



Planning & Community Dev.
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AGENDA
Molalla Planning Commission
6:30 PM, December 1, 2021

Meeting Location: Molalla Civic Center
315 Kennel Avenue.
Molalla, OR 97038

The Planning Commission Meeting will begin at 6:30pm. The Planning Commission has adopted Public Participation Rules. Copies of these rules and public comment cards are available at the entry desk. Public comment cards must be turned in prior to the start of the Commission meeting. The City will endeavor to provide a qualified bilingual interpreter, at no cost, if requested at least 48 hours prior to the meeting. To obtain services call the City Recorder at (503) 829-6855.

- I. CALL TO ORDER**
- II. FLAG SALUTE AND ROLL CALL**
- III. PUBLIC COMMENT** – Limited to 3 minutes per person
- IV. MINUTES:**
 - October 6, 2021, Planning Commission Meeting
- V. QUASI-JUDICIAL HEARING:**
 - SDR04-2021 – 200/201 S Leroy Ave (Cascade Place Apartments)
- VI. REPORTS AND ANNOUNCEMENTS**
 - Planners Report
 - Directors Report
- VII. ADJOURNMENT**



**Molalla Planning Commission
MINUTES
Molalla Civic Center
315 Kennel Ave.
Molalla, OR97038
October 6, 2021**

The October 6, 2021, meeting of the Molalla Planning Commission was called to order by Vice Chair Doug Eaglebear at 6:31pm.

COMMISSIONER ATTENDANCE:

Chair Rae Lynn Botsford – Absent
Commissioner Rick Deaton – Present
Commissioner Doug Eaglebear – Present
Commissioner Jennifer Satter – Present
Commissioner Jacob Giberson – Present
Commissioner Connie Farrens – Present

STAFF IN ATTENDANCE:

Mac Corthell, Planning Director - Present
Dan Zinder, Associate Planner – Present
Julie Larson, Planning Specialist - Present
Sam Miller, Sr. Engineer - Present

AGENDA:

- I. CALL TO ORDER**
- II. FLAG SALUTE AND ROLL CALL**
- III. PUBLIC COMMENT** – Limited to 3 minutes per person

No Public Comment

IV. MINUTES:

- September 1, 2021, Planning Commission Meeting

Planning Commission approves minutes 5-0

V. QUASI-JUDICIAL HEARING:

- SDR06-2021 & CUP01-2021 – 250/270 W 7th Street (Dansons)

Begins at 0:03:58 of Part 1 of meeting video (*Link posted below*)

Planning Director, Mac Corthell, presented the staff report and material for planning files SDR06-2021 & CUP01-2021 which would establish appropriate land use approvals for a new wood pellet manufacturing, storage, and distribution use on a 16.3-acre site located at 250 W 7th Street

After discussion, Commissioner Giberson, made a motion to approve SDR06-2021 & CUP01-2021. Commissioner Deaton made a second motion. Motion passes 5-0

QUASI-JUDICIAL HEARING:

- SDR01-2021 & SUB02-2021 – 220 W Main Street (B&I)

Begins at 0:05:06 of Part 2 of meeting video (*Link posted below*)

Associate Planner, Dan Zinder, presented the staff report and material for planning files SDR01-2021 & SUB02-2021 a proposal for a new 10,200 sq. ft. commercial building for retail and storage uses which comes in conjunction with a proposed replat of the tax lots.

After discussion, Commissioner Giberson, made a motion to approve SDR01-2021 & SUB02-2021 striking the condition of a second parking island in the parking lot. Commissioner Farrens made a second motion. Motion passes 5-0

VI. DISCUSSION ITEM: Pulled from Agenda

- ~~Planning Commissioner Recommendation~~

VII. REPORTS AND ANNOUNCEMENTS:

- Planners Report
- Directors Report

VIII. ADJOURNMENT

Meeting adjourned at 7:23PM

PLANNING COMMISSION MEETING CAN BE VIEWED IN ITS ENTIRETY HERE:

[Part 1: October 6, 2021 Planning Commission Meeting Video](#)

[Part 2: October 6, 2021 Planning Commission Meeting Video](#)

Chair, Rae Lynn Botsford

Date

ATTEST: _____
Mac Corthell, Planning Director



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CITY OF MOLALLA STAFF REPORT

SDR04-2021; Cascade Place

Date: November 24, 2021 for the December 1, 2021 Planning Commission Meeting

File No.: SDR04-2021

Proposal: Site design review and subdivision for a new 151-unit apartment complex.

Addresses: 200 S Leroy Ave and 201 S Leroy Ave

Tax Lots: Lots 04700 and 04600 of Taxmap 52E08C

Applicant: I & E Construction
27375 SW Parkway Avenue
Wilsonville, OR 97070

Property Owners: Cascade Center Molalla
27375 SW Parkway Avenue
Wilsonville, OR 97070

Applicable Standards: Molalla Municipal Code, Title 17, Development Code

Division II, Zoning Regulations

Section 17-2.2.030 Allowed Uses

Section 17-2.2.040 Lot and Development Standards

Section 17-2.3.080 Multifamily Development

Division III, Community Design Standards

Section 17-3.2.030 Residential Buildings

Chapter 17-3.3 Access and Circulation

Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting

Chapter 17-3.5 Parking and Loading

Chapter 17-3.6 Public Facilities

Division IV, Application Review Procedures and Approval Criteria

*Chapter 17-4.1.040 Type III Procedure (Quasi-Judicial Review –
Public Hearing)*

Chapter 17-4.2.050 Approval Criteria (Site Design Review)

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- II. Recommendations
- III. Conditions of Approval

EXHIBITS:

EXHIBIT A: FINDINGS OF FACT FOR SDR04-2021

EXHIBIT B: APPLICATION PACKAGE FOR SDR04-2021

EXHIBIT C: MOLALLA PUBLIC WORKS COMMENTS

EXHIBIT D: MOLALLA FIRE DEPARTMENT COMMENTS

EXHIBIT E: ODOT COMMENTS

I. EXECUTIVE SUMMARY

Proposal:

The Applicants seek approval for a site design review for a new 151-unit apartment complex in Molalla. This application is to be processed concurrently with two Property Line Adjustments (PLA)s affecting the same site (PLA02-2021 and PLA03-2021). The PLAs are currently approved by the City and awaiting recording with Clackamas County. Once the PLAs are processed, the subject site will span the two southern-most parcels of the Cascade Center subdivision. The applicant proposes to access the eastern parcel from S Leroy Ave on the south side and a private common access drive on the north side. The western parcel proposes access from S Leroy Ave on the southeast corner of the parcel. In addition to 151 new homes in 13 buildings, this project will provide more than one acre of landscaping and common open space, a community/recreation building, a swimming pool, a continuous pedestrian circulation system, off-street parking for residents and visitors, enclosed trash facilities, and private open space for each dwelling.

Site Description:

The existing site consists of two vacant parcels that flank S Leroy Avenue. The parcels are south of OR-211 and north of Lowe RD and are the two southern-most parcels of the Cascade Center subdivision. After the approved PLAs are processed, the proposed site will amass 6.68 ac with 4.65 ac on the parcel east of S Leroy Ave and 2.03 ac on the parcel west of S Leroy Ave. Slope is slightly to the southwest for both parcels. Current zoning of the subject parcel is General Commercial (C-2) and no change to the zoning designation is proposed.

Surrounding Zoning and Land Uses:

The property's southern and western boundary is adjacent to an existing apartment complex "Stoneplace Apartments" which are zoned R-3. To the south, the property is bordered by commercial uses Grocery Outlet, Dollar General, and three C-2 zoned properties whose use is yet to be determined. Two of these are part of the Cascade Center subdivision and one is outside of that subdivision. The property's eastern border abuts an existing self-storage facility, also on C-2 zoned land.

Public Agency Responses:

Staff circulated notice of the project to the City's Public Works Department, Fire Marshal, and ODOT on October 22, 2021. The City has included responses from ODOT, Molalla Fire District, and Molalla Public Works as Exhibits G, E, and F respectively, and/or integrated their comments into the proposed findings and conditions of this decision.

Public Notice and Comments:

Per MMC 17-4.1.040, notice of the public hearing was sent to all property owners within 300 feet of the subject properties and to a group of interested parties on October 29, 2021. Notice was published in the Molalla Pioneer on November 3, 2021 and on the City's website on October 29, 2021. Signage containing public notice information was posted on the property on November 10, 2021. As of November 24, 2021 Staff had received no public comment on the application.

I. Recommendation

Based on the application materials and findings demonstrating present or conditioned compliance with the applicable criteria, staff recommends **APPROVAL** of Site Design Review SDR04-2021, subject to the conditions of approval to follow. This approval is based on the Applicant's written narrative, site plans, preliminary partition plat, and supplemental application materials. Any modifications to the approved plans other than those required by the conditions of this decision will require a new land use application and approval.

II. Conditions of Approval

1. Building Permits, Engineering Plan Approvals, and Certificate of Occupancy Required:

- a. Per Molalla Municipal Code (hereinafter MMC) 17-4.2.070 and the State of Oregon Structural Specialty Code, upon approval of this Site Design Review, the applicant must submit for building permit authorization from Molalla Planning Staff and Engineering Plan Review from Molalla Public Works. Per MMC 17-4.2.070, this site design review has an approval period of 1-year from the date of approval. As a condition of approval, the Applicant/owner shall submit for both Building Permit Authorization for all proposed improvements through the City of Molalla Planning Department and Civil Plan Review through the City of Molalla Public Works Department within the 1-year approval period. Extension requests for the 1-year period are subject to the Code provisions of MMC 17-4.2.070, B.
- b. Per MMC 17-4.9.020 and the State of Oregon Structural Specialty Code, upon approval of this Site Design Review (change of use), the applicant must obtain a Certificate of Occupancy from the Clackamas County Building Official. As a condition of approval, the Applicant/owner shall obtain a Certificate of Occupancy through the Clackamas County Building Official for all onsite occupants prior to operation of the new, proposed use/occupancy.

Note: City approval is required for all Certificates of Occupancy.

2. Conditions Requiring Resolution Prior To Submitting Building Permit Applications to the Molalla Planning Department:

- a. The Applicant shall record a deed provision ensuring that Cascade Place residents west of Leroy Ave may access and utilize Stoneplace Apartments trash receptacles (MMC 17-2.3.180 C, 4).
- b. As a condition of approval, the applicant shall provide a striping/no parking signage/curb paint detail for civil/building plan approval (MMC 17-3.3.030 C, 6).
- c. All driveway aprons shall be designed consistent with the Americans with Disabilities requirements (MMC 17-3.3.030 C, 14).
- d. The Applicant shall extend walkways from S Leroy Ave on the north sides of each parcel to the breezeways that provide access to upper story apartments. As a condition of approval, the Applicant shall extend the walkways across the north access of parcel 04700 and provide an ADA ramp to parcels to the north (MMC 17-3.3.040 B, 3).
- e. Trees planted in tree wells within sidewalks or other paved areas shall be installed with root barriers, consistent with applicable nursery standards (MMC 17-3.4.040 E, 5).
- f. The Applicant shall specify bike rack style meeting the standards of MMC 17-3.5.040 with their building permit submissions.
- g. The Applicant shall finalize recording of Molalla Planning files PLA02-2021 and PLA03-2021
- h. Separate engineering drawings reflecting the installation of public utilities will be required. For residential development projects, all public improvements shall be completed and accepted by the Public Works Department, or otherwise bonded in accordance with MMC 17-3.6.010 and the City of Molalla Public Works Design Standards prior to issuance of building permits. No connections to City services shall be allowed until improvements to the public system to which connection is sought are completed and accepted by City of Molalla Public Works (MMC 17-3.6.080).
 - i. No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way, and easements have been obtained and approved by staff, and Staff is notified a minimum of 24 hours in advance.
 - ii. Staff reserves the right to require revisions/modifications to the public

improvement construction plans and completed street improvements if additional modifications or expansion of the sight distance onto adjacent streets is required.

- iii. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.
- iv. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated, or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff.
- v. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction.
- vi. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document.
- vii. Sanitary sewer designs require review by Oregon Department of Environmental Quality. Applicant shall be responsible for submission of plans to state agency and all associated fees. Applicant's Engineer will be required to submit final report to DEQ and provide a copy of the report to the City.
- viii. All utilities will be stubbed out to the far end of each street for future extension. The project shall utilize existing water, sewer, and storm water 'stub-outs' wherever possible. Water for domestic and fire protection shall be looped through the proposed site. Any 'stub-outs' determined to be not needed for the proposed development or any future development of the subject property shall be abandoned in accordance with the Molalla Standard Specifications for Public Works Construction.

- ix. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director.
- x. General Wetland Requirements – The applicant will be required to provide Public Works with a letter of concurrence from the Department of State Lands regarding any wetlands on the subject property prior to City approval of occupancy.
- xi. General Erosion Control – The applicant shall install, operate, and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant’s Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.
- xii. System Development Charges shall be paid prior to release of Building Permit Authorization from the City of Molalla.
- xiii. The Applicant shall submit fire hydrant and FDC locations for approval.

3. Conditions to be Met Prior To Occupancy:

- a. The Applicant shall receive access approval from the City of Molalla through the civil plan review process (MMC 17-3.3.030 C, 4).
- b. The Applicant shall record an easement with the deed allowing joint use of and cross access between driveways for the western subject parcel and Taxlot 1800 of Map 52E08C (MMC 17-3.3.030 I)
- c. Applicant will be required to construct 6-foot-wide sidewalks along the two frontages of S Leroy Ave. Applicant shall construct commercial driveway as the eastern access so that the centerline aligns with the centerline of driveway on the west side of S Leroy Ave as proposed. Per exhibit 4: Major Collector Cross Section in accordance with TSP (MMC 17-3.6.020).

- d. Applicant will be required to construct a commercial driveway to complete the frontage improvements on the west side of S Leroy Ave. Per exhibit 4: Major Collector Cross Section in accordance with TSP (MMC 17-3.6.020).
- e. Applicant shall dedicate a 10-foot wide Public Utility Easement along all public rights of way if not already provided in the Cascade Center subdivision plat. No structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy (MMC 17-3.6.040).
- f. Access to public streets shall be limited to Leroy Ave and all accesses shall be constructed in such a manner as to eliminate turning conflicts. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction (MMC 17-3.6.040).
- g. Applicant will be required to dedicate a 15-foot-wide sewer line easement per City requirements through the East Access Utility Extension and extend the sanitary line through it from OR-211 to the subject parcel at 201 S Leroy Ave (MMC 17-3.6.040).
- h. For the parcel addressed at 200 S Leroy Ave (Lot 8 of Cascade Center), there is an existing 8-inch sanitary main that crosses through the site, serving Cascade Center to the north and Stoneplace Apartments to the south. Applicant will be required to connect to existing onsite 8-inch sanitary main to serve 200 S Leroy Ave by gravity system (MMC 17-3.6.040).
- i. Applicant shall be required to submit sanitary sewer design plans to Oregon DEQ for review and approval. Applicant shall provide a Certificate of Capacity to Oregon DEQ at time of plan submission. No Public Works permit can be issued without DEQ's approval of the sewer system and the Certificate of Capacity (MMC 17-3.6.040).
- j. 200 S Leroy Ave (Cascade Center Lot 8) is served from existing 8-inch line stubbed from Cascade Center Development at the northern border of the parcel and an existing 12-inch main in S Leroy Ave. The Applicant shall loop onsite fire line waterline through these two lines, creating circulation. Applicant shall dedicate a 15-foot-wide waterline easement over onsite waterline per City requirements (MMC 17-3.6.040).
- k. 201 S Leroy Ave (Cascade Center Lot 9) can be served from existing 8-inch stub from the 12-in waterline on W Main St (OR-211). Applicant will be required to extend

8-inch main through the East Access Utility Extension off OR-211/W Main St and connect to it. Applicant shall dedicate a 15-foot wide waterline easement per City requirements. Should Fire Department regulations require additional fire flow that results in looping the water line through the site, then applicants engineer shall coordinate with Public Works for the extension of a public water line, and dedication of easements (MMC 17-3.6.040).

- l. Applicant shall connect to ODOT storm system via East Access Utility Extension. Storm main is approximately 7 feet in depth and will serve Lot 9 of the proposed development. Storm connection shall meet ODOT requirements. 200 Leroy Ave shall connect to existing 24-inch Storm main exists on the north side of the parcel within the Cascade Center Development and will serve this portion of the proposed development_(MMC 17-3.6.050).
- m. Onsite Improvements: Applicant will be required to provide water quality and detention for lots 8 and 9 in accordance with the Molalla Standard Specifications for Public Works Construction_(MMC 17-3.6.050).
- n. No overhead crossings of public right of way shall be approved by the city.

4. Ongoing Conditions:

- a. The southern two vacant parcels shall develop accesses in accordance MMC Chapter 17-3.3 at the time of their site design review (MMC 17-4.3.020(F)).
- b. No visual obstructions shall be placed in vision clearance areas (MMC 17-3.3.030 G).
- c. No proposed fencing shall be made of prohibited materials, as detailed in MMC 17-3.4
- d. All landscaping shall be maintained in good condition, or otherwise replaced by the property owner (MMC 17-3.4.030 G).
- e. Fences and walls shall be maintained in good condition, or otherwise replaced by the property owner (MMC 17-3.4.040 F).
- f. For undeveloped parcels of the proposed subdivision, the applicant shall make appropriate improvements conforming with Division III Community Design Standards at the time of development.

- g. The Applicant shall receive an approach permit from the City of Molalla Public Works Department prior to submission of building permits for development of any lot within the proposed replat.
- h. Connections to City utilities for each parcel shall be in conformance with applicable Molalla Public Works Design Standards at the time of site design review.
- i. As an ongoing condition of approval, all outdoor lighting shall be maintained in good condition, or otherwise replaced by the property owner (MMC 17-3.4.050 C).
- j. As a condition of approval, parking shall be provided consistent with ADA requirements (MMC17-3.5.030 H).

Exhibit A:

City Staff's Findings of Fact for SDR04-2021

A. The application is complete, in accordance with Section 17-4.2.040;

Findings: The City received the Applicant's proposal on August 10, 2021 and deemed it complete in accordance with Section 17-4.2.040 on October 15, 2021.

B. The application complies with all of the applicable provisions of the underlying Zoning District (Division II), including, but not limited to, building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other applicable standards;

17-2.2.030 Allowed Uses

Findings: The Applicant's submitted application is for a 151-unit apartment complex. Per MMC Table 17-2.2.030 Multifamily Dwellings are a permitted use in the C-2 zone per special use standards of 17-2.3.080 Multifamily Development. Criterion is met.

17-2.2.040 Lot and Development Standards

Findings:

Minimum Lot Area – There is no minimum lot size in commercial zones. This standard is met.

Minimum Lot Width and Depth – There is no minimum lot width or depth in commercial zones. This standard is met.

Building and Structure Height – Maximum building height in the C-2 zone is 55ft. The height of the proposed structures are between 39-42ft. This standard is met.

Maximum Lot Coverage - Maximum foundation plane coverage in the C-2 zone is 100%. The Applicant proposes covering 52,098 SF of the total 296,751 SF site, or 18% of the site. This standard is met.

Minimum Landscape Area % (includes required parking lot, landscaping, and required screening)
Minimum landscaped area in the C-2 zone is 5%. The Applicant proposes landscaping 24% of the total developed area. This standard is met.

Minimum Setbacks -

Front Setback Requirement: 0ft – This standard is met.

Garage Setback Requirement: 20ft – No garages are proposed. This standard does not apply.

Alley: 3ft - This property does not abut an alley. This standard does not apply.

Adjacent to R Districts: 10ft – This subject site is abutted by an R-3 district to the south. Staff measures that proposed buildings are at least 10ft from the southern property line. This standard is met.

Build to Line: 0ft – In accordance with MMC 17-3.2.040 B the applicable exemptions to waive build to line are met as there is a 10ft PUE requirement along S Leroy Ave that cannot be built over and pedestrian amenities are provided to building entrances. This standard is met.

17-2.3.080 Multifamily Development

- A. **Purpose.** The following standards are intended to ensure that multifamily developments are planned with adequate open space and are designed to prevent conflicts between residential uses, on-site recreation, and vehicle circulation and parking areas. The standards supplement the design standards of Division III.
- B. **Applicability.** This section applies to new multifamily developments.

Findings: This application involves Site Design Review for multifamily dwellings. Therefore, these standards are applicable.

- C. **Standards.**
 - 1. **Common Open Space and Landscaping.** A minimum of 15 percent of the site area in a multifamily development shall be designated and permanently reserved as common area or open space, in accordance with all of the following criteria:
 - a. "Site area" for the purposes of this section is defined as the subject lot or lots after subtracting any required dedication of street right-of-way.

Findings: The Applicant's submitted landscaping plan shows 1.09 of the total 6.81 acres of the site are designated as common/open space. This exceeds the 15% minimum required for this site. This standard is met.

- b. The common area or open space shall contain one or more of the following: outdoor recreation area, tree grove (e.g., existing mature trees), turf play fields or playgrounds, sports courts, swim pool, walking fitness course, natural area with

picnic benches, or similar open space amenities as appropriate for the intended residents.

Findings: The Applicant's submitted landscaping plan shows pedestrian amenities, trees, landscaping, a swimming pool, a barbecue area, and natural landscaped areas. This standard is met.

- c. In order to be counted as eligible toward the minimum open space area, such areas shall have dimensions of not less than 20 feet.

Findings: The Applicant has only included areas with dimensions of 20 feet or greater in their common open space calculations. This standard is met.

- d. Open space and common areas not containing recreational facilities shall be landscaped.

Findings: The Applicant's submitted landscaping plan shows that all open space areas not containing recreational facilities are landscaped. This standard is met.

- e. Buildings located in the C-1 zone are exempt from this section.

Findings: The property is not located within the C-1 zone. Therefore, this exemption is not applicable.

- 2. **Private Open Space.** Private open space areas shall be required for dwelling units based on the following criteria:
 - a. A minimum of 40 percent of all ground-floor dwelling units shall have front or rear patios or decks containing at least 48 square feet of usable area. Ground floor housing means the housing unit entrance (front or rear) is within five feet of the finished ground elevation (i.e., after grading and landscaping). This section does not apply to buildings within the C-1 zone.

Findings: The Applicant's submitted architectural plans show concrete patios greater than 48 square feet provided to each ground-floor dwelling. This standard is met.

- b. A minimum of 40 percent of all upper-floor housing units shall have balconies or porches containing at least 48 square feet of usable area. Upper-floor housing means housing units with a first floor elevation that is more than five feet above the finished grade.

Findings: The Applicant's submitted architectural plans show that wooden decks greater than

48 square feet are provided to each upper-floor housing unit. This standard is met.

3. **Building Orientation and Design, Access and Circulation, Landscaping and Screening, Parking and Loading, and Public Facilities.** The standards of Chapters 17-3.2 through 17-3.6 shall be met.

