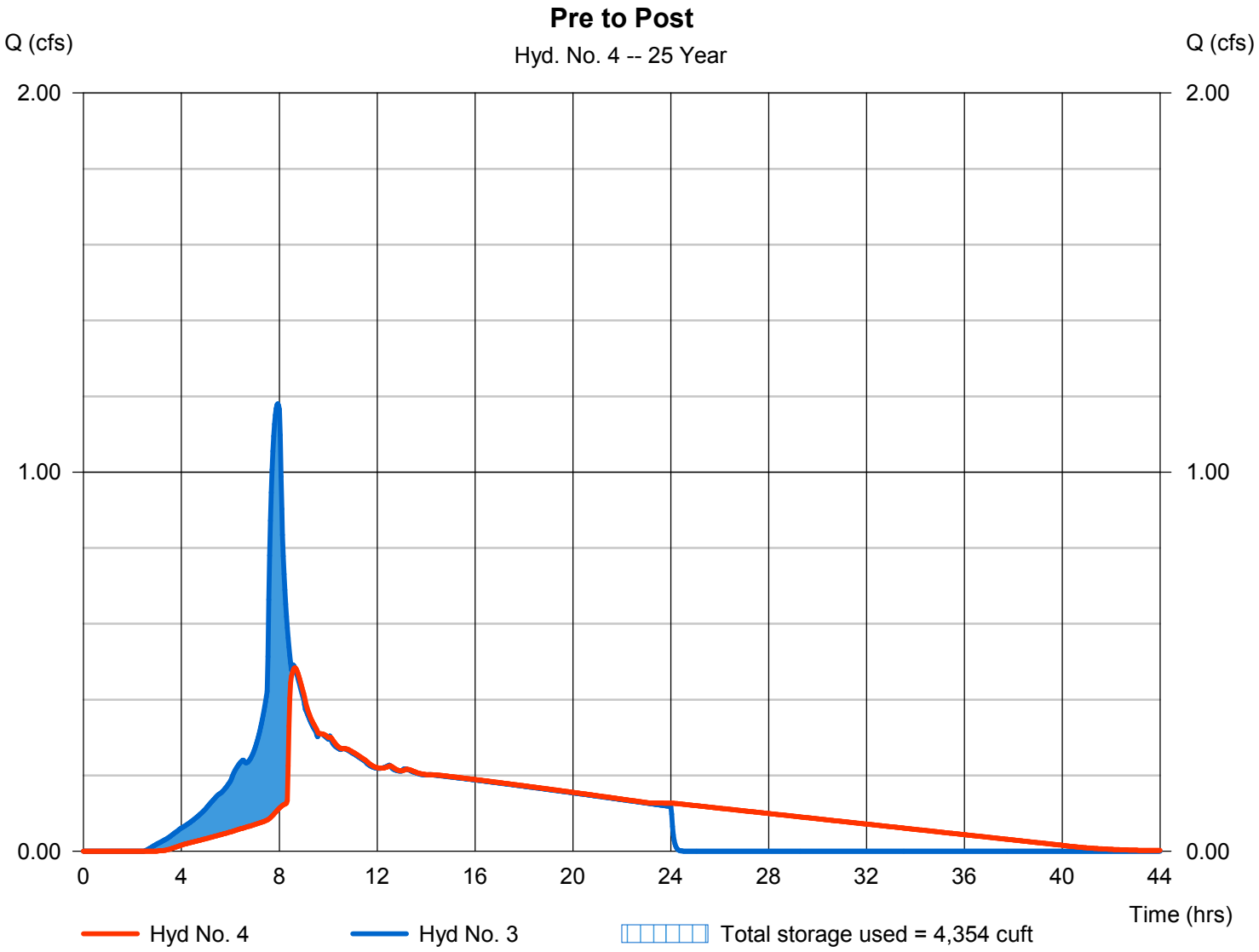
Hydrograph Report

Hyd. No. 4

Pre to Post

Hydrograph type	=	Reservoir	Peak discharge	=	0.484 cfs
Storm frequency	=	25 yrs	Time to peak	=	8.63 hrs
Time interval	=	2 min	Hyd. volume	=	16,724 cuft
Inflow hyd. No.	=	3 - Post Development	Max. Elevation	=	4.94 ft
Reservoir name	=	Detention Box	Max. Storage	=	4,354 cuft

Storage Indication method used.