Findings: Staff discusses the Applicant’s degree of compliance with Chapter 17, Division III standards under item D.

4. **Trash Storage.** Trash receptacles, recycling, and storage facilities shall be oriented away from building entrances, set back at least 10 feet from any public right-of-way and adjacent residences, and shall be screened with an evergreen hedge or solid fence or wall of not less than six feet in height. Receptacles must be accessible to trash pick-up trucks. (Ord. 2017-08 §1)

Findings: This standard is met subject to a condition of approval. The Applicant’s submitted application shows a trash enclosure in the northeast corner of the eastern parcel. The Applicant’s submitted landscape plan shows that trash enclosures are screened by an arborvitae hedge. No trash enclosure is provided on the western parcel. The Applicant’s submitted narrative states that;

“Additional trash enclosures shared with the Stoneplace apartments are available to the properties to the west of Leroy Avenue.”

To ensure that this relationship is maintained, as a condition of approval, the Applicant shall record a deed provision ensuring that Cascade Place residents west of Leroy Ave may access and utilize Stoneplace Apartments trash receptacles.

C. The proposal includes required upgrades, if any, to existing development that does not comply with the applicable zoning district standards, pursuant to Chapter 17-1.4 Nonconforming Situations;

Findings: The subject site is a recently subdivided, vacant piece of land. There is not any existing development, nor any nonconforming situations. This criterion does not apply.

D. The proposal complies with all the Development and Design Standards of Division III, as applicable:

Findings: Applicable Criteria under Division III. Community Design Standards for this project include:

Section 17-3.2.030 – Residential Buildings

Chapter 17-3.3 Access and Circulation

Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting

Chapter 17-3.5 Parking and Loading

Chapter 17-3.6 Public Facilities

17-3.2.030 Residential Buildings

- A. **Purpose.** The following requirements are intended to create and maintain a built environment that is conducive to walking; reduces dependency on the automobile for short trips; provides natural surveillance of public spaces; addresses the orientation and design of garages; and creates a human-scale design, e.g., with buildings placed close to public ways and large building walls divided into smaller planes with detailing.
- B. **Building Orientation.** Residential buildings that are subject to the provisions of this chapter, pursuant to Section 17-3.2.020, shall conform to all of the following standards in subsections B.1 through 3, below, as generally illustrated in Figure 17-3.2-1. Figure 17-3.2-2 provides examples of non-compliance.
 - 1. **Building Orientation to Street.** Except as provided below, dwelling units shall orient toward a street, have a primary entrance opening toward the street, and be connected to the right-of-way with an approved walkway or residential front yard.
 - a. A dwelling may have its primary entrance oriented to a yard other than the front or street yard where the only permitted access to the property is from a shared driveway or flag lot drive and orienting the dwelling entrance to the street is not practical due to the layout of the lot and driveway.
 - b. Where there is no adjacent street to which a dwelling may be oriented, or it is not practical to orient a dwelling to an adjacent street due to lot layout, topographic, or other characteristics of the site, the dwelling may orient to a walkway, courtyard, open space, common area, lobby, or breezeway (i.e., for multifamily buildings).
 - c. Where a flag lot is permitted, building orientation shall conform to the provisions for flag lots under Chapter 17-4.3.

Findings: The Applicant's submitted application shows that proposed Buildings 4, 5, and 6 are located adjacent to the street. For these buildings, ground floor apartments have primary entrances opening towards S Leroy Ave. Second and third floor apartments are only accessible from breezeway facing the interior of the lots. Standards are met subject to conditions in section 17-3.3.040 – Pedestrian Access and Circulation that condition additional direct pedestrian routes to access the interior breezeways.

The remainder of the proposed buildings are not adjacent to the street. The orientation and primary entrance locations of these buildings meet the above standards.

2. **Limitation on Parking Between Primary Entrance and Street.** Off-street parking is not allowed between a primary building entrance and the street to which it is oriented, except that assisted living facilities, group care facilities, and similar institutional-residential uses serving clients with disabilities may have one driveway located between the primary building entrance and an adjacent street as required to serve as a drop-off or loading zone, provided the primary building entrance shall connect to an adjacent street by a pedestrian walkway that conforms to the standards of Section 17-3.3.040. The intent of this exception is to provide for one drop-off or loading zone while maintaining a direct, convenient, and safe pedestrian access to a primary building entrance.

Findings: The Applicant's submitted site plans show no off-street parking proposed between primary entrances and the street. This standard is met.

3. **Build-To Line.** Where a new building is proposed in a zone that requires a build-to line per Section 17-2.2.040, the building shall comply with the build-to line standard and the development shall meet the standards for pedestrian access under Section 17-3.3.040.

Findings: This standard is met subject to the condition of approval outlined in the Staff response to standard 17-3.2.030 B. A required 10' PUE allows waiver of a build to line standard. Additionally, pedestrian amenities to ground floor apartments Build-to-line requirements cannot be met doe

- C. **Garages.** The following standards apply to all types of vehicle storage, including, but not limited to, buildings, carports, canopies, and other permanent and temporary structures. The standards are intended to balance residents' desire for a convenient, safe, and private vehicle access to their homes with the public interest in maintaining safe and aesthetically pleasing streetscapes. The standards therefore promote pedestrian safety and visibility of public ways, while addressing aesthetic concerns associated with street-facing garages.
 1. **Alleys and Shared Drives.** Where a dwelling abuts a rear or side alley, or a shared driveway, including flag lot drives, the garage or carport opening(s) for that dwelling shall orient to the alley or shared drive, as applicable, and not a street.
 2. **Setback for Garage Opening Facing Street.** No garage or carport opening shall be placed closer than 16 feet to a street right-of-way. On corner lots, garages facing a side street (i.e., not the same street as the front entrance) may be located closer than 16 feet to a street right-of-way.
 3. **Width of Garage Openings Facing Street.** Where one or more garage openings face a street, the total width of all garage openings on that building elevation shall not

exceed 50 percent of the width of that elevation; except this standard does not apply where the garage opening is recessed behind the front elevation of the dwelling by not less than four feet for its entire width, or where all garage openings are placed behind the primary entrance to the dwelling. An arbor, portico, or similar architectural feature extending the entire width of the garage may be used as the basis of measuring the garage recess. A garage opening is considered to be facing a street where the opening is parallel to, or within 45 degrees of, the street right-of-way line.

4. **Three-Car and Wider Garages.** Where three or more contiguous garage parking bays are proposed facing the same street, the garage opening closest to a side property line shall be recessed at least two feet behind the adjacent opening(s) to break up the street-facing elevation and diminish the appearance of the garage from the street. Side-loaded garages, on interior lots, i.e., where the garage openings are turned away from the street, are exempt from this requirement.
5. **Garages for Duplex Dwellings.** Duplex design shall conform to Section 17-2.3.060.

Findings: The applicant's submitted application does not include garages or other vehicle storage structures. These standards do not apply.

D. **Architecture.** The following standards require variation in architectural plans to avoid monotony in new developments. The standards support the creation of architecturally varied neighborhoods, whether a neighborhood develops all at once or one lot at a time, avoiding homogeneous street frontages that detract from the community's appearance. The standards are applied through the Site Design Review process for new townhome dwellings and new multifamily dwellings, and through the Zoning Checklist (Type I) review process prior to issuance of building permits for new single-family dwellings and new duplex dwellings. In addition to the following requirements, duplexes, townhomes, and multifamily projects shall conform to the special use standards of Chapter 17-2.3.

1. **Detailed Design.** Dwelling designs shall incorporate not fewer than four architectural features per dwelling unit from subdivisions a through k, as generally illustrated in this chapter. Applicants are encouraged to use those elements that best suit the proposed building style and design.
 - a. Covered front porch: not less than six feet in depth and not less than 30 percent of the width of dwelling, excluding the landing for dwelling entrance.
 - b. Dormers: minimum of two required for each single-family dwelling and two each for other dwellings; must be a functional part of the structure, for example, providing light into a living space.
 - c. Recessed entrance: not less than four feet deep.
 - d. Windows: not less than 30 percent of surface area of all street-facing elevation(s).
 - e. Window trim: minimum four-inch width (all elevations).
 - f. Eaves: overhang of not less than 12 inches.
 - g. Offset: offset in façade and/or roof (see subsection 2, "Articulation"); counts twice if both façade and roof offsets are provided.

- h. Bay window: projects from front elevation by 12 inches.
- i. Balcony: one per dwelling unit facing street.
- j. Decorative top: e.g., cornice or pediment with flat roof or brackets with pitched roof.
- k. Other: feature not listed but providing visual relief or contextually appropriate design similar to subdivisions a through j, as approved by the Planning Official through a Type I procedure.

Findings: The Applicant's submitted architectural plans show that each building contain at least four of the required elements.

- 2. **Articulation.** Plans for residential buildings shall incorporate design features such as varying rooflines, offsets, balconies, projections (e.g., overhangs, porches, or similar features), recessed or covered entrances, window reveals, or similar elements that break up otherwise long, uninterrupted elevations. Such elements shall occur at a minimum interval of 40 feet, and each floor shall contain at least two elements from the following options, as generally illustrated in this Section 17-3.2.030.
 - a. Recess (e.g., porch, courtyard, entrance balcony, or similar feature) that has a minimum depth of four feet;
 - b. Extension (e.g., floor area, porch, entrance, balcony, overhang, or similar feature) that projects a minimum of two feet and runs horizontally for a minimum length of four feet; or
 - c. Offsets or breaks in roof elevation of two feet or greater in height.

Findings: The Applicant's submitted architectural plans show offsets, extensions, and variation in roof elevation are provided at intervals of less than 40 feet. Each building includes balconies, covered entryways, and variation in roof elevation. These standards are met.

- 3. **House Plan Variety.** This subsection applies to land divisions and new developments with five or more residential buildings. No two directly adjacent or opposite dwelling units in a single-family development, or buildings in a multifamily development, may possess the same front or street-facing elevation. This standard is met when front or street-facing elevations differ from one another by no fewer than three of the elements listed in subdivisions a through g. Where façades repeat on the same block face, they must have at least three intervening lots between them that meet the above standard. Land division approvals will be conditioned to assure compliance with this subsection.
 - a. **Materials.** The plans specify different exterior cladding materials, a different combination of materials, or different dimensions, spacing, or arrangement of the

same materials. This criterion does not require or prohibit any combination of materials; it only requires that plans not repeat or mirror one another. Materials used on the front façade must turn the corner and extend at least two feet deep onto the side elevations.

- b. **Articulation.** The plans have different offsets, recesses, or projections; or the front building elevations break in different places. For example, a plan that has a stoop entry (recess) varies from one that has an entry under a front porch (projection). For this criterion to apply, a recess must have a minimum depth of four feet and a projection or offset must be at least four feet in depth.
- c. **Variation in Roof Elevation.** The plans have different roof forms (e.g., gable versus gambrel or hip), different roof height (by at least 10 percent), different orientation (e.g., front-facing versus side-facing gable), or different roof projections (e.g., with and without dormer or shed, or different type of dormer or shed).
- d. **Entry or Porch.** The plans have different configuration or detailing of the front porch or covered entrance.
- e. **Fenestration.** The plans have different placement, shape, or orientation of windows or different placement of doors.
- f. **Height.** The elevation of the primary roofline (along the axis of the longest roofline) changes by not less than four feet from building to building, or from dwelling unit to dwelling unit (e.g., townhome units), as applicable. Changes in grade of eight feet or more from one lot to the adjacent lot are counted toward change in height for purposes of evaluating façade variation.
- g. **Color Palette.** Variation in color palette. (Ord. 2017-08 §1)

Findings: The Applicant’s submitted site plans show 13 proposed buildings and these standards apply. The proposed adjacent and opposite buildings show differences in color palette, roof elevation, and fenestration. These standards are met.

17-3.3.030 Vehicular Access and Circulation

- A. **Purpose and Intent.** Section 17-3.3.030 implements the street access policies of the City of Molalla Transportation System Plan. It is intended to promote safe vehicle access and egress to properties, while maintaining traffic operations in conformance with adopted standards. “Safety,” for the purposes of this chapter, extends to all modes of transportation.
- B. **Permit Required.** Vehicular access to a public street (e.g., a new or modified driveway connection to a street or highway) requires an approach permit approved by the applicable roadway authority.

Findings: This standard is met subject to a condition of approval. The Applicant’s submitted application involves Site Design Review for a new multifamily community that is

planned to take access to S Leroy Avenue within the jurisdiction of the City of Molalla (City). As a condition of approval, the Applicant shall receive access approval from the City of Molalla through the civil plan review process.

- C. **Traffic Study Requirements.** The City, in reviewing a development proposal or other action requiring an approach permit, may require a traffic impact analysis, pursuant to Section 17-3.6.020, to determine compliance with this Code.

Findings: Criteria for requiring a full traffic impact analysis were met. The Applicant submitted a Traffic Impact Study (Exhibit D) prepared by a Registered Engineer as part of the application package. This standard is met.

- D. **Approach and Driveway Development Standards.** Approaches and driveways shall conform to all of the following development standards:

1. The number of approaches on higher classification streets (e.g., collector and arterial streets) shall be minimized; where practicable, access shall be taken first from a lower classification street.

Findings: The Applicant's submitted application shows both the eastern and western portions of the development taking access from S Leroy Avenue. The subject site is not adjacent to any other public streets. This criterion is met.

2. Approaches shall conform to the spacing standards of subsections E and F, below, and shall conform to minimum sight distance and channelization standards of the roadway authority.

Findings: Per the Molalla Transportation Systems Plan, S Leroy Avenue is classified as a major collector. Access spacing for private drives on major collectors is 150 ft. The Applicant's submitted application shows that all proposed accesses are at least 150 ft from adjacent roadways. This standard is met.

3. Driveways shall be paved and meet applicable construction standards. Where permeable paving surfaces are allowed or required, such surfaces shall conform to applicable Public Works Design Standards.

Findings: The Applicant's submitted site plan shows that all driveway surfaces are paved. This standard is met.

4. The City Engineer may limit the number or location of connections to a street, or limit directional travel at an approach to one-way, right-turn only, or other restrictions, where the roadway authority requires mitigation to alleviate safety or traffic operations concerns.

Findings: Staff finds that the proposed number, locations, and directional travels of proposed access points are appropriate for the proposed site. This standard is met.

5. Where the spacing standards of the roadway authority limit the number or location of connections to a street or highway, the City Engineer may require a driveway extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The City Engineer may also require the owner(s) of the subject site to record an access easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s).

Findings: Staff finds that driveway spacing complies with City of Molalla spacing standards for collector streets. Internal connections to private drives and adjacent properties have been provided to promote inter-parcel circulation as appropriate.

6. Where applicable codes require emergency vehicle access, approaches and driveways shall be designed and constructed to accommodate emergency vehicle apparatus and shall conform to applicable fire protection requirements. The City Engineer may restrict parking, require signage, or require other public safety improvements pursuant to the recommendations of an emergency service provider.

Findings: This standard is met subject to a condition of approval. The Applicant's submitted site plans show accesses and drive aisles that are consistent with Oregon Fire Code standards. As a condition of approval, the applicant shall provide a striping/no parking signage/curb paint detail for civil/building plan approval.

7. As applicable, approaches and driveways shall be designed and constructed to accommodate truck/trailer-turning movements.

Findings: Page D-08 of the Applicant's submitted site plan shows turning movements for fire apparatus, which are would be the largest vehicles anticipated to access the proposed development. This standard is met.

8. Except where the City Engineer and roadway authority, as applicable, permit an open access with perpendicular or angled parking, driveways shall accommodate all projected vehicular traffic on-site without vehicles stacking or backing up onto a street.

Findings: All vehicular circulation is internal to the site. No vehicle stacking is anticipated for a multifamily development. This standard is met.

9. Driveways shall be designed so that vehicle areas, including, but not limited to, drive-up and drive-through facilities and vehicle storage and service areas, do not obstruct any public right-of-way.

Findings: The Applicant's submitted site plan shows that the driveways do not cause any obstructions to the public right of way. This standard is met.

10. Approaches and driveways shall not be wider than necessary to safely accommodate projected peak hour trips and turning movements, and shall be designed to minimize crossing distances for pedestrians.

Findings: The Applicant's submitted site plan shows that the driveways do not cause any obstructions to the public right of way. This standard is met.

11. As it deems necessary for pedestrian safety, the City Engineer, in consultation with the roadway authority, as applicable, may require that traffic-calming features, textured driveway surfaces (e.g., pavers or similar devices), curb extensions, signage or traffic control devices, or other features, be installed on or in the vicinity of a site as a condition of development approval.

Findings: Staff will not be requiring additional pedestrian safety features. This standard does not apply.

12. Construction of approaches along acceleration or deceleration lanes, and along tapered (reduced width) portions of a roadway, shall be avoided; except where no reasonable alternative exists and the approach does not create safety or traffic operations concern.

Findings: This application does not include approaches along acceleration or deceleration lanes or reduced width portions of roadway. This standard does not apply.

13. Approaches and driveways shall be located and designed to allow for safe maneuvering in and around loading areas, while avoiding conflicts with pedestrians, parking, landscaping, and buildings.

Findings: This application does not include loading areas. This standard does not apply.

14. Where sidewalks or walkways occur adjacent to a roadway, driveway aprons constructed of concrete shall be installed between the driveway and roadway edge. The roadway authority may require the driveway apron be installed outside the required sidewalk or walkway surface, consistent with Americans with Disabilities Act (ADA) requirements, and to manage surface water runoff and protect the roadway surface.

Findings: This standard is met subject to a condition of approval. As a condition of approval, all driveway aprons shall be designed consistent with the Americans with Disabilities requirements.

15. Where an accessible route is required pursuant to ADA, approaches and driveways shall meet accessibility requirements where they coincide with an accessible route.

Findings: This application includes a sidewalk adjacent to S Leroy Avenue. As shown on the Applicant's preliminary site plans (Exhibit A), the driveway apron for the access to S Leroy Avenue is planned to be constructed of concrete and to meet applicable accessibility requirements. Additional aprons are included throughout the site wherever pedestrian walkways cross vehicular drive aisles. This standard is met.

16. The City Engineer may require changes to the proposed configuration and design of an approach, including the number of drive aisles or lanes, surfacing, traffic-calming features, allowable turning movements, and other changes or mitigation, to ensure traffic safety and operations.

Findings: Staff will not be requiring configuration changes to the proposed accesses. This standard does not apply.

17. Where a new approach onto a state highway or a change of use adjacent to a state highway requires ODOT approval, the applicant is responsible for obtaining ODOT approval. The City Engineer may approve a development conditionally, requiring the applicant first obtain required ODOT permit(s) before commencing development, in which case the City will work cooperatively with the applicant and ODOT to avoid unnecessary delays.

Findings: The proposed development is not adjacent to any ODOT facilities. This standard does not apply.

18. Where an approach or driveway crosses a drainage ditch, canal, railroad, or other feature that is under the jurisdiction of another agency, the applicant is responsible for obtaining all required approvals and permits from that agency prior to commencing development.

Findings: The approach of the proposed development does not cross any feature that is under the jurisdiction of another agency. This standard does not apply.

19. Where a proposed driveway crosses a culvert or drainage ditch, the City Engineer may require the developer to install a culvert extending under and beyond the edges of the driveway on both sides of it, pursuant to applicable Public Works Design Standards.

Findings: The approach of the proposed development does not cross any culvert or drainage ditch. This standard does not apply.

20. Except as otherwise required by the applicable roadway authority or waived by the City Engineer temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

Findings: The Applicant's submitted application states that this standard will be met during construction.

21. Development that increases impervious surface area shall conform to the storm drainage and surface water management requirements of Section 17-3.6.050.

Findings: The Applicant has submitted a preliminary stormwater report with their application along with planned improvements for surface water management. This standard is met for the purposes of this review and will be evaluated further during engineering plan review.

E. **Approach Separation from Street Intersections.** Except as provided by subsection H, minimum distances shall be maintained between approaches and street intersections consistent with the current version of the Public Works Design Standards and Transportation System Plan.

Findings: Per the Molalla Transportation Systems Plan, S Leroy Ave is a Major Collector. Access spacing requirements for private drives on major collectors is 150 ft. The Applicant's submitted Site Plan shows that all proposed accesses are appropriately spaced from current intersections.

F. **Approach Spacing.** Except as provided by subsection H or as required to maintain street operations and safety, the following minimum distances shall be maintained between approaches consistent with the current version of the Public Works Design Standards and Transportation System Plan.

Findings: Fifty (50') ft of spacing is required between approaches on collector streets. The Applicant's submitted site plan shows that at least 50' of spacing is maintained between all proposed approaches. This standard is met.

G. **Vision Clearance.** No visual obstruction (e.g., sign, structure, solid fence, or shrub vegetation) greater than 2.5 feet in height shall be placed in "vision clearance areas" at street intersections.. The minimum vision clearance area may be modified by the Planning Official through a Type I procedure, upon finding that more or less sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). Placement of light poles, utility poles, and tree trunks should be avoided within vision clearance areas.

Findings: The Applicant's submitted site plan shows no visual obstructions in the vision clearance area. This criterion is met subject to conditions of approval. As an ongoing condition of approval, no visual obstructions shall be placed in vision clearance areas.

H. **Exceptions and Adjustments.** The City Engineer may approve adjustments to the spacing standards of subsections E and F, above, where an existing connection to a City street does not meet the standards of the roadway authority and the proposed development moves in the direction of code compliance. The Planning Official through a Type II procedure may also approve a deviation to the spacing standards on City streets where it finds that mitigation measures, such as consolidated access (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g., one-way), turning

restrictions (e.g., right-in/ right-out only), or other mitigation alleviate all traffic operations and safety concerns.

Findings: The Applicant has not applied for an exception or adjustment to access or approach spacing. This standard does not apply.

- I. **Joint Use Access Easement and Maintenance Agreement.** Where the City approves a joint use driveway, the property owners shall record an easement with the deed allowing joint use of and cross access between adjacent properties. The owners of the properties agreeing to joint use of the driveway shall record a joint maintenance agreement with the deed, defining maintenance responsibilities of property owners. The applicant shall provide a fully executed copy of the agreement to the City for its records, but the City is not responsible for maintaining the driveway or resolving any dispute between property owners.

Findings: This standard is met subject to a condition of approval. The Applicant has proposed cross access with Taxlot 1800 of Map 52E08C to the south. As a condition of approval, the Applicant shall record an easement with the deed allowing joint use of and cross access between driveways for the western subject parcel and Taxlot 1800 of Map 52E08C.

17-3.3.040 Pedestrian Access and Circulation

- B. **Standards.** Developments shall conform to all of the following standards for pedestrian access and circulation as generally illustrated in Figure 17-3.3-3:
 1. **Continuous Walkway System.** A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable.

Findings: The Applicant's submitted site plan shows a continuous sidewalk that connects all buildings with adjacent public sidewalks, walkways within the Cascade Center development, and with other buildings in the development. This standard is met.

2. **Safe, Direct, and Convenient.** Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, recreational areas, playgrounds, and public rights-of-way conforming to the following standards:
 - a. The walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel.

- b. The walkway is designed primarily for pedestrian safety and convenience, meaning it is reasonably free from hazards and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The Planning Official may require landscape buffering between walkways and adjacent parking lots or driveways to mitigate safety concerns.
- c. The walkway network connects to all primary building entrances, consistent with the building design standards of Chapter 17-3.2 and, where required, Americans with Disabilities Act (ADA) requirements.

Findings: These standards are met subject to conditions of approval. The Applicant's submitted site plans show a walkway that provides a safe pedestrian route throughout the site and between sites. Additional pedestrian walkways that extend from sidewalks on S Leroy Ave on the north sides of each parcel to the breezeways that provide access to upper story apartments would satisfy the direct access requirements. Additionally, extending the walkways across the north access of parcel 04700 and providing an ADA ramp to parcels to the north would enhance direct access throughout the site. As a condition of approval, the Applicant shall extend walkways from S Leroy Ave on the north sides of each parcel to the breezeways that provide access to upper story apartments. As a condition of approval, the Applicant shall extend the walkways across the north access of parcel 04700 and provide an ADA ramp to parcels to the north.

- 3. **Vehicle/Walkway Separation.** Except as required for crosswalks, per subsection 4, below, where a walkway abuts a driveway or street it shall be raised six inches and curbed along the edge of the driveway or street. Alternatively, the Planning Official may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically separated from all vehicle-maneuvering areas. An example of such separation is a row of bollards (designed for use in parking areas) with adequate minimum spacing between them to prevent vehicles from entering the walkway.

Findings: The Applicant's submitted site plans show curbing planned for walkways where they abut driveways or streets. This standard is met.

- 4. **Crosswalks.** Where a walkway crosses a parking area or driveway ("crosswalk"), it shall be clearly marked with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrasting material). The crosswalk may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and similar types of non-permanent applications are discouraged, but may be approved for lesser used crosswalks not exceeding 24 feet in length.

Findings: The Applicant's submitted site plans show seven instances where the pedestrian walkway crosses drive aisles. The Applicant's submitted application states that shown crossings shall be marked as required by this code. This standard is met.

5. **Walkway Width and Surface.** Walkways, including access ways required for subdivisions pursuant to Chapter 17-4.3, shall be constructed of concrete, asphalt, brick or masonry pavers, or other durable surface, as approved by the City Engineer, and not less than six feet wide. Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be concrete or asphalt and shall conform to the current version of the Public Works Design Standards and Transportation System Plan.

6. **Walkway Construction (Private).** Walkway surfaces may be concrete, asphalt, brick or masonry pavers, or other City-approved durable surface meeting ADA requirements. Walkways shall be not less than six feet in width in commercial and mixed use developments and where access ways are required for subdivisions under Division IV.

Findings: The Applicant's submitted site plan shows walkways throughout the site are constructed of concrete and are at least 6 ft in width. These standards are met.

7. **Multi-Use Pathways.** Multi-use pathways, where approved, shall be a minimum width and constructed of materials consistent with the current version of the Public Works Design Standards and Transportation System Plan.

Findings: This application does not include multiuse pathways. This standard does not apply.

Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting

17-3.4.030 Landscaping and Screening

- A. **General Landscape Standard.** All portions of a lot not otherwise developed with buildings, accessory structures, vehicle maneuvering areas, or parking shall be landscaped.

- B. **Minimum Landscape Area.** All lots shall conform to the minimum landscape area standards of the applicable zoning district, as contained in Tables 17-2.2.040.D and 17-2.2.040.E. The Planning Official, consistent with the purposes in Section 17-3.4.010, may allow credit toward the minimum landscape area for existing vegetation that is retained in the development.

Findings: The Applicant's submitted site plans show that over 18% of the site will be landscaped in addition to the 16% common open space. Requirements for total landscaping and common open space are 5% and 15% respectively. These standards are met.

C. **Plant Selection.** A combination of deciduous and evergreen trees, shrubs, and ground covers shall be used for all planted areas, the selection of which shall be based on local climate, exposure, water availability, and drainage conditions, among other factors. When new vegetation is planted, soils shall be amended and irrigation shall be provided, as necessary, to allow for healthy plant growth. The selection of plants shall be based on all of the following standards and guidelines:

1. Use plants that are appropriate to the local climate, exposure, and water availability. The presence of utilities and drainage conditions shall also be considered.
2. Plant species that do not require irrigation once established (naturalized) are preferred over species that require irrigation.
3. Trees shall be not less than two-inch caliper for street trees and one and one-half-inch caliper for other trees at the time of planting. Trees to be planted under or near power lines shall be selected so as to not conflict with power lines at maturity.
4. Shrubs shall be planted from five-gallon containers, minimum, where they are for required screens or buffers, and two-gallon containers minimum elsewhere.
5. Shrubs shall be spaced in order to provide the intended screen or canopy cover within two years of planting.
6. All landscape areas, whether required or not, that are not planted with trees and shrubs or covered with allowable non-plant material, shall have ground cover plants that are sized and spaced to achieve plant coverage of not less than 75 percent at maturity.
7. Bark dust, chips, aggregate, or other non-plant ground covers may be used, but shall cover not more than 35 percent of any landscape area. Non-plant ground covers cannot be a substitute for required ground cover plants.
8. Where stormwater retention or detention, or water quality treatment facilities are proposed, they shall meet the requirements of the current version of the Public Works Design Standards.
9. Existing mature trees that can thrive in a developed area and that do not conflict with other provisions of this Code shall be retained where specimens are in good health, have desirable aesthetic characteristics, and do not present a hazard.
10. Landscape plans shall avoid conflicts between plants and buildings, streets, walkways, utilities, and other features of the built environment.
11. Evergreen plants shall be used where a sight-obscuring landscape screen is required.
12. Deciduous trees should be used where summer shade and winter sunlight is desirable.
13. Landscape plans should provide focal points within a development, for example, by preserving large or unique trees or groves or by using flowering plants or trees with fall color.

14. Landscape plans should use a combination of plants for seasonal variation in color and yearlong interest.
15. Where plants are used to screen outdoor storage or mechanical equipment, the selected plants shall have growth characteristics that are compatible with such features.
16. Landscape plans shall provide for both temporary and permanent erosion control measures, which shall include plantings where cuts or fills, including berms, swales, stormwater detention facilities, and similar grading, is proposed.
17. When new vegetation is planted, soils shall be amended and irrigation provided, as necessary, until the plants are naturalized and able to grow on their own.

Findings: The Applicant's submitted landscaping plans show that plant materials meet the above guidelines. These standards are met.

D. Central Commercial C-1 District Streetscape Standard. Developers of projects within the Central Commercial C-1 zoning district can meet the landscape area requirement of subsection B, in part, by installing street trees in front of their projects. The Planning Official shall grant credit toward the landscape area requirement using a ratio of 1:1, where one square foot of planted area (e.g., tree well or planter surface area) receives one square foot of credit. The Planning Official may grant additional landscape area credit by the same ratio where the developer widens the sidewalk or creates a plaza or other civic space pursuant to Section 17-3.2.050.

Findings: The subject properties are located in the C-2 zone. This standard does not apply.

- E. Parking Lot Landscaping.** All of the following standards shall be met for parking lots. If a development contains multiple parking lots, then the standards shall be evaluated separately for each parking lot.
1. A minimum of 10 percent of the total surface area of all parking areas, as measured around the perimeter of all parking spaces and maneuvering areas, shall be landscaped. Such landscaping shall consist of shade trees distributed throughout the parking area. A combination of deciduous and evergreen trees, shrubs, and ground cover plants is required. The trees shall be planned so that they provide a partial canopy cover over the parking lot within five years. At a minimum, one tree per 12 parking spaces on average shall be planted over and around the parking area.

Findings: The Applicant's submitted landscaping plan shows that 10.8% of parking area is landscaped. A total of 40 trees are provided for 323 parking proposed parking spaces at a ratio of one tree per ~8 parking spaces. This standard is met.

2. All parking areas with more than 20 spaces shall provide landscape islands with trees that break up the parking area into rows of not more than 10 contiguous parking spaces. Landscape islands and planters shall have dimensions of not less than 48 square feet of area and no dimension of less than six feet, to ensure adequate soil, water, and space for healthy plant growth.

Findings: The Applicants submitted site plans show 323 total parking space and there are no proposed rows with more than 10 contiguous parking spaces without a treed landscape island breaking it up. This standard is met.

3. All required parking lot landscape areas not otherwise planted with trees must contain a combination of shrubs and groundcover plants so that, within two years of planting, not less than 50 percent of that area is covered with living plants.

Findings: The Applicants submitted site plans show all proposed parking lot landscaping islands include trees. This standard is met.

4. Wheel stops, curbs, bollards, or other physical barriers are required along the edges of all vehicle-maneuvering areas to protect landscaping from being damaged by vehicles. Trees shall be planted not less than two feet from any such barrier.

Findings: The Applicant's submitted site plans show wheel stops between landscaped areas and vehicle maneuvering areas. This standard is met.

5. Trees planted in tree wells within sidewalks or other paved areas shall be installed with root barriers, consistent with applicable nursery standards.

Findings: This standard is met subject to a condition of approval. As a condition of approval, trees planted in tree wells within sidewalks or other paved areas shall be installed with root barriers, consistent with applicable nursery standards.

- F. **Screening Requirements.** Screening is required for outdoor storage areas, unenclosed uses, and parking lots, and may be required in other situations as determined by the Planning Official. Landscaping shall be provided pursuant to the standards of subsections F.1 through 3. (See also Figure 17-3.4-4.)

1. **Outdoor Storage and Unenclosed Uses.** All areas of a site containing or proposed to contain outdoor storage of goods, materials, equipment, and vehicles (other than required parking lots and service and delivery areas, per Site Design Review), and areas containing junk, salvage materials, or similar contents, shall be screened from view from adjacent rights-of-way and residential uses by a sight-obscuring fence, wall, landscape screen, or combination of screening methods. See also Section 17-3.4.040 for related fence and wall standards.

Findings: The Applicant's submitted site plans show an arborvitae hedge around the trash enclosure. No other outdoor storage areas are planned. This standard is met.

2. **Parking Lots.** The edges of parking lots shall be screened to minimize vehicle headlights shining into adjacent rights-of-way and residential yards. Parking lots abutting a sidewalk or walkway shall be screened using a low-growing hedge or low garden wall to a height of between three feet and four feet.

Findings: The Applicant's submitted site plans show that all parking spaces directed toward adjacent lots are screened by landscaping. No parking areas are directed at residential properties nor the right of way. This standard is met.

3. **Other Uses Requiring Screening.** The Planning Official may require screening in other situations as authorized by this Code, including, but not limited to, outdoor storage areas, blank walls, Special Uses pursuant to Chapter 17-2.3, flag lots, and as mitigation where an applicant has requested an adjustment pursuant to Chapter 17-4.7.

Findings: This standard does not apply to this proposal.

- G. **Maintenance.** All landscaping shall be maintained in good condition, or otherwise replaced by the property owner.

Findings: This criterion can be met with a condition of approval. As an ongoing condition of approval all landscaping shall be maintained in good condition, or otherwise replaced by the property owner.

17-3.4.040 Fences and Walls

A. **Purpose.** This section provides general development standards for fences, and walls that are not part of a building, such as screening walls and retaining walls.

B. **Applicability.** Section 17-3.4.040 applies to all fences, and to walls that are not part of a building, including modifications to existing fences and walls.

C. **Height.**

1. **Residential Zones.**

Findings: The Applicant’s proposal is in a non-residential zone. These standards do not apply.

2. **Non-Residential Zones.** Fences and freestanding walls (i.e., exclusive of building walls) for non-residential uses shall not exceed the following height above grade, where grade is measured from the base of the subject fence or wall.

a. Within Front or Street-Facing Side Yard Setback. Four feet, except the following additional height is allowed for properties located within an industrial, public, or institutional zone:

(1) Where approved by the City Planning Official, a fence constructed of open chain link or other “see-through” composition that allows 90 percent light transmission may reach a height of up to eight feet.

b. Within an Interior Side or Rear Yard Setback. Eight feet; except the fence or wall height, as applicable, shall not exceed the distance from the fence or wall line to the nearest primary structure on an adjacent property.

Findings: No fences are proposed within setback areas. These standards are met.

3. **All Zones.** Fences and walls shall comply with the vision clearance standards of Section 17-3.3.030.G. Other provisions of this Code, or the requirements of the roadway authority, may limit allowable height of a fence or wall below the height limits of this section.

Findings: No fences and walls are proposed in vision clearance areas as a part of this application. This standard is not applicable.

D. **Materials.** Prohibited fence and wall materials include straw bales, tarps, barbed or razor wire (except in the M-2 Heavy Industrial zone); scrap lumber, untreated wood (except cedar or redwood), corrugated metal, sheet metal, scrap materials; dead, diseased, or dying plants; and materials similar to those listed herein.

Findings: This standard is met subject to a condition of approval. The Applicant’s submitted application includes fencing around the tot lot and swimming pool. As a condition of approval, all fencing shall be comprised of approved materials subject to MMC section 17-3.4.040 D.

E. **Permitting.** A Type I approval is required to install a fence of six feet or less in height, or a wall that is four feet or less in height. All other walls and fences require review and approval by the Planning Official through a Type II procedure. The Planning Official may require installation of walls or fences as a condition of approval for development, as provided by other Code sections. A building permit may be required for some fences and walls, pursuant to applicable building codes. Walls greater than four feet in height shall be designed by a Professional Engineer licensed in the State of Oregon.

Findings: Proposed fencing is hereby approved in conjunction with this site design review.

F. **Maintenance.** Fences and walls shall be maintained in good condition, or otherwise replaced by the property owner. (Ord. 2017-08 §1)

Findings: This standard is met subject to a condition of approval. As an ongoing condition of approval, fences and walls shall be maintained in good condition, or otherwise replaced by the property owner.

17-3.4.050 Outdoor Lighting

C. Standards.

1. Light poles, except as required by a roadway authority or public safety agency, shall not exceed a height of 20 feet; pedestal- or bollard-style lighting shall be used to illuminate walkways. Flag poles, utility poles, and streetlights are exempt from this requirement.

Findings: The Applicant's submitted lighting plan shows outdoor lighting poles that will not exceed 20 ft in height and otherwise meets standards. This standard is met.

2. Where a light standard is placed over a sidewalk or walkway, a minimum vertical clearance of eight feet shall be maintained.

Findings: The Applicant's submitted lighting plan does not include lighting placed directly over walkways. This standard does not apply.

3. Outdoor lighting levels shall be subject to review and approval through Site Design Review. As a guideline, lighting levels shall be no greater than necessary to provide for pedestrian safety, property or business identification, and crime prevention.

Findings: The Applicant's submitted lighting plan shows that planned lighting levels are not greater than necessary to provide safety. This standard is met.

4. Except as provided for up-lighting of flags and permitted building-mounted signs, all outdoor light fixtures shall be directed downward, and have full cutoff and full shielding to preserve views of the night sky and to minimize excessive light spillover onto adjacent properties.

Findings: The Applicant's submitted lighting plan shows planned outdoor light fixtures that are downward-facing lights with cutoffs to minimize light intrusion onto adjacent properties. This standard is met.

5. Lighting shall be installed where it will not obstruct public ways, driveways, or walkways.

Findings: The Applicant's submitted lighting plan shows no lighting obstructing public ways, driveways, or walkways. This standard is met.

6. Walkway lighting in private areas shall have a minimum average illumination of not less than 0.2 foot-candles. Lighting along public walkways shall meet the current version of the Public Works Design Standards and AASHTO lighting requirements.

Findings: The Applicant's submitted lighting plan shows that lighting over walkways clearly averages over 0.2 foot candles. This standard is met.

7. Active building entrances shall have a minimum average illumination of not less than two foot-candles.

Findings: The Applicant's submitted lighting plan shows that lighting above active entrances exceeds two foot candles. This standard is met.

8. Surfaces of signs shall have an illumination level of not more than two foot candles.

Findings: The Applicant's submitted application does not include signs. This standard is met.

9. Parking lots and outdoor services areas, including quick vehicle service areas, shall have a minimum illumination of not less than 0.2 foot-candles, average illumination of approximately 0.8 foot-candles, and a uniformity ratio (maximum-to-minimum ratio) of not more than 20:1.

Findings: The Applicant's submitted lighting plan shows that the planned lighting in the parking area has a minimum illumination of 0.2 foot-candles, average illumination of .9 foot-candles, and a uniformity ratio of 15:1. This standard is met.

10. Where illumination grid lighting plans cannot be reviewed or if fixtures do not provide photometrics and bulbs are under 2,000 lumens, use the following guidelines:

- a. Poles should be no greater in height than four times the distance to the property line.
- b. Maximum lumen levels should be based on fixture height.
- c. Private illumination shall not be used to light adjoining public right-of-way.

Findings: The Applicant's submitted lighting plan shows that these standards are met.

11. Where a light standard is placed within a walkway, an unobstructed pedestrian through zone not less than 48 inches wide shall be maintained.

Findings: The Applicant's submitted lighting plan shows that planned lighting located near walkways have unobstructed pedestrian through zones not less than 48 inches wide. This standard is met.

12. Lighting subject to this section shall consist of materials approved for outdoor use and shall be installed according to the manufacturer's specifications.

Findings: The Applicant's submitted lighting plan shows that planned lighting is designed for outdoor use. This standard is met.

Chapter 17-3.5 Parking and Loading

A. **Minimum Number of Off-Street Automobile Parking Spaces.** Except as provided by this subsection A, or as required for Americans with Disabilities Act compliance under subsection G, off-street parking shall be provided pursuant to one of the following three standards:

1. The standards in Table 17-3.5.030.A;
2. A standard from Table 17-3.5.030.A for a use that the Planning Official determines is similar to the proposed use; or
3. Subsection B Exceptions, which includes a Parking Demand Analysis option.

Findings: The Applicant's submitted application proposes 323 parking spaces. The proposed use contains 41 1-bedroom apartments, 86 2-bedroom apartments, and 24 3-bedroom apartments.

The minimum parking requirement for this development is 293 parking spaces. This standard is met.

B. Carpool and Vanpool Parking Requirements.

1. Carpool and vanpool parking spaces shall be identified for the following uses:
 - a. New commercial and industrial developments with 50 or more parking spaces;
 - b. New institutional or public assembly uses; and
 - c. Transit park-and-ride facilities with 50 or more parking spaces.

Findings: The Applicant's submitted application is for multi-family development. These standards do not apply.

C. Exceptions and Reductions to Off-Street Parking.

Findings: The Applicant has not requested any off-street parking exceptions and Staff finds that no exceptions are necessary to meet compliance with this code. This standard does not apply.

- D. Maximum Number of Off-Street Automobile Parking Spaces.** The maximum number of off-street automobile parking spaces allowed per site equals the minimum number of required spaces for the use pursuant to Table 17-3.5.030.A, times a factor of:
1. 1.2 spaces for uses fronting a street with adjacent on-street parking spaces; or
 2. 1.5 spaces, for uses fronting no street with adjacent on-street parking; or
 3. A factor based on applicant's projected parking demand, subject to City approval.

Findings: The Applicant's submitted application proposes 323 parking spaces. The proposed use contains 41 1-bedroom apartments, 86 2-bedroom apartments, and 24 3-bedroom apartments. The maximum parking requirement for this development is 1.5 times the minimum of 293 parking spaces, or 440 spaces. This standard is met.

- E. Shared Parking.** Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlap (e.g., uses primarily of a daytime versus nighttime nature; weekday uses versus weekend uses), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use. Shared parking requests shall be subject to review and approval through a Type I Review.

Findings: The Applicant has not requested any shared parking arrangements. This standard does not apply.

- F. **Parking Stall Design and Minimum Dimensions.** Where a new off-street parking area is proposed, or an existing off-street parking area is proposed for expansion, the entire parking area shall be improved in conformance with this Code. At a minimum the parking spaces and drive aisles shall be paved with asphalt, concrete, or other City-approved materials, provided the Americans with Disabilities Act requirements are met, and shall conform to the minimum dimensions in Table 17-3.5.030.F and the figures below. All off-street parking areas shall contain wheel stops, perimeter curbing, bollards, or other edging as required to prevent vehicles from damaging buildings or encroaching into walkways, sidewalks, landscapes, or the public right-of-way. Parking areas shall also provide for surface water management, pursuant to Section 17-3.6.050.

Findings: Proposed parking stalls are all 90 degree angled parking stalls. Table 17-3.5.030 F requires that 90 degree angled spaces, as proposed, require:

- 18' stall depth.
- 8.5' stall curb width
- 23' drive aisle (2 way).

The Applicant's submitted application shows 19' stall lengths, 8.5' stall widths, and and 26' drive aisles This standard is met.

- G. **Adjustments to Parking Area Dimensions.** The dimensions in subsection E are minimum standards. The Planning Official, through a Type II procedure, may adjust the dimensions based on evidence that a particular use will require more or less maneuvering area. For example, the Planning Official may approve an adjustment where an attendant will be present to move vehicles, as with valet parking. In such cases, a form of guarantee must be filed with the City ensuring that an attendant will always be present when the lot is in operation.

Findings: The Applicant has not requested any modifications to parking area dimensions and Staff finds that no adjustments are necessary to meet compliance with this code. This criterion does not apply.

- H. **Americans with Disabilities Act (ADA).** Parking shall be provided consistent with ADA requirements, including, but not limited to, the minimum number of spaces for automobiles, van-accessible spaces, location of spaces relative to building entrances,

accessible routes between parking areas and building entrances, identification signs, lighting, and other design and construction requirements.

Findings: The Applicant's submitted site plan shows 12 proposed ADA spaces. This standard is met.

- I. **Electric Charging Stations.** Charging stations for electric vehicles are allowed as an accessory use to parking areas developed in conformance with this Code, provided the charging station complies with applicable building codes and any applicable state or federal requirements.

Findings: No electric charging stations are proposed. This criterion does not apply.

17-3.5.040 Bicycle Parking

- A. **Standards.** *Bicycle parking spaces shall be provided with new development and, where a change of use occurs, at a minimum, shall follow the standards in Table 17-3.5.040.A. Where an application is subject to Conditional Use Permit approval or the applicant has requested a reduction to an automobile-parking standard, pursuant to Section 17-3.5.030.C, the Planning Official may require bicycle parking spaces in addition to those in Table 17-3.5.040.A.*

Findings: Per Table 17-3.5.040.A two bicycle parking spaces are required for every 4 dwelling units. The Applicant's submitted application is for 151 dwelling units and 78 bike parking stalls are provided. This standard is met.