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.83	2.40	0.00	2.90	3.40	3.90	0.00	4.40
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix 4c

Conveyance Calculations

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Appendix 5

On-site Plans

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Appendix 6

Stormwater Operations & Maintenance Plan

111 SW 5th Avenue, Suite 2500, Portland, OR 97204
503-227-3251 | **www.kpff.com**

SITE DATA

SITE LOCATION:	2613 SE WILLARD STREET, MILWAUKIE, OR 97222
SITE AREA:	1.70 ACRES / 74,243 S.F.

BUILDING SUMMARY

OFFICE - BUILDING GROSS SF	12,500 SQ. FT.
SHELTER - BUILDING GROSS SF	8,639 SQ. FT.
HOUSING BUILDING TYPE A - BUILDING GROSS SF	13,966 SQ. FT.
HOUSING BUILDING TYPE B - BUILDING GROSS SF	7,800 SQ. FT.
HOUSING BUILDING TYPE C - BUILDING GROSS SF	13,932 SQ. FT.
TOTAL BUILDINGS GROSS SF=	57,383 SQ. FT.

ZONING DATA

ZONE CLASSIFICATION:	R-2 MEDIUM AND HIGH DENSITY RESIDENTIAL
TYPES ALLOWED: (TABLE 19.302.2)	MULTI-FAMILY HOUSING OFFICE PERMITTED WITH CONDITIONAL USE APPROVAL COMMUNITY SERVICE USE (SHELTER) PERMITTED WITH COMMUNITY SERVICE USE APPROVAL
DENSITY: (TABLE 19.302.4)	DWELLING UNITS PER ACRE: MINIMUM: 11.6 MAXIMUM: 17.4
TOTAL SITE AREA:	1.70 ACRES / 74,243 S.F.
PROPOSED NUMBER OF UNITS:	28 UNITS
MINIMUM YARD REQUIREMENTS FOR PRIMARY STRUCTURES:	FRONT YARD: 15 FT. SIDE YARD (19.302.5.A): 5 FT. STREET SIDE YARD: 15 FT. REAR YARD: 15 FT.
ALLOWABLE BUILDING HEIGHT: (TABLE 19.302.4) MAXIMUM: (19.202.2 2C)	3 STORIES OR 45 FT., WHICHEVER IS LESS PITCHED ROOF WHERE ROOF PITCH IS 12/12 OR LESS: MEASURE TO THE AVERAGE HEIGHT OF THE HIGHEST GABLE
PROPOSED:	BUILDING TYPE A: 3 STORIES, 39'-0" BUILDING TYPE B: 3 STORIES, 42'-0" BUILDING TYPE C: 3 STORIES, 42'-0" OFFICE: 3 STORIES, 38'-7" AT AVERAGE HT, 44'-5 1/2" AT TOP HT SHELTER: 2 STORIES, 27'-10 1/2" AT AVERAGE HT, 33'-6" AT TOP HT
MAXIMUM LOT COVERAGE: (TABLE 19.302.4)	ALLOWED: 45%; 33,409 S.F. PROPOSED: 31%; 23,242 S.F.
MINIMUM VEGETATION:	ALLOWED: 15%
MINIMUM SITE SIZE FOR MULTI-FAMILY: (TABLE 19.302.5.F.2)	5,000 S.F. FOR FIRST DWELLING UNIT, 2,500 S.F. FOR ADDITIONAL DWELLING UNITS = 72,500 S.F.