- B. **Design.** *Bicycle parking shall consist of staple-design steel racks or other City-approved racks, lockers, or storage lids providing a safe and secure means of storing a bicycle, consistent with the Public Works Design Standards.*

Findings: This standard is met subject to a condition of approval. Staff finds that the Applicant's submitted application shows proposed bike rack locations but does not specify rack style. As a condition of approval, the Applicant shall specify bike rack style meeting the standards of MMC 17-3.5.040 with their building permit submissions.

- C. **Exemptions.** *This section does not apply to single-family and duplex housing, home occupations, and agricultural uses.*

Findings: These standards do apply to the submitted application for multi-family development.

D. Hazards. Bicycle parking shall not impede or create a hazard to pedestrians or vehicles and shall be located to not conflict with the vision clearance standards of Section 17-3.3.030.G.

Findings: The Applicant's submitted site plans show that proposed bicycle parking is separated from the pedestrian walkway and is not anticipated to cause a hazard. Standard is met.

17-3.5.040 Loading Areas

- A. **Purpose.** The purpose of Section 17-3.5.050 is to provide adequate loading areas for commercial and industrial uses that do not interfere with the operation of adjacent streets.
- B. **Applicability.** Section 17-3.5.050 applies to uses that are expected to have service or delivery truck visits. It applies only to uses visited by trucks with a 40-foot or longer wheelbase, at a frequency of one or more vehicles per week. The Planning Official shall determine through a Type I review the number, size, and location of required loading areas, if any.
- C. **Standard.** Where an off-street loading space is required, it shall be large enough to accommodate the largest vehicle that is expected to serve the use without obstructing vehicles or pedestrian traffic on adjacent streets and driveways. The Planning Official may restrict the use of other public rights-of-way, so applicants are advised to provide complete and accurate information about the potential need for loading spaces.
- D. **Placement, Setbacks, and Landscaping.** Loading areas shall conform to the standards of Chapter 17-3.2 Building Orientation and Design; Chapter 17-3.3 Access and Circulation; and Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting. Where parking areas are prohibited between a building and the street, loading areas are also prohibited.
- E. **Exceptions and Adjustments.** The Planning Official, through a Type I Review, may approve a loading area adjacent to or within a street right-of-way where it finds that loading and unloading operations are short in duration (i.e., less than one hour), infrequent, do not obstruct traffic during peak traffic hours, do not interfere with emergency response services, and are acceptable to the applicable roadway authority. (Ord. 2017-08 §1)

Findings: Loading areas are not included with this application. These standards do not apply.

Chapter 17-3.6 Public Facilities

17-3.6.020 Transportation Standards

Findings: Transportation standards are met subject to conditions of approval.

1. The Applicant submitted a traffic impact analysis, as required, with the submitted application. Both ODOT and the City concur with findings in this analysis and no updates to the submitted analysis are required.
2. S. Leroy Ave (East side): Leroy Avenue is a major collector street under City of Molalla jurisdiction. Current right-of-way width is 60 feet and pavement width is 46 feet. Cascade Center constructed Leroy Avenue with curb and gutter on the east side of the roadway. Applicant will be required to construct 6-foot-wide sidewalks along the two frontages of S Leroy Ave. Applicant shall construct commercial driveway as the eastern access so that the centerline aligns with the centerline of driveway on the west side of S Leroy Ave as proposed. Per exhibit 4: Major Collector Cross Section in accordance with TSP.
3. S. Leroy Avenue (West side): Leroy Avenue is a major collector street under City of Molalla jurisdiction. Current right-of-way width is 60 feet and pavement width is 46 feet. Cascade Center constructed Leroy Avenue with curb, gutter, and 6-foot-wide sidewalks on the west side of the roadway fronting Lot 8. Applicant will be required to construct a commercial driveway to complete the frontage improvements on the west side of S Leroy Ave. Per exhibit 4: Major Collector Cross Section in accordance with TSP.
4. Right-of-way Dedications/Donations: If right of way dedication fronts streets under the jurisdiction of the City of Molalla, Applicant shall submit dedication on formats approved by the Public Works Department. Applicant is advised that donation must be completed and recorded prior to submission of final subdivision plat or final partition plat in order for Public Works to process plat documents. The most recent plat and survey shows 60 feet of right-of-way, no dedication is required.
5. Applicant shall dedicate a 10-foot wide Public Utility Easement along all public rights of way if not already provided in the Cascade Center subdivision plat. No structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy.

6. Access to public streets shall be limited to Leroy Ave and all accesses shall be constructed in such a manner as to eliminate turning conflicts. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.

17-3.6.040 Sanitary Sewer and Water Service Improvements

Findings: Sanitary Sewer and Water Service standards are met subject to conditions of approval.

Sanitary: There are no sewer improvements available for connection of onsite sewer improvements. An 8-inch sanitary main exists on W Main Street (OR-211), which is under jurisdiction of the Oregon Department of Transportation (ODOT). Sanitary main is approximately 9 feet deep at the East Access Utility Extension and will serve the parcel addressed at 201 S Leroy Ave (Lot 9 of Cascade Center) by gravity system. Applicant will be required to dedicate a 15-foot-wide sewer line easement per City requirements through the East Access Utility Extension and extend the sanitary line through it from OR-211 to the subject parcel at 201 S Leroy Ave.

For the parcel addressed at 200 S Leroy Ave (Lot 8 of Cascade Center), there is an existing 8-inch sanitary main that crosses through the site, serving Cascade Center to the north and Stoneplace Apartments to the south. Applicant will be required to connect to existing onsite 8-inch sanitary main to serve 200 S Leroy Ave by gravity system.

Applicant shall be required to submit sanitary sewer design plans to Oregon DEQ for review and approval. Applicant shall provide a Certificate of Capacity to Oregon DEQ at time of plan submission. No Public Works permit can be issued without DEQ's approval of the sewer system and the Certificate of Capacity.

Water: 200 S Leroy Ave (Cascade Center Lot 8) is served from existing 8-inch line stubbed from Cascade Center Development at the northern border of the parcel and an existing 12-inch main in S Leroy Ave. The Applicant shall loop onsite fire line waterline through these two lines, creating circulation. Applicant shall dedicate a 15-foot-wide waterline easement over onsite waterline per City requirements.

201 S Leroy Ave (Cascade Center Lot 9) can be served from existing 8-inch stub from the 12-in waterline on W Main St (OR-211). Applicant will be required to extend 8-inch main through the East Access Utility Extension off OR-211/W Main St and connect to it. Applicant shall dedicate a 15-foot wide waterline easement per City requirements. Should Fire Department regulations require additional fire flow that results in looping the water line through the site, then applicants engineer shall coordinate with Public Works for the extension of a public water line, and dedication of easements.

17-3.6.050 Storm Drainage and Surface Water Management Facilities

Findings: Storm Drainage standards are met subject to conditions of approval.

There are no storm improvements available for connection of onsite storm improvements on S Leroy Ave. A 15-inch storm main, owned and maintained by ODOT, exists approximately 280 feet to the north of 201 S Leroy Ave. on W Main Street (OR 211). Applicant shall connect to ODOT storm system via East Access Utility Extension. Storm main is approximately 7 feet in depth and will serve Lot 9 of the proposed development. Storm connection shall meet ODOT requirements. 200 Leroy Ave shall connect to existing 24-inch Storm main exists on the north side of the parcel within the Cascade Center Development and will serve this portion of the proposed development.

Onsite Improvements: Applicant will be required to provide water quality and detention for lots 8 and 9 in accordance with the Molalla Standard Specifications for Public Works Construction.

17-3.6.060 Utilities

Findings: Utilities standards are met subject to a condition of approval. All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city.

17-3.6.070 Easements

Findings: Refer to utility easement requirements addressed in responses to sections 17-3.6.020 and 17-3.6.040.

17-3.6.80 Construction Plan Approval

Findings: Construction Plan Approval standards are met subject to conditions of approval. From the materials submitted, it appears that the storm drain, domestic water, and sanitary sewer facilities will be obtained from main line connections and/or extensions. Separate engineering drawings reflecting the installation of public utilities will be required. For residential development projects, all public improvements shall be completed and accepted by the Public Works Department, or otherwise bonded in accordance with MMC 17-3.6.010 and the City of Molalla Public Works Design Standards prior to issuance of building permits. No connections to City services shall be allowed until improvements to the public system to which connection is

sought are completed and accepted by City of Molalla Public Works. City of Molalla Construction plan approval requirements include:

- A. No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way, and easements have been obtained and approved by staff, and Staff is notified a minimum of 24 hours in advance.
- B. Staff reserves the right to require revisions/modifications to the public improvement construction plans and completed street improvements if additional modifications or expansion of the sight distance onto adjacent streets is required.
- C. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.
- D. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated, or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff.
- E. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction.
- F. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document.
- G. Sanitary sewer designs require review by Oregon Department of Environmental Quality. Applicant shall be responsible for submission of plans to state agency and all associated fees. Applicant's Engineer will be required to submit final report to DEQ and provide a copy of the report to the City.

- H. All utilities will be stubbed out to the far end of each street for future extension. The project shall utilize existing water, sewer, and storm water ‘stub-outs’ wherever possible. Water for domestic and fire protection shall be looped through the proposed site. Any ‘stub-outs’ determined to be not needed for the proposed development or any future development of the subject property shall be abandoned in accordance with the Molalla Standard Specifications for Public Works Construction.
- I. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director.
- J. General Wetland Requirements – The applicant will be required to provide Public Works with a letter of concurrence from the Department of State Lands regarding any wetlands on the subject property prior to City approval of occupancy.
- K. General Erosion Control – The applicant shall install, operate, and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant’s Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.
- L. System Development Charges shall be paid prior to release of Building Permit Authorization from the City of Molalla.

E. For non-residential uses, all adverse impacts to adjacent properties, such as light, glare, noise, odor, vibration, smoke, dust, or visual impact, are avoided; or where impacts cannot be avoided, they are minimized; and

Findings: This project is for a residential use. This standard does not apply.

F. The proposal meets all existing conditions of approval for the site or use, as required by prior land use decision(s), as applicable. Note: Compliance with other City codes and requirements, though not applicable land use criteria, may be required prior to issuance of building permits. (Ord. 2017-08 §1)

Findings: This standard is met subject to a condition of approval. Conditions for DRW01-2019 Cascade Center have been fulfilled. Property line adjustments PLA02-2021 and

PLA03-2021 have been approved by the City of Molalla but have not yet been recorded with the county. Finalization of these property line adjustments is critical for establishing the proposed boundaries of the subject parcels. As a condition of approval, the Applicant shall finalize recording of Molalla Planning files PLA02-2021 and PLA03-2021 prior to issuance of building permits.

Exhibit B:

Application Package For SDR04-2021



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August 9, 2021

Via Hand Delivery, and Email to: communityplanner@cityofmolalla.com

Dan Zinder
 Associate Planner
 City of Molalla
 PO Box 248
 Molalla, OR 97038

Re: **Cascade Place, LLC – Cascade Place Apartments.**

Dear Mr. Zinder:

Thank you for coordinating with AKS and the rest of the applicant team on this new application for the Cascade Place Apartments. We have reviewed the preapplication memorandum as well as the application materials. The applicant has expressed concerns about the potential change to MMC 17-2.3.090.C.1 regarding ground floor uses in the C-2 zone, and comprehensive plan provisions the city may attempt to apply to the application. This letter is to review the relevant state and local land use regulations in order to ensure that only the governing regulations and criteria are applied to this multifamily application.

The Goal Post Rule

Currently, ground floor residential is an allowed use in the C-2 zone. MCC 17-2.3.090.C.1. We understand that the City Council will consider a text amendment to that code section on August 11, 2021, which would create a new prohibition on ground floor residential use. Because this application is being submitted on August 9, 2021, so long as the application is made complete within 180 days, then the City’s decision “shall be based upon the standards and criteria that were applicable at the time the application was first submitted.” ORS 227.178(3)(a). Therefore, any change to the Molalla Municipal Code that may be made on August 11, 2021 cannot be applied to this application.

The Comprehensive Plan Does Not Apply

The applicant team is also concerned that the City may attempt to apply some provisions of the comprehensive plan to the application. The preapplication memo accurately lists several zoning code provisions that apply, and none of those indicate that compliance with the comprehensive plan is a criterion for approval of this multifamily development.

In order for the City to apply a comprehensive plan provision to this application, the text and context of the comprehensive plan must establish that the provision must be applied directly as a permit approval standard. *Friends of the Hood River Waterfront v. City of Hood River*, 68 Or LUBA 459, 468 (2013).

We are unaware of any comprehensive plan provisions that mandate commercial ground floor uses in the C-2 zone, but please let us know if there is something that we missed. Nor are we aware of any comprehensive plan provision that must be directly applied to a land use application for multifamily development.

The Needed Housing Statutes

The proposed apartments are defined as “needed housing” by statute. ORS 197.303(1)(a). As a result, the City can only apply clear and objective land use regulations to the application. ORS 197.307(4). And because the application complies with the clear and objective development standards in the zoning code, the City may not deny the application. ORS 227.175(4)(b)(A). These needed housing statutes are rigorously enforced, and we urge the City to refrain from any action that could introduce subjective criteria into the City’s final land use decision on this project. For example, if the City were to decide that under the comprehensive plan it has the discretion to allow ground floor residential in some cases but not others, it would violate the statute. Violation of this statute carries with it mandatory attorney fees at LUBA.

Compensation for Restriction of Residential Use

As you are aware, the project team includes many of the same professionals that are developing the Cascade Center commercial project immediately to the north of the apartments site. The team is well versed in the economics of commercial development and the locations that are attractive to commercial tenants. Because the apartment site is tucked behind the Cascade Center, it is not visible from Highway 211. That lack of visibility means the ground floor commercial uses apparently desired by the City would likely not succeed in the marketplace. Because commercial rents are higher than residential rents, the project team would gladly include commercial ground floor spaces if they were feasible. Because they are not feasible, residential is the highest and best use for the ground floor.

Oregon land use law favors housing, and protects against new restrictions on residential uses. ORS 195.305(2) requires compensation for the reduction in the fair market value of the site that could result from the approval of a new restriction on ground floor residential use. Please note that the restriction would change the apartments from being a use that is permitted by the zoning code to a nonconforming use, which in and of itself is an impairment in the market value.

In summary, these are important legal constraints on the City’s apparent expectations for the land use regulations that will be applied to this project. We look forward to developing this new housing for Molalla, and operating the site under the current regulations which allow ground floor residential use.

Thank you for your interest in the project.

Sincerely,

JORDAN RAMIS PC



Timothy V. Ramis

cc: Karl Ivanov
Zach Pelz, AKS

Site Design Review Application for Cascade Place Multifamily Homes

Date: August 2021

Submitted to: City of Molalla
Planning Department
117 N Molalla Avenue
Molalla, OR 97038

Applicant: I & E Construction
27375 SW Parkway Avenue
Wilsonville, OR 97070

AKS Job Number: 7710-01



3700 River Road N, Suite 1
Keizer, OR 97030
(503) 400-6028

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Exhibits

- Exhibit A:** Preliminary Site Design Review Plans
- Exhibit B:** City Land Use Application Forms
- Exhibit C:** Preliminary Architectural Plans
- Exhibit D:** Transportation Impact Study
- Exhibit E:** Preliminary Stormwater Report
- Exhibit F:** Clackamas County Assessor's Map
- Exhibit G:** Property Ownership and Title Information
- Exhibit H:** Cascade Center Wetland Delineation Report
- Exhibit I:** Planning Process Summary: Pre 11-2021

Site Design Review Application for Cascade Place Multifamily Homes

Submitted to:	City of Molalla Planning Department 117 N Molalla Avenue Molalla, OR 97038
Applicant:	I & E Construction 27375 SW Parkway Avenue Wilsonville, OR 97070
Property Owners:	Cascade Center Molalla, LLC 27375 SW Parkway Avenue Wilsonville, OR 97070
Applicant's Consultant:	AKS Engineering & Forestry, LLC 3700 River Road N, Suite1 Keizer, OR 97030 Contact: Zach Pelz, AICP Email: PelzZ@aks-eng.com Phone: (503) 400-6028
Site Location:	850 W Main Street, 720 W Main Street, 200 S Leroy Avenue, and 201 S Leroy Avenue
Clackamas County Assessor's Map:	Map: 5 2E 8C Tax Lots: 4500, 4600, 4601, 4700, and 5000
Site Size:	± 6.81 acres (area 1: ±4.65 acres; area 2: ±2.16 acres)
Land Use District:	General Commercial (C-2)

I. Executive Summary

This application involves a Type III Site Design Review (SDR) to accommodate 151 new multifamily homes located at 850 W Main Street, 720 W Main Street, 200 S Leroy Avenue, and 201 S Leroy Avenue in Molalla. This application is to be processed concurrently with two Property Line Adjustments (PLA)s affecting the same site. The subject properties will total ±6.81 acres in size after the PLAs are complete (Clackamas County Assessor's Map 5-2E-08C, Tax Lots 4500, 4600, 4601, 4700, and 5000). The site is located entirely within the General Commercial (C-2) District and the use is permitted subject to Special Use Standards (MDC 17-2.2.030 and 17-2.3.080), as addressed below. The site will be accessed via the extended S Leroy Avenue with a driveway providing connection on each side of the street. In addition to 151 new homes in 13 buildings, this project will provide more than one acre of landscaping and common open space, a community/recreation building, a swimming pool, a continuous pedestrian circulation system, off-street parking for residents and visitors, enclosed trash facilities, and private open space for each dwelling. Each building will be serviced with storm, sanitary sewer, and water systems.

With proximity to the existing Cascade Center commercial development, this site provides an opportunity to create a symbiotic community of mixed commercial and residential uses. The design allows for convenient access to business establishments on adjoining lots without jeopardizing residential needs. The multifamily site will serve as a safe, intimate neighborhood bordered on two sides by similar multifamily residential development; that will provide adequate facilities for residents, safe pedestrian circulation throughout the site, and family-friendly amenities for all occupants.

The Cascade Place site design review is a "needed housing" application under Oregon Revised Statute (ORS) 197.303(1)(a) as it provides multifamily housing within an urban growth boundary. ORS 197.307(4) states that a local government may apply only clear and objective standards, conditions, and procedures regulating the development of needed housing and such standards, conditions, and procedures cannot have the effect, either in themselves or cumulatively, of discouraging needed housing through unreasonable cost or delay. As addressed in the letter provided on behalf of the Applicant by Jordan Ramis, PC, the city of Molalla may only apply clear and objective development code provisions to the approval of this development. The approval criteria within the City of Molalla Development Code (Code) do not include a provision requiring compliance with the comprehensive plan; therefore, the provisions of the comprehensive plan may not be applied to the approval of this multifamily development.

Oregon Courts and the Land Use Board of Appeals (LUBA) have generally held that an approval standard is not clear and objective if it imposes on an applicant "subjective, value-laden analyses that are designed to balance or mitigate impacts of the development" [Rogue Valley Association of Realtors v. City of Ashland, 35 Or LUBA 139, 158 (1998) aff'd, 158 Or App 1 (1999)]. ORS 197.831 places the burden on local governments to demonstrate that the standards and conditions placed on needed housing applications can be imposed only in a clear and objective manner. While this application addresses all standards and conditions, I & E Construction (Applicant) reserves the right to object to the enforcement of standards or conditions that are not clear and objective and does not waive its right to assert that the needed housing statutes apply to this application. The exceptions in ORS 197.307(4)(a) and 197.307(5) do not apply to this application. ORS 197.307(7)(a) is controlled by ORS 197.307(4). The City has not taken an exception under 197.303(3).c

This application is also a "limited land use application" as that term is defined in ORS 197.015 (12). ORS 197.195 (1) describes how certain standards can be applied to a limited land use application.

This application includes the City application forms, written materials, preliminary plans, and other documentation necessary for City staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the City’s approval of the application.

II. Site Description/Setting

The property included in this application comprises a total area of ±6.81 acres with flat topography throughout the site. It is bordered on two sides by multifamily residential developments and commercial development on another. The site extends through both sides of the approved extension of S Leroy Avenue and is currently undeveloped. The existing vegetation on the lot consist of grass.

North: The lots to the north of the site have been approved for commercial development and are currently undergoing various phases of permitting and construction.

South: The lots to the south of the site primarily consist of multifamily residential apartments.

East: The property to the east of the site is currently developed with commercial self-storage facilities.

West: The property to the west is developed with multifamily residential apartments.

III. Applicable Review Criteria

CITY OF MOLALLA DEVELOPMENT CODE

Chapter 17-2.2 ZONING DISTRICT REGULATIONS

17-2.2.030 Allowed Uses

- A. Uses Allowed in Base Zones. Allowed uses include those that are permitted, those that are permitted subject to special use standards, and those that are allowed subject to approval of a conditional use permit, as identified by Table 17-2.2.030. Allowed uses fall into four general categories: Residential, Public and Institutional, Commercial, and Other. If Table 17-2.2.030 does not list a specific use, and Division V Definitions does not identify the use or include it as an example of an allowed use, the City may find that use is allowed, or is not allowed, by following the procedures of Section 17-1.5.010 Code Interpretations. Uses not listed in Table 17-2.2.030 and not found to be similar to an allowed use are prohibited.
- B. Permitted Uses and Uses Permitted Subject to Special Use Standards. Uses listed as “Permitted (P)” are allowed provided they conform to Section 17-2.2.040 Lot and Development Standards. Uses listed as “Permitted Subject to Special Use Standards (S)” are allowed, provided they conform to the Chapter 17-2.3 Special Use Standards and Section 17-2.2.040 Lot and Development Standards. Uses listed as “Not Allowed (N)” are prohibited. Uses not listed but similar to those allowed may be permitted pursuant to Section 17-1.5.010.

Table 17-2.2.030 – Uses Allowed by Zoning District	
Uses	Commercial and Industrial Zones
A. Residential Uses	C-2
Multifamily Dwelling	S
Key: P = Permitted Use S = Permitted with Special Use Standards CU = Conditional Use Permit Required N = Not Allowed	

Response: This application involves a Site Design Review for multifamily dwellings. According to Table 17-2.2.030 (above), multifamily dwellings are permitted subject to special use standards in MDC 17-2.3.080. Applicable special use standards are addressed below. This criterion is met.

17-2.2.040 Lot and Development Standards

A. Development Standards. Section 17-2.2.040 provides the general lot and development standards for each of the City’s base zoning districts. The standards of Section 17-2.2.040 are organized into two tables: Table 17-2.2.040.D applies to Residential zones, and Table 17-2.2.040.E applies to non-residential zones.

Response: This application involves a Site Design Review for multifamily dwellings on property that has a C-2 zoning designation. The lot and development standards for properties in the C-2 zone are addressed below in Table 17-2.2.040. Concurrent applications to reconfigure underlying parcels that make up this site has been submitted. In addition to the responses below, those applications provide further evidence to demonstrate compliance with applicable lot standards.

B. Design Standards. City standards for Access, Circulation, Site and Building Design, Parking, Landscaping, Fences and Screening, and Public Improvements, among others, are located in Division III. Notwithstanding the provisions of Section 17-2.2.040 and Division III, different standards may apply in specific locations, such as at street intersections, within overlay zones, adjacent to natural features, and other areas as may be regulated by this Code or subject to state or federal requirements. For requirements applicable to the City’s overlay zones, please refer to Chapter 17-2.4.

Response: As applicable, the above referenced code sections are discussed in detail throughout this application. This standard is met.

C. Disclaimer. Property owners are responsible for verifying whether a proposed development meets the applicable standards of this Code. Submittal of a Zoning Checklist for review and approval by the Planning Official may be required in order to determine whether use is allowed on a given site, and whether further land use review is required.

Response: This application responds to the applicable sections of the Molalla Development Code. Applicant met with City Planning staff in a pre-application conference on July 7, 2021 to review the applicable review procedures and approval criteria. A copy of the city’s written meeting summary notes is included as Exhibit I. This standard is met.

D. Lot and Development Standards for Residential Districts. The development standards in Table 17-2.2.040.D apply to all new development as of November 10, 2017 in residential zones.

Response: This application applies to a residential development in a C-2 zone. While certain residential uses are permitted in the C-2 District, this zoning districts falls under the Commercial Zoning classification in MDC 17-2.1.020 and not the Residential Zoning umbrella. This criterion does not apply.

E. Lot and Development Standards for Non-Residential Districts. The development standards in Table 17-2.2.040.E apply to all new development as of November 10, 2017 in the City’s non-residential zones, as follows.

Table 17-2.2.040.E – Lot and Development Standards for Non-Residential zones		
Standard	C-2 Zone	Proposal
Minimum Lot Area (square feet) *Development must conform to lot width, depth, yard setback, and coverage standards.	None	6.81 Acres
Building or Structure Height Standard maximum height	55 ft.	Type 1-3: 40’ Type 4, 5: 39’ 1” Type 6: 41’ 5” Type 7: 40’ 4.5”
*[Height Increase. The City may increase the standard height, above, for specific projects with approval of a Conditional Use Permit (CUP), per Chapter 17-4.4]	Yes	Not Requested
Fences and Non-Building Walls Maximum Height—Front Yard Maximum Height—Interior Side Maximum Height—Rear Yard Maximum Height—Street-Side or Reverse Frontage Lot (rear) (See also Section 17-3.4.040.)	4 ft. 6 ft. 6 ft. 4 ft. or 6 ft. with 5 ft. landscape buffer	Perimeter fences and freestanding walls are not included in this application.
Lot Coverage. Maximum Lot Coverage (foundation plane as % of site area)	100%	56%
Minimum Landscape Area (% lot area). Landscape area may include plant areas and some non-plant areas as allowed under Section 17-3.4.030.	5% (15% per MDC 17-2.3.080.C.1)	24%
Minimum Setback Yards (feet): (See also Section 17-2.2.050) Front, Street-Side, Interior Side, and Rear property lines, except garage or carport, or as required by other code provisions Garage or Carport Entry, set back from street Alley Adjacent to R Districts	0 ft. 20 ft. 3 ft. 10 ft.	10-25 ft. N/A N/A N/A
Build-To Line (feet): New Buildings Only: At least one primary building entrance shall be built no farther from the street right-of-way than the build-to line; except where a greater setback is required for a Planned Street Improvement, then the build-to line increases proportionately. The build-to line may also be increased through Site Design Review when pedestrian amenities are provided between a primary building entrance and the street right-of-way. To avoid encroachment into the right-of-way, doorways are not required to be flush with the build-to line.	0 ft; may be increased when pedestrian amenities are provided between a primary building entrance and street	Pedestrian amenities are provided where this standard cannot be met.

17-2.2.50.A Setback Yards Exceptions

A. Encroachments

1. Except as otherwise restricted by applicable building codes, building elements such as eaves, chimneys, bay windows, overhangs, heating, cooling and ventilation systems, and similar incidental structures, may extend into the required setback yards by no more than 36 inches, provided that a setback of not less than 36 inches is maintained, all applicable building codes are met, and the vision clearance standards in Section 17-3.3.030.G are met.
2. Porches, decks, patios, steps, and similar features not exceeding 30 inches in height may encroach into setbacks, provided a minimum setback of not less than 36 inches is maintained and all applicable building codes are met.
3. Fences may be placed within setback yards, subject to the standards of Sections 17-2.2.040, 17-2.2.050, and 17-3.4.040.

Response: No building elements are proposed to extend into the required setback areas.

- B. Reverse Frontage Lots. Buildings on reverse-frontage lots (through lots) are required to meet the build-to line standard on only one street. Reverse frontage lots are subject to the fence height and setback requirements of Sections 17-2.2.040 and 17-2.2.050, and the design standards (e.g., materials and landscape buffer requirements) of Section 17-3.4.040.

Response: This proposal does not include reverse frontage lots. This criterion does not apply.

- C. Flag Lots. Where a flag lot is proposed, the Planning Official shall designate the front yard of a flag lot to ensure compatibility with adjacent land uses, based on existing development patterns and location of adjacent driveways, utilities, and natural features, as either:
1. Front yard parallel to the street providing automobile access; or
 2. Front yard parallel to the flagpole from which driveway access is received.

Flag lots shall comply with Section 17-4.3.050. The City may impose reasonable conditions to ensure flag lot development is compatible with adjacent uses. (Ord. 2017-08 §1)

Response: Flag lots are not proposed in this application. This criterion does not apply.

17-2.2.060 Residential Density Standards

To ensure efficient use of buildable lands and to provide for a range of needed housing in conformance with the Comprehensive Plan, all new developments in the residential districts shall conform to the minimum and maximum densities prescribed in Table 17-2.2.040.D...

...

Response: This application involves Site Design Review for a residential development within a commercial (C-2) zone. Therefore, the standards of Chapter 17-2.2.060 do not apply.

17-2.2.070 Lot Coverage

Lot Coverage Calculation. The maximum allowable lot coverage, as provided in Tables 17-2.2.040.D and 17-2.2.040.E, and is calculated as the percentage of a lot or parcel covered by buildings and structures (as defined by the foundation plan area) at 30 inches or greater above the finished grade. It does not include paved surface-level developments such as driveways, steps, parking pads, and patios that do not meet the minimum elevation of 30 inches above grade.

Response: The maximum allowable lot coverage in the C-2 zone is 100 percent. This proposal includes ±52,098 square feet of building coverage or ±18 percent of the total site area. This standard is met.

Chapter 17-2.3 SPECIAL USE STANDARDS

17-2.3.030 Review Process

The City uses the procedures for Site Design Review, under Chapter 17-4.2, in reviewing proposed uses for compliance with the requirements of Chapter 17-2.3.

Response: This application includes detailed responses to the applicable code sections within Chapters 17-4.2 and 17-2.3.

17-2.3.080 Multifamily Development

A. Purpose. The following standards are intended to ensure that multifamily developments are planned with adequate open space and are designed to prevent conflicts between residential uses, on-site recreation, and vehicle circulation and parking areas. The standards supplement the design standards of Division III.

B. Applicability. This section applies to new multifamily developments.

Response: This application involves Site Design Review for multifamily dwellings. Therefore, these standards are applicable and addressed in detail below.

C. Standards.

1. Common Open Space and Landscaping. A minimum of 15 percent of the site area in in a multifamily development shall be designated and permanently reserved as common area or open space, in accordance with all of the following criteria:

a. “Site area” for the purposes of this section is defined as the subject lot or lots after subtracting any required dedication of street right-of-way.

Response: The site area is ±6.81 acres. Approximately 1.09 acres of the site is designated as common/open space, which exceeds the 15% minimum required for this site. This criterion is met.

b. The common area or open space shall contain one or more of the following: outdoor recreation area, tree grove (e.g., existing mature trees), turf play fields or playgrounds, sports courts, swim pool, walking fitness course, natural area with picnic benches, or similar open space amenities as appropriate for the intended residents.

Response: Pedestrian amenities are included in open space areas and include trees, landscaping, a swimming pool, a barbecue area, and natural landscaped areas, as shown on the preliminary plans.

c. In order to be counted as eligible toward the minimum open space area, such areas shall have dimensions of not less than 20 feet.

Response: As shown in the preliminary plans, all open space areas have dimensions of at least 20 feet. This criterion is met.

d. Open space and common areas not containing recreational facilities shall be landscaped.

Response: As shown on the preliminary landscaping plan, all open space areas not containing recreational facilities are landscaped. This criterion is met.

e. Buildings located in the C-1 zone are exempt from this section.

Response: The property is not located within the C-1 zone. Therefore, this exemption is not applicable.

2. Private Open Space. Private open space areas shall be required for dwelling units based on the following criteria:

a. A minimum of 40 percent of all ground-floor dwelling units shall have front or rear patios or decks containing at least 48 square feet of usable area. Ground floor housing means the housing unit entrance (front or rear) is within five feet of the finished ground elevation (i.e., after grading and landscaping). This section does not apply to buildings within the C-1 zone.

Response: Patios and decks are shown on architectural drawings. Concrete patios greater than 48 square feet are provided to each ground-floor dwelling.

b. A minimum of 40 percent of all upper-floor housing units shall have balconies or porches containing at least 48 square feet of usable area. Upper-floor housing means housing units with a first floor elevation that is more than five feet above the finished grade.

Response: Balconies and porches are shown on architectural drawings. Wooden decks greater than 48 square feet are provided to each upper-floor housing unit.

3. Building Orientation and Design, Access and Circulation, Landscaping and Screening, Parking and Loading, and Public Facilities. The standards of Chapters 17-3.2 through 17-3.6 shall be met.

Response: Building orientation and design, access and circulation, landscaping and screening, parking and loading, and public facilities are discussed in detail in response to Chapters 17-3.2 through 17-3.6 below.

4. Trash Storage. Trash receptacles, recycling, and storage facilities shall be oriented away from building entrances, set back at least 10 feet from any public right-of-way and adjacent residences, and shall be screened with an evergreen hedge or solid fence or wall of not less than six feet in height. Receptacles must be accessible to trash pick-up trucks.

Response: Trash facilities are provided on the east end of the property. The enclosure is set more than 10 feet from adjacent buildings and public rights-of-way and is screened with an arborvitae hedge as shown in the preliminary landscape plans. Additional trash enclosures shared with the Stoneplace apartments are available to the properties to the west of Leroy Avenue, as shown on Exhibit A. This criterion is met.

Chapter 17-3.2 BUILDING ORIENTATION AND DESIGN

17-3.2.030 Residential Buildings

B. Building Orientation. Residential buildings that are subject to the provisions of this chapter, pursuant to Section 17-3.2.020, shall conform to all of the following standards in subsections B.1 through 3, below, as generally illustrated in Figure 17-3.2-1. Figure 17-3.2-2 provides examples of non-compliance.

-
1. **Building Orientation to Street.** Except as provided below, dwelling units shall orient toward a street, have a primary entrance opening toward the street, and be connected to the right-of-way with an approved walkway or residential front yard.
 - a. A dwelling may have its primary entrance oriented to a yard other than the front or street yard where the only permitted access to the property is from a shared driveway or flag lot drive and orienting the dwelling entrance to the street is not practical due to the layout of the lot and driveway.
 - b. Where there is no adjacent street to which a dwelling may be oriented, or it is not practical to orient a dwelling to an adjacent street due to lot layout, topographic, or other characteristics of the site, the dwelling may orient to a walkway, courtyard, open space, common area, lobby, or breezeway (i.e., for multifamily buildings).

Response: The proposed residential buildings numbered 4 through 6 have primary entrances oriented towards a street with connecting walkways providing access to S Leroy Avenue. Buildings numbered 1 through 3 and 7 through 13 cannot be oriented towards streets but are connected to common areas and amenities by pedestrian walkway connections in accordance with option b. This criterion is met.

- c. Where a flag lot is permitted, building orientation shall conform to the provisions for flag lots under Chapter 17-4.3.

Response: This application does not involve the creation of a new flag lot. This criterion is not applicable.

2. **Limitation on Parking Between Primary Entrance and Street.** Off-street parking is not allowed between a primary building entrance and the street to which it is oriented, except that assisted living facilities, group care facilities, and similar institutional-residential uses serving clients with disabilities may have one driveway located between the primary building entrance and an adjacent street as required to serve as a drop-off or loading zone, provided the primary building entrance shall connect to an adjacent street by a pedestrian walkway that conforms to the standards of Section 17-3.3.040. The intent of this exception is to provide for one drop-off or loading zone while maintaining a direct, convenient, and safe pedestrian access to a primary building entrance.

Response: Off-street parking is provided throughout the site. No parking spaces are proposed between the street and the buildings facing S Leroy Avenue.

3. **Build-To Line.** Where a new building is proposed in a zone that requires a build-to line per Section 17-2.2.040, the building shall comply with the build-to line standard and the development shall meet the standards for pedestrian access under Section 17-3.3.040.

Response: This application includes new buildings within a C-2 zone, which requires a build-to line. Build-to line requirements are addressed in detail below; this criterion is met.

-
- C. **Garages.** The following standards apply to all types of vehicle storage, including, but not limited to, buildings, carports, canopies, and other permanent and temporary structures. The standards are intended to balance residents' desire for a convenient, safe, and private vehicle access to their homes with the public interest in maintaining safe and aesthetically pleasing streetscapes. The standards therefore promote pedestrian safety and visibility of public ways, while addressing aesthetic concerns associated with street-facing garages.
1. **Alleys and Shared Drives.** Where a dwelling abuts a rear or side alley, or a shared driveway, including flag lot drives, the garage or carport opening(s) for that dwelling shall orient to the alley or shared drive, as applicable, and not a street.
 2. **Setback for Garage Opening Facing Street.** No garage or carport opening shall be placed closer than 16 feet to a street right-of-way. On corner lots, garages facing a side street (i.e., not the same street as the front entrance) may be located closer than 16 feet to a street right-of-way.
 3. **Width of Garage Openings Facing Street.** Where one or more garage openings face a street, the total width of all garage openings on that building elevation shall not exceed 50 percent of the width of that elevation; except this standard does not apply where the garage opening is recessed behind the front elevation of the dwelling by not less than four feet for its entire width, or where all garage openings are placed behind the primary entrance to the dwelling. An arbor, portico, or similar architectural feature extending the entire width of the garage may be used as the basis of measuring the garage recess. A garage opening is considered to be facing a street where the opening is parallel to, or within 45 degrees of, the street right-of-way line.
 4. **Three-Car and Wider Garages.** Where three or more contiguous garage parking bays are proposed facing the same street, the garage opening closest to a side property line shall be recessed at least two feet behind the adjacent opening(s) to break up the street-facing elevation and diminish the appearance of the garage from the street. Side-loaded garages, on interior lots, i.e., where the garage openings are turned away from the street, are exempt from this requirement.
 5. **Garages for Duplex Dwellings.** Duplex design shall conform to Section 17-2.3.060.

Response: This project does not include garages or other types of vehicle storage structures. Therefore, these criteria are not applicable.

- D. **Architecture.** The following standards require variation in architectural plans to avoid monotony in new developments. The standards support the creation of architecturally varied neighborhoods, whether a neighborhood develops all at once or one lot at a time, avoiding homogeneous street frontages that detract from the community's appearance. The standards are applied through the Site Design Review process for new townhome dwellings and new multifamily dwellings, and through the Zoning Checklist (Type I) review process prior to issuance of building permits for new single-family dwellings and new duplex dwellings. In addition to the following requirements, duplexes, townhomes, and multifamily projects shall conform to the special use standards of Chapter 17-2.3.

1. **Detailed Design.** Dwelling designs shall incorporate not fewer than four architectural features per dwelling unit from subdivisions a through k, as generally illustrated in this chapter. Applicants are encouraged to use those elements that best suit the proposed building style and design.

- a. Covered front porch: not less than six feet in depth and not less than 30 percent of the width of dwelling, excluding the landing for dwelling entrance.
- b. Dormers: minimum of two required for each single-family dwelling and two each for other dwellings; must be a functional part of the structure, for example, providing light into a living space.
- c. Recessed entrance: not less than four feet deep.
- d. Windows: not less than 30 percent of surface area of all street-facing elevation(s).
- e. Window trim: minimum four-inch width (all elevations).
- f. Eaves: overhang of not less than 12 inches.
- g. Offset: offset in façade and/or roof (see subsection 2, “Articulation”); counts twice if both façade and roof offsets are provided.
- h. Bay window: projects from front elevation by 12 inches.
- i. Balcony: one per dwelling unit facing street.
- j. Decorative top: e.g., cornice or pediment with flat roof or brackets with pitched roof.
- k. Other: feature not listed but providing visual relief or contextually appropriate design similar to subdivisions a through j, as approved by the Planning Official through a Type I procedure.

Response: Architectural plans are included in this application package as Exhibit C. Each building style includes a minimum of four of the elements listed above, as notated on the plans. This criterion is met.

- 2. **Articulation.** Plans for residential buildings shall incorporate design features such as varying rooflines, offsets, balconies, projections (e.g., overhangs, porches, or similar features), recessed or covered entrances, window reveals, or similar elements that break up otherwise long, uninterrupted elevations. Such elements shall occur at a minimum interval of 40 feet, and each floor shall contain at least two elements from the following options, as generally illustrated in this Section 17-3.2.030.
 - a. Recess (e.g., porch, courtyard, entrance balcony, or similar feature) that has a minimum depth of four feet;
 - b. Extension (e.g., floor area, porch, entrance, balcony, overhang, or similar feature) that projects a minimum of two feet and runs horizontally for a minimum length of four feet; or
 - c. Offsets or breaks in roof elevation of two feet or greater in height.

Response: Architectural plans are included in this application package as Exhibit C. Offsets, extensions, and variation in roof elevation are provided at intervals of less than 40 feet. Each building includes balconies, covered entryways, and variation in roof elevation. This criterion is met.

- 3. **House Plan Variety.** This subsection applies to land divisions and new developments with five or more residential buildings. No two directly adjacent or opposite dwelling units in a single-family development, or buildings in a multifamily development, may possess the same front or street-facing elevation. This standard is met when front or street-facing elevations differ from one another by no fewer than three of the elements listed in

subdivisions a through g. Where façades repeat on the same block face, they must have at least three intervening lots between them that meet the above standard. Land division approvals will be conditioned to assure compliance with this subsection.

- a. **Materials.** The plans specify different exterior cladding materials, a different combination of materials, or different dimensions, spacing, or arrangement of the same materials. This criterion does not require or prohibit any combination of materials; it only requires that plans not repeat or mirror one another. Materials used on the front façade must turn the corner and extend at least two feet deep onto the side elevations.
- b. **Articulation.** The plans have different offsets, recesses, or projections; or the front building elevations break in different places. For example, a plan that has a stoop entry (recess) varies from one that has an entry under a front porch (projection). For this criterion to apply, a recess must have a minimum depth of four feet and a projection or offset must be at least four feet in depth.
- c. **Variation in Roof Elevation.** The plans have different roof forms (e.g., gable versus gambrel or hip), different roof height (by at least 10 percent), different orientation (e.g., front-facing versus side-facing gable), or different roof projections (e.g., with and without dormer or shed, or different type of dormer or shed).
- d. **Entry or Porch.** The plans have different configuration or detailing of the front porch or covered entrance.
- e. **Fenestration.** The plans have different placement, shape, or orientation of windows or different placement of doors.
- f. **Height.** The elevation of the primary roofline (along the axis of the longest roofline) changes by not less than four feet from building to building, or from dwelling unit to dwelling unit (e.g., townhome units), as applicable. Changes in grade of eight feet or more from one lot to the adjacent lot are counted toward change in height for purposes of evaluating façade variation.
- g. **Color Palette.** Variation in color palette. (Ord. 2017-08 §1)

Response: The proposal includes 13 residential buildings and a non-residential community recreational facility. Architectural plans are included as Exhibit C and contain information addressing their variable features. Buildings that are adjacent or opposite to one another contain at least three of the above-listed elements.

17-3.2.050 Civic Space and Pedestrian Amenities

- A. **Purpose.** This section provides standards for civic spaces where such areas are required or provided voluntarily. Civic spaces allow for light and air circulation, visual relief, pedestrian resting areas, and opportunities for socialization in the most densely developed parts of the City. The code allows projects to meet minimum landscape area standards of Chapter 17-3.4 by providing civic space adjacent to street frontages or in courtyards or plazas between buildings, instead of with planted areas elsewhere on a lot as is typically done for residential developments.
- B. **Applicability.** All new commercial and mixed use developments with more than 10,000 square feet of gross leasable floor area within the Central Commercial C-1 and General Commercial C-2 zones are required to meet the standards of this section.

[...]

Response: This application involves Site Design Review for new multifamily homes. The civic space requirements of this section apply only to commercial and mixed-use developments; therefore, this criterion is not applicable.

Chapter 17-3.3 ACCESS AND CIRCULATION

17-3.3.030 Vehicular Access and Circulation

(...)

B. **Permit Required.** Vehicular access to a public street (e.g., a new or modified driveway connection to a street or highway) requires an approach permit approved by the applicable roadway authority.

Response: This application involves Site Design Review for a new multifamily community that is planned to take access to S Leroy Avenue within the jurisdiction of the City of Molalla (City). The applicable access permits must be approved by the City. This criterion will be met.

C. **Traffic Study Requirements.** The City, in reviewing a development proposal or other action requiring an approach permit, may require a traffic impact analysis, pursuant to Section 17-3.6.020, to determine compliance with this Code.

Response: A Transportation Impact Study (TIS) has been included with this application (Exhibit D). The TIS examines the traffic impacts of the planned improvements on the transportation system in the vicinity of the site, and—based on the detailed analysis—the surrounding transportation system can safely support the planned project. This criterion is satisfied.

D. **Approach and Driveway Development Standards.** Approaches and driveways shall conform to all of the following development standards:

1. **The number of approaches on higher classification streets (e.g., collector and arterial streets) shall be minimized; where practicable, access shall be taken first from a lower classification street.**

Response: The property takes access from S Leroy Avenue which is a collector street. No other access is available from a lower classification street, and a minimal number of access points are utilized; therefore, this criterion is met.

2. **Approaches shall conform to the spacing standards of subsections E and F, below, and shall conform to minimum sight distance and channelization standards of the roadway authority.**

Response: As shown on the Preliminary Plans, access to the site is from a driveway on each side of S Leroy Avenue. As discussed in detail in subsections E and F below, the planned approaches conform to the spacing and sight distance standards. This criterion is met.

3. **Driveways shall be paved and meet applicable construction standards. Where permeable paving surfaces are allowed or required, such surfaces shall conform to applicable Public Works Design Standards.**

Response: As shown on the Preliminary Plans (Exhibit A), all permeable paving surfaces are designed to comply with applicable construction standards. This criterion is met.