PARKING SUMMARY

19.600 OFF STREET PARKING — MULTI-FAMILY DWELLING

MINIMUM ON-SITE PARKING:	1 SPACE PER DWELLING UNIT (800 SF OR LESS) = 4
	1.25 SPACE PER DWELLING UNIT (800 SF OR MORE) = 30
	TOTAL FOR MINIMUM REQUIREMENTS = 34
MAXIMUM ON-SITE PARKING:	2 SPACES PER DWELLING UNIT = 56

19.600 OFF STREET PARKING — COMMERCIAL USE - OFFICE

MINIMUM ON-SITE PARKING:	2 SPACES PER 1,000 SF OF FLOOR AREA = 25
MAXIMUM ON-SITE PARKING:	3.4 SPACES PER 1,000 SF OF FLOOR AREA = 43

19.600 OFF STREET PARKING — COMMUNITY SERVICE - SHELTER

MINIMUM ON-SITE PARKING:	1 SPACE PER DWELLING UNIT (800 SF OR LESS) = 8
MAXIMUM ON-SITE PARKING:	1.25 SPACE PER DWELLING UNIT (800 SF OR MORE) = 0

19.609 BICYCLE PARKING

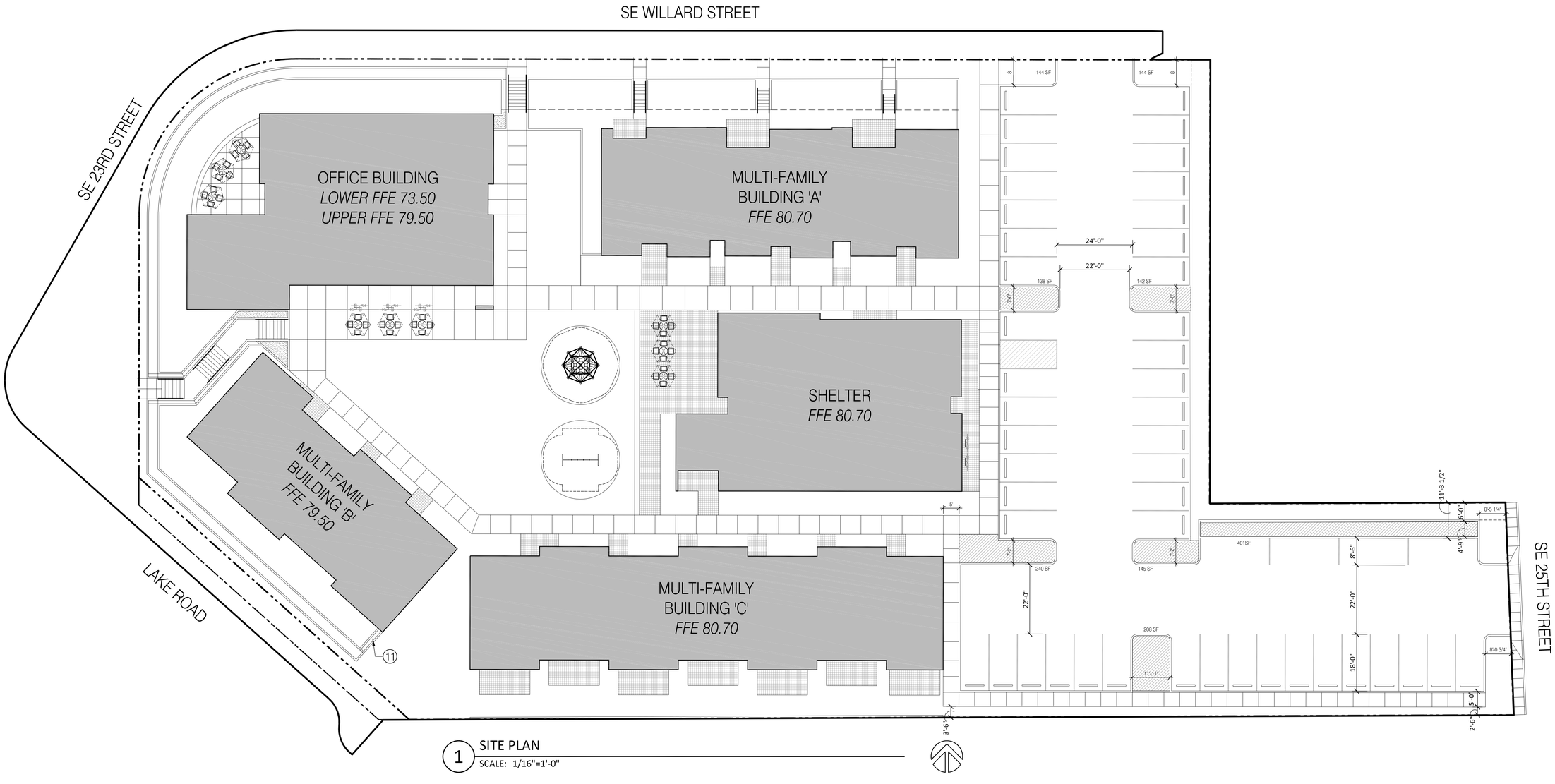
OFFICE:	6
SHELTER:	4
TOTAL BICYCLE PARKING:	10