4. **The City Engineer may limit the number or location of connections to a street, or limit directional travel at an approach to one-way, right-turn only, or other restrictions, where the roadway authority requires mitigation to alleviate safety or traffic operations concerns.**

Response: As shown on the Preliminary Plans (Exhibit A), the site is planned to take access from each side of S Leroy Avenue. The street extension has already been permitted, and access to these lots will not create any additional traffic safety or operational concerns.

5. Where the spacing standards of the roadway authority limit the number or location of connections to a street or highway, the City Engineer may require a driveway extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The City Engineer may also require the owner(s) of the subject site to record an access easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s).

Response: Driveway spacing complies with City of Molalla spacing standards for collector streets. Vehicular and pedestrian connections are provided within the development to allow access to adjacent lots as is practicable.

6. Where applicable codes require emergency vehicle access, approaches and driveways shall be designed and constructed to accommodate emergency vehicle apparatus and shall conform to applicable fire protection requirements. The City Engineer may restrict parking, require signage, or require other public safety improvements pursuant to the recommendations of an emergency service provider.

Response: This development is compliant with Fire Code standards. No further safety improvements are necessary unless requested by the City.

7. As applicable, approaches and driveways shall be designed and constructed to accommodate truck/trailer-turning movements.

Response: As shown on the Preliminary Plans, the access road approaches have been designed to accommodate the typical types of vehicles that would access multifamily dwellings, including emergency vehicles and garbage trucks. This criterion is met.

8. Except where the City Engineer and roadway authority, as applicable, permit an open access with perpendicular or angled parking, driveways shall accommodate all projected vehicular traffic on-site without vehicles stacking or backing up onto a street.

Response: As shown on the Preliminary Plans, parking areas are designed to accommodate all projected vehicular traffic on-site without vehicles backing up onto a street. This criterion is satisfied.

9. Driveways shall be designed so that vehicle areas, including, but not limited to, drive-up and drive-through facilities and vehicle storage and service areas, do not obstruct any public right-of-way.

Response: As shown on the Preliminary Plans (Exhibit A), the access driveways do not cause any obstructions to public rights-of-way. This criterion is met.

10. Approaches and driveways shall not be wider than necessary to safely accommodate projected peak hour trips and turning movements, and shall be designed to minimize crossing distances for pedestrians.

Response: The attached Traffic Impact Study (Exhibit D) identifies applicable peak hour trip data, turning movement counts, and traffic volumes. This report projects that the proposed development will generate approximately 946 net new weekday trips including 59-70 peak hour trips. As shown on the Preliminary Plans (Exhibit A), the planned approach is

designed to accommodate anticipated peak hour trips and is not wider than necessary. This criterion is met.

11. As it deems necessary for pedestrian safety, the City Engineer, in consultation with the roadway authority, as applicable, may require that traffic-calming features, textured driveway surfaces (e.g., pavers or similar devices), curb extensions, signage or traffic control devices, or other features, be installed on or in the vicinity of a site as a condition of development approval.

Response: This application includes walkways throughout the site for convenient pedestrian circulation. Measures such as traffic calming, curb extensions, and/or traffic control devices are not needed or warranted. To the extent applicable, this criterion is satisfied.

12. Construction of approaches along acceleration or deceleration lanes, and along tapered (reduced width) portions of a roadway, shall be avoided; except where no reasonable alternative exists and the approach does not create safety or traffic operations concern.

Response: This application does not include approaches along acceleration or deceleration lanes or reduced width portions of roadway. This criterion is met.

13. Approaches and driveways shall be located and designed to allow for safe maneuvering in and around loading areas, while avoiding conflicts with pedestrians, parking, landscaping, and buildings.

Response: This application does not include loading areas. Therefore, this criterion is not applicable.

14. Where sidewalks or walkways occur adjacent to a roadway, driveway aprons constructed of concrete shall be installed between the driveway and roadway edge. The roadway authority may require the driveway apron be installed outside the required sidewalk or walkway surface, consistent with Americans with Disabilities Act (ADA) requirements, and to manage surface water runoff and protect the roadway surface.

Response: This application includes Americans with Disabilities Act (ADA) compliant walkways where required. Surface water management is addressed in Exhibit E.

15. Where an accessible route is required pursuant to ADA, approaches and driveways shall meet accessibility requirements where they coincide with an accessible route.

Response: This application includes a sidewalk adjacent to S Leroy Avenue. As shown on the Preliminary Plans (Exhibit A), the driveway apron for the access to S Leroy Avenue is planned to be constructed of concrete and is planned to meet applicable accessibility requirements. Additional aprons are included throughout the site wherever pedestrian walkways cross vehicular drive aisles. These criteria are satisfied.

16. The City Engineer may require changes to the proposed configuration and design of an approach, including the number of drive aisles or lanes, surfacing, traffic-calming features, allowable turning movements, and other changes or mitigation, to ensure traffic safety and operations.

Response: The driveway approaches are being designed to City standards. This standard is met.

17. Where a new approach onto a state highway or a change of use adjacent to a state highway requires ODOT approval, the applicant is responsible for obtaining ODOT approval. The City Engineer may approve a development conditionally, requiring the applicant first obtain required ODOT permit(s)

before commencing development, in which case the City will work cooperatively with the applicant and ODOT to avoid unnecessary delays.

Response: This application does not propose a new access or change of use adjacent to a state highway. This criterion is met.

18. Where an approach or driveway crosses a drainage ditch, canal, railroad, or other feature that is under the jurisdiction of another agency, the applicant is responsible for obtaining all required approvals and permits from that agency prior to commencing development.

Response: As shown on the Preliminary Plans (Exhibit A), the existing approach does not cross a feature that is under the jurisdiction of another agency. This criterion is not applicable.

19. Where a proposed driveway crosses a culvert or drainage ditch, the City Engineer may require the developer to install a culvert extending under and beyond the edges of the driveway on both sides of it, pursuant to applicable Public Works Design Standards.

Response: The existing approach does not cross a culvert or drainage ditch. A wetland delineation report that includes the subject site is included as exhibit H indicating that no wetland mitigation or permitting is required. This criterion is not applicable.

20. Except as otherwise required by the applicable roadway authority or waived by the City Engineer temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

Response: This criterion will be met during construction.

21. Development that increases impervious surface area shall conform to the storm drainage and surface water management requirements of Section 17-3.6.050.

Response: As discussed in detail in the Preliminary Stormwater Report included with this application (Exhibit E) and further in this narrative, the planned improvements for the site conform to the storm drainage and surface water management requirements of Section 17-3.6.050. This criterion is satisfied.

E. Approach Separation from Street Intersections. Except as provided by subsection H, minimum distances shall be maintained between approaches and street intersections consistent with the current version of the Public Works Design Standards and Transportation System Plan.

Response: The northern approach is ±460 feet from the intersection of S Leroy Avenue and OR 211. The southern approach is ±250 feet from the future intersection of S Leroy Avenue with Lowe Road. This criterion is met.

F. Approach Spacing. Except as provided by subsection H or as required to maintain street operations and safety, the following minimum distances shall be maintained between approaches consistent with the current version of the Public Works Design Standards and Transportation System Plan.

Response: The property includes two access points, one driveway on each side of S Leroy Avenue. The access spacing minimum for collector streets is 50 feet. The driveway to the west of S Leroy Avenue is ±125 feet from the nearest approach, and the driveway to the east is ±190 feet from the nearest approach. This criterion is satisfied.

G. Vision Clearance. No visual obstruction (e.g., sign, structure, solid fence, or shrub vegetation) greater than 2.5 feet in height shall be placed in “vision clearance areas” at street intersections. The minimum vision clearance area may be modified by the Planning Official through a Type I procedure, upon finding that more or less sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). Placement of light poles, utility poles, and tree trunks should be avoided within vision clearance areas.

Response: As shown on the Preliminary Plans (Exhibit A), the intersection of each driveway with S Leroy Avenue is clear of visual obstructions within the 10-foot vision clearance area. This criterion is met.

H. Exceptions and Adjustments. The City Engineer may approve adjustments to the spacing standards of subsections E and F, above, where an existing connection to a City street does not meet the standards of the roadway authority and the proposed development moves in the direction of code compliance. The Planning Official through a Type II procedure may also approve a deviation to the spacing standards on City streets where it finds that mitigation measures, such as consolidated access (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g., one-way), turning restrictions (e.g., right-in/right-out only), or other mitigation alleviate all traffic operations and safety concerns.

Response: Exceptions and adjustments to the access spacing standards of the Code are not requested in this application.

I. Joint Use Access Easement and Maintenance Agreement. Where the City approves a joint use driveway, the property owners shall record an easement with the deed allowing joint use of and cross access between adjacent properties. The owners of the properties agreeing to joint use of the driveway shall record a joint maintenance agreement with the deed, defining maintenance responsibilities of property owners. The applicant shall provide a fully executed copy of the agreement to the City for its records, but the City is not responsible for maintaining the driveway or resolving any dispute between property owners.

Response: A joint use driveway is not requested nor required for this proposal. This criterion does not apply.

17-3.3.040 Pedestrian Access and Circulation

(...)

B. Standards. Developments shall conform to all of the following standards for pedestrian access and circulation as generally illustrated in Figure 17-3.3-3:

1. Continuous Walkway System. A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable.

Response: As shown on the Preliminary Plans (Exhibit A), the planned pedestrian walkway system connects each building entrance to pedestrian amenities within the site and extends throughout the development. The pedestrian walkway system also connects the development to public sidewalks and adjacent commercial uses. This criterion is met.

2. Safe, Direct, and Convenient. Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, recreational areas, playgrounds, and public rights-of-way conforming to the following standards:

-
- a. The walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel.
 - b. The walkway is designed primarily for pedestrian safety and convenience, meaning it is reasonably free from hazards and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The Planning Official may require landscape buffering between walkways and adjacent parking lots or driveways to mitigate safety concerns.
 - c. The walkway network connects to all primary building entrances, consistent with the building design standards of Chapter 17-3.2 and, where required, Americans with Disabilities Act (ADA) requirements.

Response: As shown on the Preliminary Plans (Exhibit A), the planned walkways connect building entrances, open space areas, parking areas, and public sidewalks in reasonably direct routes. These standards are satisfied.

3. **Vehicle/Walkway Separation.** Except as required for crosswalks, per subsection 4, below, where a walkway abuts a driveway or street it shall be raised six inches and curbed along the edge of the driveway or street. Alternatively, the Planning Official may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically separated from all vehicle-maneuvering areas. An example of such separation is a row of bollards (designed for use in parking areas) with adequate minimum spacing between them to prevent vehicles from entering the walkway.

Response: As shown on the Preliminary Plans (Exhibit A), curbs are planned for walkways where they abut driveways or streets. This criterion is met.

4. **Crosswalks.** Where a walkway crosses a parking area or driveway (“crosswalk”), it shall be clearly marked with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrasting material). The crosswalk may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and similar types of non-permanent applications are discouraged, but may be approved for lesser used crosswalks not exceeding 24 feet in length.

Response: Drive aisles within the project are generally 24 to 26 feet in width. There are seven instances where walkways cross parking areas or driveways; these areas will be clearly delineated as is permitted above. This criterion can be satisfied.

5. **Walkway Width and Surface.** Walkways, including access ways required for subdivisions pursuant to Chapter 17-4.3, shall be constructed of concrete, asphalt, brick or masonry pavers, or other durable surface, as approved by the City Engineer, and not less than six feet wide. Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be concrete or asphalt and shall conform to the current version of the Public Works Design Standards and Transportation System Plan.

Response: Concrete walkways are included in the preliminary plans pursuant to Chapter 17-4.3. The widths vary from 6 feet to 8 feet for common-use and pedestrian circulation walkways. Individual units with ground-floor patios abutting public sidewalks also have individual connections as permitted below, 5 feet in width.

-
6. **Walkway Construction (Private).** Walkway surfaces may be concrete, asphalt, brick or masonry pavers, or other City-approved durable surface meeting ADA requirements. Walkways shall be not less than six feet in width in commercial and mixed use developments and where access ways are required for subdivisions under Division IV.

Response: This application includes private walkways serving individual residences. Walkways for commercial and mixed-use development are not included. As shown on the Preliminary Plans (Exhibit A), the private walkways included in the application are planned to be constructed of concrete and are 5 feet wide. This standard is satisfied as applicable.

7. **Multi-Use Pathways.** Multi-use pathways, where approved, shall be a minimum width and constructed of materials consistent with the current version of the Public Works Design Standards and Transportation System Plan.

Response: This application does not include multiuse pathways. This standard does not apply.

Chapter 17-3.4 LANDSCAPING, FENCES AND WALLS, OUTDOOR LIGHTING

17-3.4.030 Landscaping and Screening

- A. **General Landscape Standard.** All portions of a lot not otherwise developed with buildings, accessory structures, vehicle maneuvering areas, or parking shall be landscaped.
- B. **Minimum Landscape Area.** All lots shall conform to the minimum landscape area standards of the applicable zoning district, as contained in Tables 17-2.2.040.D and 17-2.2.040.E. The Planning Official, consistent with the purposes in Section 17-3.4.010, may allow credit toward the minimum landscape area for existing vegetation that is retained in the development.

Response: As shown on the Preliminary Landscape Plan, ±16 percent of the site is planned to be designated as open areas. A total of 18% of the site will be landscaped, which exceeds the minimum standard of 5 percent shown in Table 17-2.2.040.E. As addressed in the response to 17-2.3.080 (Multifamily Development Special Use Standards), this proposal must include a minimum of 15 percent of the site as common/open space. The application is compliant with this standard as well. As further illustrated on the Preliminary Landscape Plan, the areas not planned for future buildings, parking areas, or vehicle maneuvering areas are planned to be landscaped. These standards are satisfied.

- C. **Plant Selection.** A combination of deciduous and evergreen trees, shrubs, and ground covers shall be used for all planted areas, the selection of which shall be based on local climate, exposure, water availability, and drainage conditions, among other factors. When new vegetation is planted, soils shall be amended and irrigation shall be provided, as necessary, to allow for healthy plant growth. The selection of plants shall be based on all of the following standards and guidelines:
 1. Use plants that are appropriate to the local climate, exposure, and water availability. The presence of utilities and drainage conditions shall also be considered.
 2. Plant species that do not require irrigation once established (naturalized) are preferred over species that require irrigation.
 3. Trees shall be not less than two-inch caliper for street trees and one and one-half-inch caliper for other trees at the time of planting. Trees to be planted under or near power lines shall be selected so as to not conflict with power lines at maturity.

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4. Shrubs shall be planted from five-gallon containers, minimum, where they are for required screens or buffers, and two-gallon containers minimum elsewhere.
 5. Shrubs shall be spaced in order to provide the intended screen or canopy cover within two years of planting.
 6. All landscape areas, whether required or not, that are not planted with trees and shrubs or covered with allowable non-plant material, shall have ground cover plants that are sized and spaced to achieve plant coverage of not less than 75 percent at maturity.
 7. Bark dust, chips, aggregate, or other non-plant ground covers may be used, but shall cover not more than 35 percent of any landscape area. Non-plant ground covers cannot be a substitute for required ground cover plants.
 8. Where stormwater retention or detention, or water quality treatment facilities are proposed, they shall meet the requirements of the current version of the Public Works Design Standards.
 9. Existing mature trees that can thrive in a developed area and that do not conflict with other provisions of this Code shall be retained where specimens are in good health, have desirable aesthetic characteristics, and do not present a hazard.
 10. Landscape plans shall avoid conflicts between plants and buildings, streets, walkways, utilities, and other features of the built environment.
 11. Evergreen plants shall be used where a sight-obscuring landscape screen is required.
 12. Deciduous trees should be used where summer shade and winter sunlight is desirable.
 13. Landscape plans should provide focal points within a development, for example, by preserving large or unique trees or groves or by using flowering plants or trees with fall color.
 14. Landscape plans should use a combination of plants for seasonal variation in color and yearlong interest.
 15. Where plants are used to screen outdoor storage or mechanical equipment, the selected plants shall have growth characteristics that are compatible with such features.
 16. Landscape plans shall provide for both temporary and permanent erosion control measures, which shall include plantings where cuts or fills, including berms, swales, stormwater detention facilities, and similar grading, is proposed.
 17. When new vegetation is planted, soils shall be amended and irrigation provided, as necessary, until the plants are naturalized and able to grow on their own.

Response: The Preliminary Landscape Plan included in Exhibit A shows plant materials that meet the above guidelines. These criteria are met.

(...)

- E. **Parking Lot Landscaping.** All of the following standards shall be met for parking lots. If a development contains multiple parking lots, then the standards shall be evaluated separately for each parking lot.

-
1. A minimum of 10 percent of the total surface area of all parking areas, as measured around the perimeter of all parking spaces and maneuvering areas, shall be landscaped. Such landscaping shall consist of shade trees distributed throughout the parking area. A combination of deciduous and evergreen trees, shrubs, and ground cover plants is required. The trees shall be planned so that they provide a partial canopy cover over the parking lot within five years. At a minimum, one tree per 12 parking spaces on average shall be planted over and around the parking area.

Response: As shown on the Preliminary Landscape Plan, parking area landscaping is included that meets the requirement above. This standard is met.

2. All parking areas with more than 20 spaces shall provide landscape islands with trees that break up the parking area into rows of not more than 10 contiguous parking spaces. Landscape islands and planters shall have dimensions of not less than 48 square feet of area and no dimension of less than six feet, to ensure adequate soil, water, and space for healthy plant growth.

Response: Landscape islands meeting the above requirements are shown on the Preliminary Landscape Plan. This standard is met.

3. All required parking lot landscape areas not otherwise planted with trees must contain a combination of shrubs and groundcover plants so that, within two years of planting, not less than 50 percent of that area is covered with living plants.

Response: As shown on the Preliminary Landscape Plan, parking area landscaping includes the required materials noted above. This standard is met.

4. Wheel stops, curbs, bollards, or other physical barriers are required along the edges of all vehicle-maneuvering areas to protect landscaping from being damaged by vehicles. Trees shall be planted not less than two feet from any such barrier.

Response: As shown on the Preliminary Plans, wheel stops or curbs are planned along the edges of vehicle maneuvering areas. This standard is met.

5. Trees planted in tree wells within sidewalks or other paved areas shall be installed with root barriers, consistent with applicable nursery standards.

Response: This application does not include tree wells within sidewalks or other paved areas. This standard is not applicable.

F. Screening Requirements. Screening is required for outdoor storage areas, unenclosed uses, and parking lots, and may be required in other situations as determined by the Planning Official. Landscaping shall be provided pursuant to the standards of subsections F.1 through 3. (See also Figure 17-3.4-4.)

1. Outdoor Storage and Unenclosed Uses. All areas of a site containing or proposed to contain outdoor storage of goods, materials, equipment, and vehicles (other than required parking lots and service and delivery areas, per Site Design Review), and areas containing junk, salvage materials, or similar contents, shall be screened from view from adjacent rights-of-way and residential uses by a sight-obscuring fence, wall, landscape screen, or combination of screening methods. See also Section 17-3.4.040 for related fence and wall standards.

Response: As shown on the Preliminary Plans, this application includes an arborvitae hedge around the trash enclosure. No other outdoor storage areas are planned. This standard is satisfied.

2. **Parking Lots.** The edges of parking lots shall be screened to minimize vehicle headlights shining into adjacent rights-of-way and residential yards. Parking lots abutting a sidewalk or walkway shall be screened using a low-growing hedge or low garden wall to a height of between three feet and four feet.

Response: Parking areas included in this application are not directly adjacent to public rights-of-way or neighboring residential yards. This criterion does not apply.

3. **Other Uses Requiring Screening.** The Planning Official may require screening in other situations as authorized by this Code, including, but not limited to, outdoor storage areas, blank walls, Special Uses pursuant to Chapter 17-2.3, flag lots, and as mitigation where an applicant has requested an adjustment pursuant to Chapter 17-4.7.

Response: Outdoor storage areas, blank walls, and other similar features are not included in the application. Trash storage areas will be screened with appropriate landscaping. As shown on the Preliminary Landscape Plan, landscaping will accompany hard surfaced area (e.g., parking) and building exteriors. This standard is satisfied.

17-3.4.040 Fences and Walls

- A. **Purpose.** This section provides general development standards for fences, and walls that are not part of a building, such as screening walls and retaining walls.
- B. **Applicability.** Section 17-3.4.040 applies to all fences, and to walls that are not part of a building, including modifications to existing fences and walls.
- C. **Height.**
 1. **Residential Zones.** Fences and freestanding walls (i.e., exclusive of building walls) for residential uses shall not exceed the following heights above grade, where grade is measured from the base of the subject fence or wall.
 - a. **Within Front or Street-Facing Side Yard Setback.** Four feet; except the following additional height is allowed:
 - (1) A fence may be constructed to a maximum height of six feet where it is located on a street-facing side yard.
 - (2) A fence may be constructed to a maximum height of six feet where the fence is of open chain link or other “see-through” composition that allows 90 percent light transmission.
 - (3) One incidental garden structure (e.g., arbor or gate) not exceeding eight feet in height and six feet in width is allowed within a front or street-facing yard provided it does not encroach into a required vision clearance area.
 - b. **Within an Interior Side or Rear Yard Setback.** Six feet; except the fence or wall height, as applicable, shall not exceed the distance from the fence or wall line to the nearest primary structure on an adjacent property.

(...)

Response: Fences are proposed around the swimming pool and tot lot in compliance with these standards. If additional perimeter fences are desired later, they can meet these standards. To the extent applicable, these criteria are satisfied.

3. All Zones. Fences and walls shall comply with the vision clearance standards of Section 17-3.3.030.G. Other provisions of this Code, or the requirements of the roadway authority, may limit allowable height of a fence or wall below the height limits of this section.

Response: This application does not include planned fences within vision clearance areas. This standard is not applicable.

- D. Materials. Prohibited fence and wall materials include straw bales, tarps, barbed or razor wire (except in the M-2 Heavy Industrial zone); scrap lumber, untreated wood (except cedar or redwood), corrugated metal, sheet metal, scrap materials; dead, diseased, or dying plants; and materials similar to those listed herein.

Response: Fences and freestanding walls are not included in this application. If additional fences are desired later, they can meet these standards. To the extent applicable, this criterion is satisfied.

17-3.4.050 Outdoor Lighting

(...)

- B. Applicability. All outdoor lighting shall comply with the standards of this section.

C. Standards.

1. Light poles, except as required by a roadway authority or public safety agency, shall not exceed a height of 20 feet; pedestal- or bollard-style lighting shall be used to illuminate walkways. Flag poles, utility poles, and streetlights are exempt from this requirement.

Response: This application includes planned outdoor lighting as shown on the Preliminary Site Lighting Plan. Light poles for outdoor lighting are planned to meet this requirement. This standard can met.

2. Where a light standard is placed over a sidewalk or walkway, a minimum vertical clearance of eight feet shall be maintained.

Response: Outdoor lighting is not proposed to be placed over walkways. This criterion does not apply.

3. Outdoor lighting levels shall be subject to review and approval through Site Design Review. As a guideline, lighting levels shall be no greater than necessary to provide for pedestrian safety, property or business identification, and crime prevention.

Response: This application includes planned outdoor lighting in the parking area, walkways, building entrances, and security lighting. As shown on the Preliminary Site Lighting Plan, the planned lighting levels are not greater than necessary to provide safety. This standard is satisfied.

4. Except as provided for up-lighting of flags and permitted building-mounted signs, all outdoor light fixtures shall be directed downward, and have full cutoff and full shielding to preserve views of the night sky and to minimize excessive light spillover onto adjacent properties.

Response: As shown on the Preliminary Architectural Plans (Exhibit C), the planned outdoor light fixtures are downward-facing lights with cutoffs to minimize light intrusion onto adjacent properties. This standard is met.

5. Lighting shall be installed where it will not obstruct public ways, driveways, or walkways.

Response: As shown on the Preliminary Site Plan, the locations for the planned site lighting do not obstruct public ways, driveways, or walkways. This standard is satisfied.

6. Walkway lighting in private areas shall have a minimum average illumination of not less than 0.2 foot-candles. Lighting along public walkways shall meet the current version of the Public Works Design Standards and AASHTO lighting requirements.

Response: As shown on the Preliminary Site Lighting Plan, the planned walkway lighting in private areas has an average minimum illumination of .3 foot-candles. Lighting along public walkways is not included with this application. To the extent applicable, this standard is satisfied.

7. Active building entrances shall have a minimum average illumination of not less than two foot-candles.

Response: As shown on the Preliminary Site Lighting Plan, the planned lighting in the active building entrances will comply with this requirement. This standard is satisfied.

8. Surfaces of signs shall have an illumination level of not more than two foot-candles.

Response: This application does not include signs. This standard is not applicable.

9. Parking lots and outdoor services areas, including quick vehicle service areas, shall have a minimum illumination of not less than 0.2 foot-candles, average illumination of approximately 0.8 foot-candles, and a uniformity ratio (maximum-to-minimum ratio) of not more than 20:1.

Response: As shown on the Preliminary Site Lighting Plan, the planned lighting in the parking area has a minimum illumination of 0.2 foot-candles, average illumination of .9 foot-candles, and a uniformity ratio of 15:1. This standard is satisfied.

10. Where illumination grid lighting plans cannot be reviewed or if fixtures do not provide photometrics and bulbs are under 2,000 lumens, use the following guidelines:
 - a. Poles should be no greater in height than four times the distance to the property line.
 - b. Maximum lumen levels should be based on fixture height.
 - c. Private illumination shall not be used to light adjoining public right-of-way.

Response: As shown on the Preliminary Site Lighting Plan, the planned lighting meets the above requirements. These standards are satisfied.

11. Where a light standard is placed within a walkway, an unobstructed pedestrian through zone not less than 48 inches wide shall be maintained.

Response: As shown on the Preliminary Site Plan, the planned lighting located near walkways have unobstructed pedestrian through zones not less than 48 inches wide. This standard is met.

12. Lighting subject to this section shall consist of materials approved for outdoor use and shall be installed according to the manufacturer’s specifications.

Response: As shown on the Preliminary Plans (Exhibit A), the planned outdoor lighting for this project consists of materials that are intended to be used outdoors. This standard is satisfied.

Chapter 17-3.5 PARKING AND LOADING

17-3.5.030 Automobile Parking

A. **Minimum Number of Off-Street Automobile Parking Spaces.** Except as provided by this subsection A, or as required for Americans with Disabilities Act compliance under subsection G, off-street parking shall be provided pursuant to one of the following three standards:

1. The standards in Table 17-3.5.030.A;
2. A standard from Table 17-3.5.030.A for a use that the Planning Official determines is similar to the proposed use; or
3. Subsection B Exceptions, which includes a Parking Demand Analysis option.

Table 17-3.5.030.A Automobile Parking Spaces by Use	
Use Categories	Minimum Parking per Land Use (Fractions are rounded down to the closest whole number.)
Residential Categories	
Multifamily	1.5 spaces for a 1-bedroom unit
	2 spaces for a 2-bedroom unit
	2.5 spaces for 3 bedrooms or more

Response: This application involves Site Design Review for multifamily dwellings. As shown on the Preliminary Plans, Area 1 has a total of 23 1-bedroom units, 62 2-bedroom units, and 18 3-bedroom units. Area 2 contains a total of 18 1-bedroom units, 24 2-bedroom units, and 6 3-bedroom units. Based on Table 17-3.5.030.A, the configuration of the units requires a minimum of 203.5 parking spaces in Area 1 and 90 in Area 2. This application includes 222 planned parking spaces in Area 1 and 101 in Area 2. This standard is met.

- B. **Carpool and Vanpool Parking Requirements.**
1. Carpool and vanpool parking spaces shall be identified for the following uses:
 - a. New commercial and industrial developments with 50 or more parking spaces;
 - b. New institutional or public assembly uses; and
 - c. Transit park-and-ride facilities with 50 or more parking spaces.

Response: This application involves Site Design Review for future multifamily dwellings. Therefore, these requirements are not applicable.

- B. **Exceptions and Reductions to Off-Street Parking.**
(...)

Response: This application does not request an exception or reduction to off-street parking. Therefore, these standards are not applicable.

- D. **Maximum Number of Off-Street Automobile Parking Spaces.** The maximum number of off-street automobile parking spaces allowed per site equals the minimum number of required spaces for the use pursuant to Table 17-3.5.030.A, times a factor of:
- 1.2 spaces for uses fronting a street with adjacent on-street parking spaces; or
 - 1.5 spaces, for uses fronting no street with adjacent on-street parking; or
 - A factor based on applicant’s projected parking demand, subject to City approval.

Response: This application involves Site Design Review for multifamily dwellings on a site that does not have adjacent on-street parking. As discussed in 17-3.5.030(A) above, the minimum number of required automobile parking spaces is 293; therefore, the maximum automobile parking spaces allowed would be 440. This application includes 323 planned parking spaces. This standard is met.

- E. **Shared Parking.** Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlap (e.g., uses primarily of a daytime versus nighttime nature; weekday uses versus weekend uses), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use. Shared parking requests shall be subject to review and approval through a Type I Review.

Response: This application does not include parking for more than one use. Therefore, this standard is not applicable.

- F. **Parking Stall Design and Minimum Dimensions.** Where a new off-street parking area is proposed, or an existing off-street parking area is proposed for expansion, the entire parking area shall be improved in conformance with this Code. At a minimum the parking spaces and drive aisles shall be paved with asphalt, concrete, or other City-approved materials, provided the Americans with Disabilities Act requirements are met, and shall conform to the minimum dimensions in Table 17-3.5.030.F and the figures below. All off-street parking areas shall contain wheel stops, perimeter curbing, bollards, or other edging as required to prevent vehicles from damaging buildings or encroaching into walkways, sidewalks, landscapes, or the public right-of-way. Parking areas shall also provide for surface water management, pursuant to Section 17-3.6.050.

PARKING ANGLE < °	CURB LENGTH	STALL DEPTH	AISLE DEPTH	STRIPE LENGTH
		SINGLE D1	TWO WAY A2	
90°	8'-6"	18'	23'	18'

Response: As shown on the Preliminary Plans (Exhibit A), the planned parking spaces are designed in conformance with the dimensional standards of this section. Therefore, this standard is met.

G. **Adjustments to Parking Area Dimensions.** The dimensions in subsection E are minimum standards. The Planning Official, through a Type II procedure, may adjust the dimensions based on evidence that a particular use will require more or less maneuvering area. For example, the Planning Official may approve an adjustment where an attendant will be present to move vehicles, as with valet parking. In such cases, a form of guarantee must be filed with the City ensuring that an attendant will always be present when the lot is in operation.

Response: As previously discussed, the parking area minimum dimensions in Table 17-3.5.030.F are met. Adjustments to these standards are not required nor warranted. This criterion is not applicable.

H. **Americans with Disabilities Act (ADA).** Parking shall be provided consistent with ADA requirements, including, but not limited to, the minimum number of spaces for automobiles, van-accessible spaces, location of spaces relative to building entrances, accessible routes between parking areas and building entrances, identification signs, lighting, and other design and construction requirements.

Response: As shown on the Preliminary Plans (Exhibit A), there are 12 planned ADA parking spaces, which is appropriate for the project. This criterion is met.

I. **Electric Charging Stations.** Charging stations for electric vehicles are allowed as an accessory use to parking areas developed in conformance with this Code, provided the charging station complies with applicable building codes and any applicable state or federal requirements.

Response: This application does not include electric charging stations. This criterion is not applicable.

17-3.5.040 **Bicycle Parking**

A. **Standards.** Bicycle parking spaces shall be provided with new development and, where a change of use occurs, at a minimum, shall follow the standards in Table 17-3.5.040.A. Where an application is subject to Conditional Use Permit approval or the applicant has requested a reduction to an automobile-parking standard, pursuant to Section 17-3.5.030.C, the Planning Official may require bicycle parking spaces in addition to those in Table 17-3.5.040.A.

Table 17-3.5.040.A Minimum Required Bicycle Parking Spaces	
Use	Minimum Number of Spaces
Multifamily Residential (not required for parcels with fewer than 4 dwelling units)	2 bike spaces per 4 dwelling units

Response: This application involves Site Design Review for 151 multifamily residential dwellings, which requires 76 bicycle parking spaces. As shown on the Preliminary Site Plan, there are 78 bicycle parking spaces provided. This criterion is satisfied.

B. **Design.** Bicycle parking shall consist of staple-design steel racks or other City-approved racks, lockers, or storage lids providing a safe and secure means of storing a bicycle, consistent with the Public Works Design Standards.

Response: As shown on the Preliminary Plans (Exhibit A), the planned bicycle racks meet the City of Molalla Public Works Design Standards. This criterion is met.

C. **Exemptions.** This section does not apply to single-family and duplex housing, home occupations, and agricultural uses.

Response: This application involves Site Design Review for future multifamily dwellings. Therefore, this exemption is not applicable.

-
- D. Hazards. Bicycle parking shall not impede or create a hazard to pedestrians or vehicles, and shall be located so as to not conflict with the vision clearance standards of Section 17-3.3.030.G.

Response: As shown on the Preliminary Plans (Exhibit A), the planned bicycle parking locations will not create a hazard to pedestrians or vehicles and do not conflict with the vision clearance standards. This criterion is satisfied.

Chapter 17-3.6 PUBLIC FACILITIES

17-3.6.020 Transportation Standards

A. General Requirements.

1. Except as provided by subsection A.5, existing substandard streets, and planned streets within or abutting a proposed development shall be improved in accordance with the standards of Chapter 17-3.6 as a condition of development approval.

Response: This application abuts a planned extension of S Leroy Avenue. The improvement will be completed prior to the completion of this development.

2. All street improvements, including the extension or widening of existing streets and public access ways, shall conform to Section 17-3.6.020, and shall be constructed consistent with the City of Molalla Public Works Design Standards.

Response: Where Street improvements are required, they will be constructed in compliance with the City of Molalla Development Code and Public Works Design Standards.

3. All new streets shall be contained within a public right-of-way. Public access ways (e.g., pedestrian ways) may be contained within a right-of-way or a public access easement, subject to review and approval of the City Engineer.

Response: This application does not include new streets. Therefore, this standard does not apply.

4. The purpose of this subsection is to coordinate the review of land use applications with roadway authorities and to implement Section 660-012-0045(2)(e) of the State Transportation Planning Rule, which requires the City to adopt a process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities. The following provisions also establish when a proposal must be reviewed for potential traffic impacts; when a Transit Analysis Letter (TAL) or Traffic Impact Analysis (TIA) must be submitted with a development application in order to determine whether conditions are needed to minimize impacts to and protect transportation facilities; the required contents of a TAL/TIA; and who is qualified to prepare the analysis.

- a. Determining the Required Level of Transportation Analysis and Documentation. A Transportation Impact Analysis (TIA) is required for developments that are expected to have an impact on the transportation system. The analysis shall be based upon the latest edition of the ITE Trip Generation Manual or an agreed-upon alternative methodology where credible data is available to support the alternative methodology. When specific criteria generally associated with small developments are met, a Transportation Analysis Letter (TAL) may be substituted for the required TIA. At the discretion of the City Engineer, a TAL may satisfy the City's transportation analysis requirements, in lieu of a TIA when a development meets all the following criteria:

(...)

Response: A Transportation Impact Study is required for this application and is included as Exhibit D

(...)

- c. Transportation Impact Analysis Contents. The following information shall be included in each TIA submitted to the City. Additional information specified by the City in the scoping summary or through the pre-application meeting or other project meetings shall also be included.
- (1) Completed TIA checklist signed by the professional engineer responsible for the preparation of the TIA.
 - (2) Table of Contents—Listings of all sections, figures, and tables included in the report.
 - (3) Executive Summary—A summary of key points, findings, conclusions, and recommendation including a mitigation plan.
 - (4) Introduction, including:
 - i. Proposed land use action including site location, zoning, building size, and project scope.
 - ii. Map showing the proposed site, building footprint, access driveways, and parking facilities.
 - iii. Map of the study area that shows site location and surrounding roadway facilities.
 - (5) Existing Conditions.
 - i. Existing site conditions and adjacent land uses.
 - ii. Roadway characteristics of important transportation facilities and modal opportunities located within the study area, including roadway functional classifications, street cross-section, posted speeds, bicycle and pedestrian facilities, on-street parking, and transit facilities.
 - iii. Existing lane configurations and traffic control devices at the study area intersections.
 - iv. Existing traffic volumes and operational analysis of the study area roadways and intersections.
 - v. Roadway and intersection crash history analysis.
 - vi. Intersection and stopping sight distance related to new and impacted driveways and intersections.
 - (6) Background Conditions (Without the Proposed Land Use Action).
 - i. Approved in-process developments and funded transportation improvements in the study area.
 - ii. Traffic growth assumptions.
 - iii. Addition of traffic from other planned developments.

-
- iv. Background traffic volumes and operational analysis.
- (7) Full Buildout Traffic Conditions (With the Proposed Land Use Action).
- i. Description of the proposed development plans.
 - ii. Trip generation characteristics of proposed project (including trip reduction documentation).
 - iii. Trip distribution assumptions.
 - iv. Full buildout traffic volumes and intersection operational analysis.
 - v. Site circulation and parking.
 - vi. Intersection and site-access driveway queuing analysis.
 - vii. Recommended roadway and intersection mitigation measures (if necessary).
- (8) Conclusions and recommendations.
- (9) Appendix—With Dividers or Tabs.
- i. Traffic count summary sheets.
 - ii. Crash analysis summary sheets.
 - iii. Existing, background, and full buildout traffic operational analysis worksheets with detail to review capacity calculations.
 - iv. Signal, left-turn, and right-turn lane warrant evaluation calculations.
 - v. Signal timing sheets depicting the timing and phasing used in analysis.
 - vi. Other analysis summary sheets such as queuing.
- (10) To present the information required to analyze the transportation impacts of development, the following figures shall be included in the TIS:
- i. Vicinity Map.
 - ii. Existing Lane Configurations and Traffic Control Devices.
 - iii. Existing Traffic Volumes and Levels of Service for each required time period.
 - iv. Future Year Background Traffic Volumes and Levels of Service for each required time period.
 - v. Proposed Site Plan, including access points for abutting parcels and for those across the street from the proposed development.
 - vi. Future Year Assumed Lane Configurations and Traffic Control Devices.
 - vii. Estimated Trip Distribution/Assignment Pattern.
 - viii. Trip reductions (pass-by trips at site access(es)).

-
- ix. Site-Generated Traffic Volumes for each required time period.
 - x. Full Buildout Traffic Volumes and Levels of Service for each required time period.

Response: A Transportation Impact Study (TIS) that contains the applicable information listed above is included with the submittal materials included in this application (Exhibit D). This standard is satisfied.

- 5. The City Engineer may waive or allow deferral of standard street improvements, including sidewalk, roadway, bicycle lane, undergrounding of utilities, and landscaping, as applicable, where one or more of the following conditions in subdivisions (a) through (d) is met. Where the City Engineer agrees to defer a street improvement, it shall do so only where the property owner agrees not to remonstrate against the formation of a local improvement district in the future.
 - a. The standard improvement conflicts with an adopted capital improvement plan.
 - b. The standard improvement would create a safety hazard.
 - c. It is unlikely due to the developed condition of adjacent property that the subject improvement would be extended in the foreseeable future, and the improvement under consideration does not by itself significantly improve transportation operations or safety.
 - d. The improvement under consideration is part of an approved partition and the proposed partition does not create any new street.

Response: This application does not include a request for deferral of standard street improvements. Therefore, these conditions are not applicable.

B. Street Location, Alignment, Extension, and Grades.

- 1. All new streets, to the extent practicable, shall connect to the existing street network and allow for the continuation of an interconnected street network, consistent with adopted public facility plans and pursuant to subsection D Transportation Connectivity and Future Street Plans.
- 2. Specific street locations and alignments shall be determined in relation to existing and planned streets, topographic conditions, public convenience and safety, and in appropriate relation to the proposed use of the land to be served by such streets.
- 3. Grades of streets shall conform as closely as practicable to the original (pre-development) topography to minimize grading.
- 4. New streets and street extensions exceeding a grade of 10 percent over a distance more than 200 feet, to the extent practicable, shall be avoided. Where such grades are unavoidable, the City Engineer may approve an exception to the 200-foot standard and require mitigation, such as a secondary access for the subdivision, installation of fire protection sprinkler systems in dwellings, or other mitigation to protect public health and safety.

5. Where the locations of planned streets are shown on a local street network plan, the development shall implement the street(s) shown on the plan.
6. Where required local street connections are not shown on an adopted City street plan, or the adopted street plan does not designate future streets with sufficient specificity, the development shall provide for the reasonable continuation and connection of existing streets to adjacent developable properties, conforming to the standards of this Code.
7. Existing street-ends that abut a proposed development site shall be extended with the development, unless prevented by environmental or topographical constraints, existing development patterns, or compliance with other standards in this Code. In such situations, the applicant must provide evidence that the environmental or topographic constraint precludes reasonable street connection.
8. Proposed streets and any street extensions required pursuant to this section shall be located, designed, and constructed to allow continuity in street alignments and to facilitate future development of vacant or redevelopable lands.

Response: This application does not include new streets or street extensions. Therefore, the standards included in this section are not applicable.

C. Rights-of-Way and Street Section Widths.

1. Street rights-of-way and section widths shall comply with the current version of the Public Works Design Standards and Transportation System Plan. The standards are intended: to provide for streets of suitable location, width, and design to accommodate expected vehicle, pedestrian, and bicycle traffic; to afford satisfactory access to law enforcement, fire protection, sanitation, and road maintenance equipment; and to provide a convenient and accessible network of streets, avoiding undue hardships to adjoining properties.

Response: This application does not include new streets. However, it does include private driveways that have been designed to conform to the City of Molalla Public Works Design Standards. It also includes improvements within the S Leroy Avenue right-of-way that have been designed to conform to City standards. To the extent applicable, this standard is satisfied.

(...)

D. Transportation Connectivity and Future Street Plans. The following standards apply to the creation of new streets:

(...)

Response: This application does not include new streets. These standards are not applicable.

- E. **Engineering Design Standards.** Street design shall conform to the standards of the applicable roadway authority; for City streets that is the current version of the Public Works Design Standards and Transportation System Plan. Where a conflict occurs between this Code and the Public Works Design Standards, the provisions of the Design Standards shall govern.

Response: This application does not include new streets. However, it does include private driveways that have been designed to conform to the City of Molalla Public Works Design Standards. This standard is satisfied.

- F. **Fire Code Standards.** Where Fire Code standards conflict with City standards, the City shall consult with the Fire Marshal in determining appropriate requirements. The City shall have the final determination regarding applicable standards.

Response: This application includes emergency vehicle turnarounds within the site. As shown on the Preliminary Plans, the site circulation areas are of adequate size to accommodate fire truck turning movements. This standard is met.

G. **Substandard Existing Right-of-Way.** Where an existing right-of-way adjacent to a proposed development is less than the standard width, the City Engineer may require the dedication of additional rights-of-way at the time of Subdivision, Partition, or Site Plan Review, pursuant to the standards in the Public Works Design Standards and Transportation System Plan.

Response: The site is not adjacent to an existing right-of-way with a substandard width. This standard is not applicable.

H. **Traffic Calming.** The City may require the installation of traffic calming features such as traffic circles, curb extensions, reduced street width (parking on one side), medians with pedestrian crossing refuges, speed tables, speed humps, or special paving to slow traffic in neighborhoods or commercial areas with high pedestrian traffic.

Response: This site takes access from both sides of S Leroy Avenue and includes a private vehicular circulation system. Traffic calming features are not required within this development.

I. **Sidewalks, Planter Strips, and Bicycle Lanes.** Except where the City Engineer grants a deferral of public improvements, pursuant to Chapter 17-4.2 or Chapter 17-4.3, sidewalks, planter strips, and bicycle lanes shall be installed concurrent with development or widening of new streets, pursuant to the requirements of this chapter. Maintenance of sidewalks and planter strips in the right-of-way is the continuing obligation of the adjacent property owner.

Response: This application does not include new streets. Therefore, this standard is not applicable.

J. **Streets Adjacent to Railroad Right-of-Way.** When a transportation improvement is proposed within 300 feet of a railroad crossing, or a modification is proposed to an existing railroad crossing, the Oregon Department of Transportation and the rail service provider shall be notified and given an opportunity to comment, in conformance with the provisions of Division IV. Private crossing improvements are subject to review and licensing by the rail service provider.

Response: This application does not include streets adjacent to railroad right-of-way. This standard is not applicable.

K. **Street Names.** No new street name shall be used which will duplicate or be confused with the names of existing streets in the City of Molalla or vicinity. Street names shall be submitted to the City for review and approval in consultation with Clackamas County and emergency services.

Response: This application does not include new streets. Therefore, this standard is not applicable.

L. **Survey Monuments.** Upon completion of a street improvement and prior to acceptance by the City, it shall be the responsibility of the developer's registered professional land surveyor to provide certification to the City that all boundary and interior monuments have been reestablished and protected.

Response: It is understood that necessary boundary monuments are to be reestablished and protected. This standard is satisfied.

M. **Street Signs.** The city, county, or state with jurisdiction shall install all signs for traffic control and street names. The cost of signs required for new development shall be the responsibility of the developer. Street name signs shall be installed at all street intersections. Stop signs and other signs may be required.

Response: This standard is understood.

- N. **Streetlight Standards.** Streetlights shall be relocated or new lights installed, as applicable, with street improvement projects. Streetlights shall conform to City standards, be directed downward, and full cutoff and full shielding to preserve views of the night sky and to minimize excessive light spillover onto adjacent properties.

Response: This application does not include streetlights but does include outdoor lighting throughout the development, as shown on the Preliminary Sight Lighting Plan. Where applicable, outdoor lighting conforms with these standards.