PROVIDED ON-SITE PARKING:

STANDARD SIZE:	48
ACCESSIBLE:	2 (LOCATED AT FRONT ENTRY)
TOTAL PARKING:	50

LEGEND

- PROPERTY LINE
- ACCESSIBLE PARKING
- MAIN UNIT ENTRY
- BICYCLE RACK



1 SITE PLAN
SCALE: 1/16"=1'-0"

mwa architects
70 NW COUCH STREET
SUITE 401
PORTLAND, OR 97209
P 503 973 5151
F 503 973 5060
MWAARCHITECTS.COM

REVISION NO. DATE

NHA CAMPUS REDEVELOPMENT

2316 SE WILLARD ST.
MILWAUKIE, OR 97222

ISSUANCE
LAND USE APPLICATION-REV
DATE
02/5/2016
SCALE
1/16"=1'-0"
PROJECT NUMBER
201327.00
DRAWN BY
KH
DRAWING TITLE
SITE PLAN

SHEET NUMBER
1.4

March 9, 2016

Keith,

Here are my comments at this time:

I appreciate the opportunity to comment on these applications. Having it available on line is very helpful. There is a lot of material and information in the application; I can't say that I have had the time to review it all in depth. Additionally some of the code related to this application has been modified, complicating the process. If I have missed something or write something that is not fact, I apologize.

With that being said, from the neighborhood perspective I have found some significant problems with this application.

Traffic study:

When I inspect the traffic analysis on page 6 the "right turn only sign" is not shown at intersection #6, Willard and 27th Ave. What else has been left out and overlooked when something so evident is not included?

25th Ave:

An entrance to the parking lot is being made on 25th Ave. I do not recall the impacts to 25th being addressed. I would appreciate that information if it is available.

It is very likely that the shortage of parking spaces will result in circling to find an available spot, putting more cars on 25th Ave.

Parking:

I have concerns about the number of parking spaces set aside for each apartment.

Page 68 of the application and page 16 of Traffic study indicates that 240 trips will be generated by the 36 units. Those 240 trips are allowed only parking 32 spaces under the calculations found in section 7 on page 32 or 28.

Page 19 & 20 of the Traffic Study compare the parking demands of two affordable housing complexes in the region. NHA has told the NDA that they will be building 1, 2, & 3 bedroom apartments. A quick search of the **Town Center Station** shows them to be studio and 1 bedroom. The majority of the **City Center in Hillsboro** apartments are one bedroom, there are no three bedroom. I don't believe that is an accurate comparison. I have better uses of my time than to check into the foot notes of this report and consequently probably have misses other problems with this application.

The number of parking spaces for the office:

Quote from the application. “Based on conversations with NHA staff, approximately 15 percent of their existing staff regularly commutes via transit, cycling and/or walking. With the nearby MAX Orange Line now open, NHA anticipates this number could go up to approximately 25 percent in the foreseeable future. With an anticipated maximum employment figure of approximately 50 staff, the office-related parking demand is estimated to be approximately 38 spaces assuming 75 percent of staff commutes via automobile.”

Page 32 section 7 of Milwaukie city code requires a minimum of 24 parking spaces for the size of their proposed office building. They are taking off 25% because they are close to light rail, meaning that they have budgeted 18 spaces for 50 employees. City code allows them to build up to 43.

Other impacts:

Noted in this application was NHA’s prior application for a zone change. Testimony at those hearings revealed that there continue to be significant impacts to neighbors. This application indicates that there will be a 24 hour staff person at the Annie Ross House. Missing is a phone number that will be answered and the offer of a good neighbor agreement that will address smoking, pets, noise and other disturbances that have occurred under the present situation.

This application acknowledges that the neighborhood will be impacted by more traffic and parking needs not only for the proposed office and shelter but also because of the apartments NHA plans to build. NHA has failed to acknowledge the impact of those apartment buildings to the neighbors. I did not notice any proposals for reductions in building height, increased setbacks, or proposed landscaping and screening intended to preserve the privacy of their existing neighbors.

In addition to the permanent impacts to the neighborhood there are also temporary impacts due to construction. NHA did not address any of those in this application.

Thank you for this opportunity,

Ray Bryan

503-593-3336

Historic Milwaukie NDA

From: Keith Liden <keith.liden@gmail.com>
Sent: Tuesday, March 15, 2016 1:06 PM
To: Martin, Alicia
Subject: Fwd: NHA Development Engineering Staff Report
Attachments: winmail.dat; ATT00001.htm

From: "Dawson, Chrissy" <DawsonC@milwaukieoregon.gov>
Date: March 9, 2016, 4:03:43 PM PST
To: "Liden, Keith" <Keith.liden@gmail.com>
Cc: "Eaton, Chuck" <EatonC@milwaukieoregon.gov>, "Egner, Dennis" <EgnerD@milwaukieoregon.gov>
Subject: NHA Development Engineering Staff Report

Keith,
The Engineering Department's staff report containing referral comments on CSU-2015-008 for the NHA development is attached. Also attached are my responses in red to the questions regarding the Traffic Analysis from the Historic Milwaukie Neighborhood District Association.

Please let me know if you have any questions.

Thanks!

Chrissy Dawson, CAPM
Engineering Technician II

City of Milwaukie
6101 SE Johnson Creek Blvd. | Milwaukie, OR 97206
T 503.786.7610 | C 971.255.7477
Community Development 503.786.7600

From: Keith Liden <keith.liden@gmail.com>
Sent: Tuesday, March 15, 2016 1:04 PM
To: Martin, Alicia
Subject: Fwd: Fire District Comments for file #'s CSU-2015-008, CU-2015-002 TFR-2015-001

Resent-From: <lidenk@milwaukieoregon.gov>
From: "Amos, Matt" <Matt.Amos@clackamasfire.com>
Date: March 8, 2016, 1:30:49 PM PST
To: "'lidenk@milwaukieoregon.gov'" <lidenk@milwaukieoregon.gov>
Subject: Fire District Comments for file #'s CSU-2015-008, CU-2015-002 TFR-2015-001

Good afternoon Keith,

Clackamas Fire District #1 has no additional comments for the proposal. However final access and water supply approval from the fire district requires the designers to provide a fire department access and water supply plan for the site.

Thank you.

Matt Amos
Fire Inspector | Fire Prevention
direct: 503.742.2661
main: 503.742.2600

To Safely Protect & Preserve Life & Property

CLACKAMAS FIRE DISTRICT #1
www.clackamasfire.com

March 11, 2016

Keith Linden
City of Milwaukie
Planning Department
6101 SE Johnson Creek Blvd
Milwaukie, OR 97206
keith.liden@gmail.com

Mr. Linden and All Concerned:

My name is Mandy Byrd and I am a Milwaukie resident. I have lived in Milwaukie for about 3 years and I have been a friend and ally of Northwest Housing Alternatives since 2007. I am a staunch supporter of affordable housing development and specifically I would like to voice my full support for Northwest Housing Alternatives' land use application for Conditional Use and Community Service Use to redevelop their existing campus.

I understand the value that Northwest Housing Alternatives brings to our community through the homes they build and the services they deliver to Clackamas County. I know that NHA's programs and services have created real change for Milwaukie families living in poverty.

If you have any questions, please feel free to contact me at 971-258-4434.

Sincerely,

Miranda L. Byrd
10044 SE Stanley Avenue
Milwaukie, OR 97222