- O. **Mail Boxes.** Mailboxes shall conform to the requirements of the United States Postal Service and the State of Oregon Structural Specialty Code.

Response: This standard is understood.

- P. **Street Cross-Sections.** The final lift of pavement shall be placed on all new constructed public roadways prior to final City acceptance of the roadway.

Response: This application does not include new streets. Therefore, this standard is not applicable.

17-3.6.040 **Sanitary Sewer and Water Service Improvements**

- A. **Sewers and Water Mains Required.** All new development is required to connect to City water and sanitary sewer systems. Sanitary sewer and water system improvements shall be installed to serve each new development and to connect developments to existing mains in accordance with the adopted facility master plans and applicable Public Works Design Standards. Where streets are required to be stubbed to the edge of the subdivision, sewer and water system improvements and other utilities shall also be stubbed with the streets, except as may be waived by the City Engineer where alternate alignment(s) are provided.

Response: As shown on the Preliminary Plans, sanitary sewer and water service for the future multifamily dwellings will be provided by installing new water and sanitary sewer services from the existing water and sanitary sewer lines located in the adjacent rights-of-way. This criterion is satisfied.

(...)

17-3.6.050 **Storm Drainage and Surface Water Management Facilities**

- A. **General Provisions.** The City shall issue a development permit only where adequate provisions for stormwater runoff have been made in conformance with the requirements of the current version of the Public Works Design Standards and Stormwater Master Plan.
- B. **Accommodation of Upstream Drainage.** Culverts and other drainage facilities shall be large enough to accommodate existing and potential future runoff from the entire upstream drainage area, whether inside or outside the development. Such facilities shall be subject to review and approval by the City Engineer.
- C. **Effect on Downstream Drainage.** Where it is anticipated by the City Engineer that the additional runoff resulting from the development will overload an existing drainage facility, the City shall withhold approval of the development until provisions have been made for improvement of the potential condition or until provisions have been made for storage of additional runoff caused by the development in accordance with City standards.

Response: A Preliminary Stormwater Report (Exhibit E) has been prepared that demonstrates that the planned improvements conform to the Public Works Design Standards and

Stormwater Master Plan. The Preliminary Stormwater Report further discusses upstream and downstream drainage and shows that the planned facilities will not negatively impact downstream capacity and are adequate to accommodate existing and future runoff from the upstream drainage area. These criteria are satisfied.

D. **Over-Sizing.** The City may require as a condition of development approval that sewer, water, or storm drainage systems serving new development be sized to accommodate future development within the area as projected by the applicable facility master plan, provided that the City may grant the developer credit toward any required system development charge for the same pursuant to the System Development Charge.

Response: Sewer, water, and storm drainage systems have been designed to conform with public facilities plans and City standards.

E. **Existing Watercourse.** Where a proposed development is traversed by a watercourse, drainage way, channel, or stream, the City may require a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourse and such further width as will be adequate for conveyance and maintenance to protect the public health and safety.

Response: The site does not have an existing watercourse, drainage way, channel, or stream. This criterion is not applicable.

17-3.6.060 Utilities

The following standards apply to new development where extension of electric power, gas, or communication lines is required:

A. **General Provision.** The developer of a property is responsible for coordinating the development plan with the applicable utility providers and paying for the extension and installation of utilities not otherwise available to the subject property.

Response: The Applicant is aware that coordination with utility providers will be required to extend the existing utilities into the site. This criterion will be met.

B. **Underground Utilities.**

1. **General Requirement.** The requirements of the utility service provider shall be met. All utility lines in new subdivisions, including, but not limited to, those required for electric, communication, and lighting, and related facilities, shall be placed underground, except where the City Engineer determines that placing utilities underground would adversely impact adjacent land uses. The Planning Official may require screening and buffering of above ground facilities to protect the public health, safety, or welfare.

Response: The requirements of the utility service providers are met. This application does not include a new subdivision, but all utilities are planned for underground placement as practical. This criterion is met.

2. **Subdivisions.** In order to facilitate underground placement of utilities, the following additional standards apply to all new subdivisions:

(...)

Response: This application involves Site Design Review, not a subdivision. Therefore, these criteria are not applicable.

-
- C. Exception to Undergrounding Requirement. The City Engineer may grant exceptions to the undergrounding standard where existing physical constraints, such as geologic conditions, streams, or existing development conditions make underground placement impractical.

Response: This exception is not required.

17-4.1.040 Type III Procedure (Quasi-Judicial Review—Public Hearing)

Type III decisions are made by the Planning Commission after a public hearing, with an opportunity for appeal to the City Council.

A. Application Requirements.

- 1. Application Forms. Applications requiring Quasi-Judicial Review shall be made on forms provided by the Planning Official.

Response: This application includes the required application forms (Exhibit B). This submittal requirement is satisfied.

- 2. Submittal Information. The Planning Official shall advise the applicant on application submittal requirements. At a minimum, the application shall include all of the following information:

- a. The information requested on the application form;
- b. Plans and exhibits required for the specific approval(s) being sought;
- c. A written statement or letter explaining how the application satisfies each and all of the relevant criteria and standards in sufficient detail;
- d. Information demonstrating compliance with prior decision(s) and conditions of approval for the subject site, as applicable; and
- e. The required fee.
- f. Comments, if obtained from neighborhood contact per Section 17-4.1.070.

Response: The required fee and other required application materials, as applicable, are included with this application. These submittal requirements are satisfied.

17-4.1.070 Neighborhood Contact

- A. Purpose and Applicability. Applicants for master planned development, subdivision, or site design review on projects involving parcels or lots larger than one acre and located adjacent to any residential zone, and property owner-applicants for zone changes, are recommended to contact neighboring property owners and offer to a hold meeting with them prior to submitting an application. This is to ensure that affected property owners are given an opportunity to preview a proposal and offer input to the applicant before a plan is formally submitted to the City, thereby raising any concerns about the project and the project's compatibility with surrounding uses early in the design process when changes can be made relatively inexpensively.

Response: Although this application involves Site Design Review involving a property larger than 1 acre, it is not adjacent to a residential zoning district. Therefore, this submittal requirement is not applicable.

Chapter 17-4.2 SITE DESIGN REVIEW

17-4.2.030 Review Procedure

Site Design Review shall be conducted using the Type II procedure in Section 17-4.1.030, except that proposals exceeding any one of the thresholds below shall be reviewed using the Type III procedure in Section 17-4.1.040:

- A. The proposed use's estimated vehicle trip generation exceeds 100 average daily trips, based on the latest edition of the Institute of Transportation Engineers (ITE) Manual;

Response: This application involves Site Design Review for future multifamily dwellings. According to the *Institute of Transportation Engineers (ITE) Manual*, this type of use will exceed 100 average daily trips. Therefore, this application is to be reviewed as a Type III procedure.

(...)

17-4.2.040 Application Submission Requirements

All of the following information is required for Site Design Review application submittal, except where the Planning Official and the City Engineer determines that some information is not pertinent and therefore is not required.

- A. General Submission Requirements.

- 1. Information required for Type II or Type III review, as applicable (see Chapter 17-4.1).

Response: Detailed responses to the applicable code sections of Chapter 17-4.1 have been provided. This submittal requirement is met.

- 2. Public Facilities and Services Impact Study. The impact study shall quantify and assess the effect of the development on public facilities and services. The City shall advise as to the scope of the study. The study shall address, at a minimum, the transportation system, including required improvements for vehicles and pedestrians; the drainage system; the parks system; water system; and sewer system. For each system and type of impact, the study shall propose improvements necessary to meet City requirements. The City may require a Traffic Impact Analysis pursuant to Section 17-3.6.020.A(4).

Response: This application is for Site Design Review for the construction of multifamily homes. The Preliminary Plans, application materials, and this narrative demonstrate that public services and facilities are available to serve the project. This standard is satisfied.

- B. Site Design Review Information. In addition to the general submission requirements, an applicant for Site Design Review shall provide the following information, as deemed applicable by the Planning Official. The Planning Official may request any information that he or she needs to review the proposal and prepare a complete staff report and recommendation to the approval body.

- 1. Site Analysis Map. The site analysis map shall contain all the following information, as the Planning Official deems applicable:
 - a. The applicant's entire property and the surrounding property to a distance sufficient to determine the location of the development in the city, and the relationship between the proposed development site and adjacent property and development. The property boundaries, dimensions, and gross area shall be identified;
 - b. Topographic contour lines at two-foot intervals for slopes, except where the Public Works Director determines that larger intervals will be adequate for steeper slopes;
 - c. Identification of slopes greater than 15 percent, with slope categories identified in five percent increments (e.g., 0%-5%, >5%-10%, >10%-15%, >15%-20%, and so forth);

-
- d. The location and width of all public and private streets, drives, sidewalks, pathways, rights-of-way, and easements on the site and adjoining the site;
 - e. Potential natural hazard areas, including, as applicable, the base flood elevation identified on FEMA Flood Insurance Rate Maps or as otherwise determined through site specific survey, areas subject to high water table, and areas designated by the City, county, or state as having a potential for geologic hazards;
 - f. Areas subject to overlay zones;
 - g. Site features, including existing structures, pavement, large rock outcroppings, areas having unique views, and drainage ways, canals, and ditches;
 - h. The location, size, and species of trees and other vegetation (outside proposed building envelope) having a caliper (diameter) of six inches or greater at four feet above grade;
 - i. North arrow, scale, and the names and addresses of all persons listed as owners of the subject property on the most recently recorded deed; and
 - j. Name and address of project designer, engineer, surveyor, and/or planner, if applicable.

Response: The Preliminary Plans (Exhibit A) included in the application materials show the information required above, as applicable. This submittal requirement is met.

- 2. Proposed Site Plan. The site plan shall contain all the following information:
 - a. The proposed development site, including boundaries, dimensions, and gross area;
 - b. Features identified on the existing site analysis maps that are proposed to remain on the site;
 - c. Features identified on the existing site map, if any, which are proposed to be removed or modified by the development;
 - d. The location and dimensions of all proposed public and private streets, drives, rights-of-way, and easements;
 - e. The location and dimensions of all existing and proposed structures, utilities, pavement, and other improvements on the site. Setback dimensions for all existing and proposed buildings shall be provided on the site plan;
 - f. The location and dimensions of entrances and exits to the site for vehicular, pedestrian, and bicycle access;
 - g. The location and dimensions of all parking and vehicle circulation areas (show striping for parking stalls and wheel stops);
 - h. Pedestrian and bicycle circulation areas, including sidewalks, internal pathways, pathway connections to adjacent properties, and any bicycle lanes or trails;
 - i. Loading and service areas for waste disposal, loading, and delivery;
 - j. Outdoor recreation spaces, common areas, plazas, outdoor seating, street furniture, and similar improvements;
 - k. Location, type, and height of outdoor lighting;

-
- l. Location of mail boxes, if known;
 - m. Name and address of project designer, if applicable;
 - n. Locations of bus stops and other public or private transportation facilities; and
 - o. Locations, sizes, and types of signs.

Response: The Preliminary Plans (Exhibit A) included in the application materials show the information required above, as applicable. This submittal requirement is met.

3. Architectural Drawings. Architectural drawings shall include, as applicable:
 - a. Building elevations with dimensions;
 - b. Building materials, colors, and type; and
 - c. Name and contact information of the architect or designer.

Response: The Preliminary Architectural Plans (Exhibit A) included in the application materials show the information required above. This submittal requirement is met.

4. Preliminary Grading Plan. A preliminary grading plan prepared by a registered engineer shall be required for development sites one-half acre or larger, or where otherwise required by the City. The preliminary grading plan shall show the location and extent to which grading will take place, indicating general changes to contour lines, slope ratios, slope stabilization proposals, and location and height of retaining walls, if proposed. Surface water detention and treatment plans may also be required, in accordance with Section 17-3.6.040.

Response: A Preliminary Grading and Erosion and Sediment Control Plan prepared by a registered professional engineer is included in the Preliminary Plans (Exhibit A). This submittal requirement is met.

5. Landscape Plan. Where a landscape plan is required, it shall show the following, pursuant to Chapter 17-3.4:
 - a. The location and height of existing and proposed fences, buffering, or screening materials;
 - b. The location of existing and proposed terraces, retaining walls, decks, patios, shelters, and play areas;
 - c. The location, size, and species of the existing and proposed plant materials (at time of planting);
 - d. Existing and proposed building and pavement outlines;
 - e. Specifications for soil at time of planting, irrigation if plantings are not drought tolerant (may be automatic or other approved method of irrigation), and anticipated planting schedule; and
 - f. Other information as deemed appropriate by the Planning Official. An arborist's report may be required for sites with mature trees that are to be retained and protected.

Response: As applicable, the above information is illustrated on the Preliminary Landscape Plan and Preliminary Architectural Plans included in this application. This submittal requirement is met.

-
6. Deed Restrictions. Copies of all existing and proposed restrictions or covenants, including those for roadway access control.

Response: Copies of deed restrictions are included with the application materials (Exhibit H). This submittal requirement is met.

7. Narrative. Letter or narrative report documenting compliance with the applicable approval criteria contained in Section 17-4.2.050.

Response: This application includes a narrative responding to applicable approval criteria of Section 17-4.2.050. This submittal requirement is met.

8. Traffic Impact Analysis, when required by Section 17-3.6.020.A(4).

Response: A Transportation Impact Study is included with the application materials (Exhibit D). This submittal requirement is met.

9. Other information determined by the Planning Official. The City may require studies or exhibits prepared by qualified professionals to address specific site features or project impacts (e.g., traffic, noise, environmental features, natural hazards, etc.), as necessary to determine a proposal's conformance with this Code.

Response: This application includes plans and reports that are sufficient to show compliance with the applicable sections of the Molalla Development Code. This criterion is satisfied.

17-4.2.050 Approval Criteria

An application for Site Design Review shall be approved if the proposal meets all of the following criteria. The Planning Official, in approving the application, may impose reasonable conditions of approval, consistent with the applicable criteria.

- A. The application is complete, in accordance with Section 17-4.2.040;

Response: As discussed in Section 17-4.2.040, this application includes the required submittal materials. This criterion is satisfied.

- B. The application complies with all of the applicable provisions of the underlying Zoning District (Division II), including, but not limited to, building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other applicable standards;

Response: This application involves Site Design Review for multifamily dwellings on property that has a C-2 zoning designation. The provisions of Division II are addressed in this narrative; therefore, this criterion is met.

- C. The proposal includes required upgrades, if any, to existing development that does not comply with the applicable zoning district standards, pursuant to Chapter 17-1.4 Nonconforming Situations;

Response: The property does not have existing nonconforming development as outlined in Chapter 17-1.4. Therefore, this criterion is not applicable.

- D. The proposal complies with all of the Development and Design Standards of Division III, as applicable, including, but not limited to:

1. Chapter 17-3.3 Access and Circulation,
2. Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting,
3. Chapter 17-3.5 Parking and Loading,

4. Chapter 17-3.6 Public Facilities, and

Response: This narrative addresses the applicable Development and Design Standards of Division III and demonstrates compliance. This criterion is met.

5. Chapter 17-3.7 Signs;

Response: It is anticipated the site will have signage. The final sign designs and locations are not available at the time of this application because they will be contingent on final architectural design and site plan approval. A sign permit application that meets the applicable requirements of Chapter 17-3.7 will be submitted separately. To the extent applicable, this criterion is met.

E. For non-residential uses, all adverse impacts to adjacent properties, such as light, glare, noise, odor, vibration, smoke, dust, or visual impact, are avoided; or where impacts cannot be avoided, they are minimized; and

Response: This application is for Site Design Review for multifamily dwellings. Therefore, this criterion is not applicable.

F. The proposal meets all existing conditions of approval for the site or use, as required by prior land use decision(s), as applicable.

Note: Compliance with other City codes and requirements, though not applicable land use criteria, may be required prior to issuance of building permits.

Response: No relevant existing conditions of approval apply to this application.

IV. Conclusion

The required findings have been made, and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the City of Molalla Development Code. The evidence in the record supports approval of the application.

Exhibit A: Preliminary Site Design Review Plans

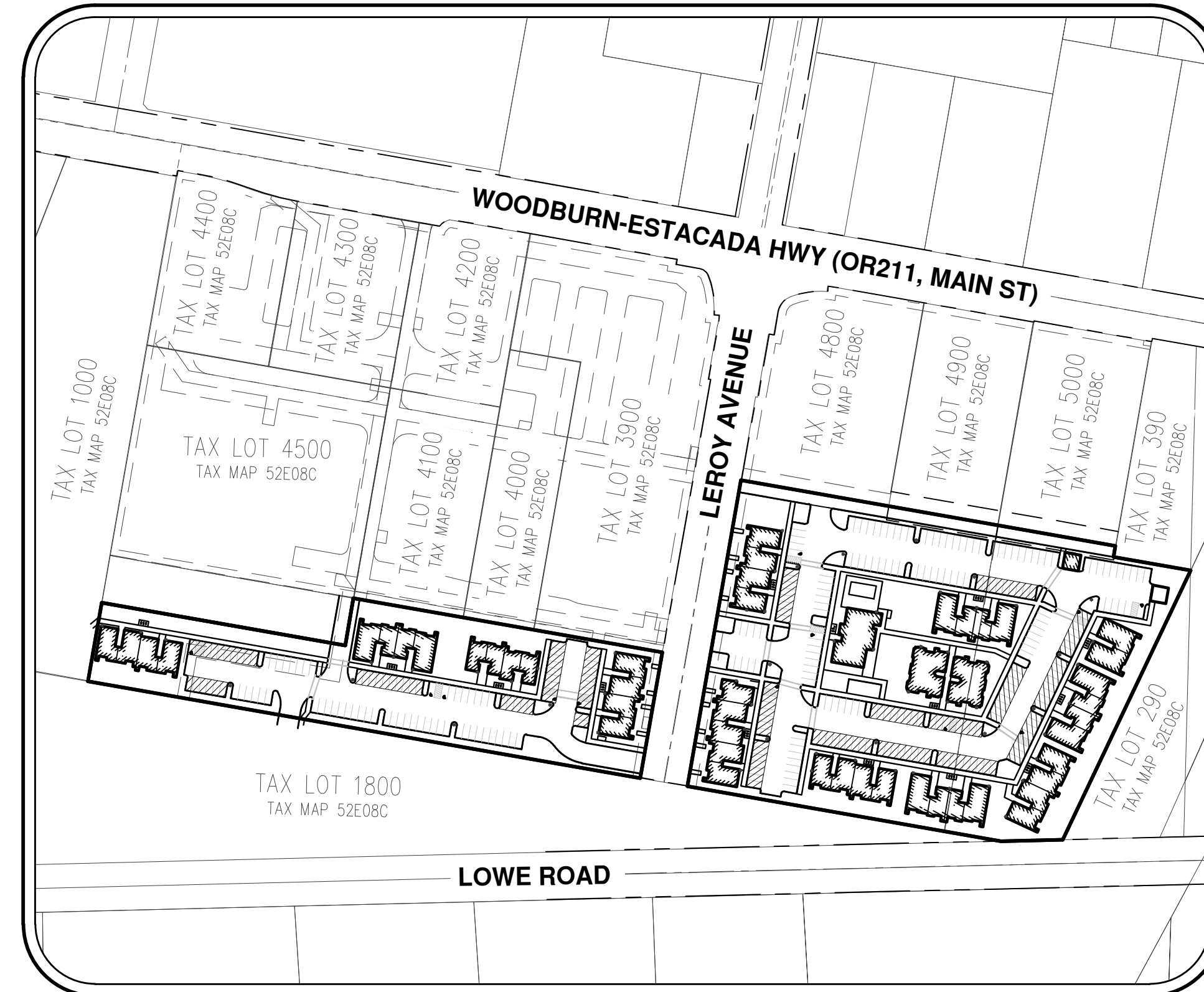
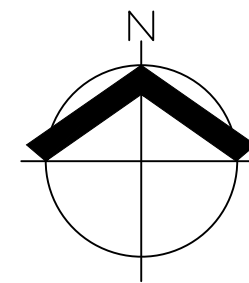
CASCADE PLACE MULTI-FAMILY

SITE DESIGN REVIEW PLANS



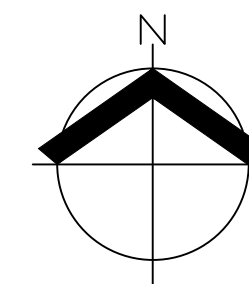
VICINITY MAP

SCALE: 1"=500'



SITE MAP

SCALE: 1"=150'



APPLICANT:

I & E CONSTRUCTION INC.
27375 SW PARKWAY AVENUE
WILSONVILLE, OR 97070

**LAND USE PLANNING,
CIVIL ENGINEERING,
AND SURVEYING FIRM:**

AKS ENGINEERING & FORESTRY, LLC
CONTACT: ZACH PELZ
3700 RIVER RD N, SUITE 1
KEIZER, OR 97303
PH: 503-400-6028

PROJECT LOCATION:

720, 850 W MAIN ST AND
200, 201 S LEROY AVE
MOLALLA, OR 97038

PROPERTY DESCRIPTION:

TAX LOT 4500, 4600, 4601, 4700, 5000
CLACKAMAS COUNTY TAX MAP 5-2E-08C
WILLAMETTE MERIDIAN, CLACKAMAS
COUNTY, OREGON.

SITE AREA:

± 6.8 AC.

ZONING:

GENERAL COMMERCIAL (C-2)

EXISTING LAND USE:

VACANT LOTS

PROJECT PURPOSE:

SITE DESIGN REVIEW FOR A NEW
MULTIFAMILY RESIDENTIAL HOUSING
COMMUNITY.

LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM DRAIN CLEAN OUT		
CONIFEROUS TREE			STORM DRAIN CATCH BASIN		
FIRE HYDRANT			STORM DRAIN AREA DRAIN		
WATER BLOWOFF			STORM DRAIN MANHOLE		
WATER METER			GAS METER		
WATER VALVE			GAS VALVE		
DOUBLE CHECK VALVE			GUY WIRE ANCHOR		
AIR RELEASE VALVE			UTILITY POLE		
SANITARY SEWER CLEAN OUT			POWER VAULT		
SANITARY SEWER MANHOLE			POWER JUNCTION BOX		
SIGN			POWER PEDESTAL		
STREET LIGHT			COMMUNICATIONS VAULT		
MAILBOX			COMMUNICATIONS JUNCTION BOX		
			COMMUNICATIONS RISER		
RIGHT-OF-WAY LINE					
BOUNDARY LINE					
PROPERTY LINE					
CENTERLINE					
DITCH					
CURB					
EDGE OF PAVEMENT					
EASEMENT					
FENCE LINE					
GRAVEL EDGE					
POWER LINE					
OVERHEAD WIRE					
COMMUNICATIONS LINE					
FIBER OPTIC LINE					
GAS LINE					
STORM DRAIN LINE					
SANITARY SEWER LINE					
WATER LINE					

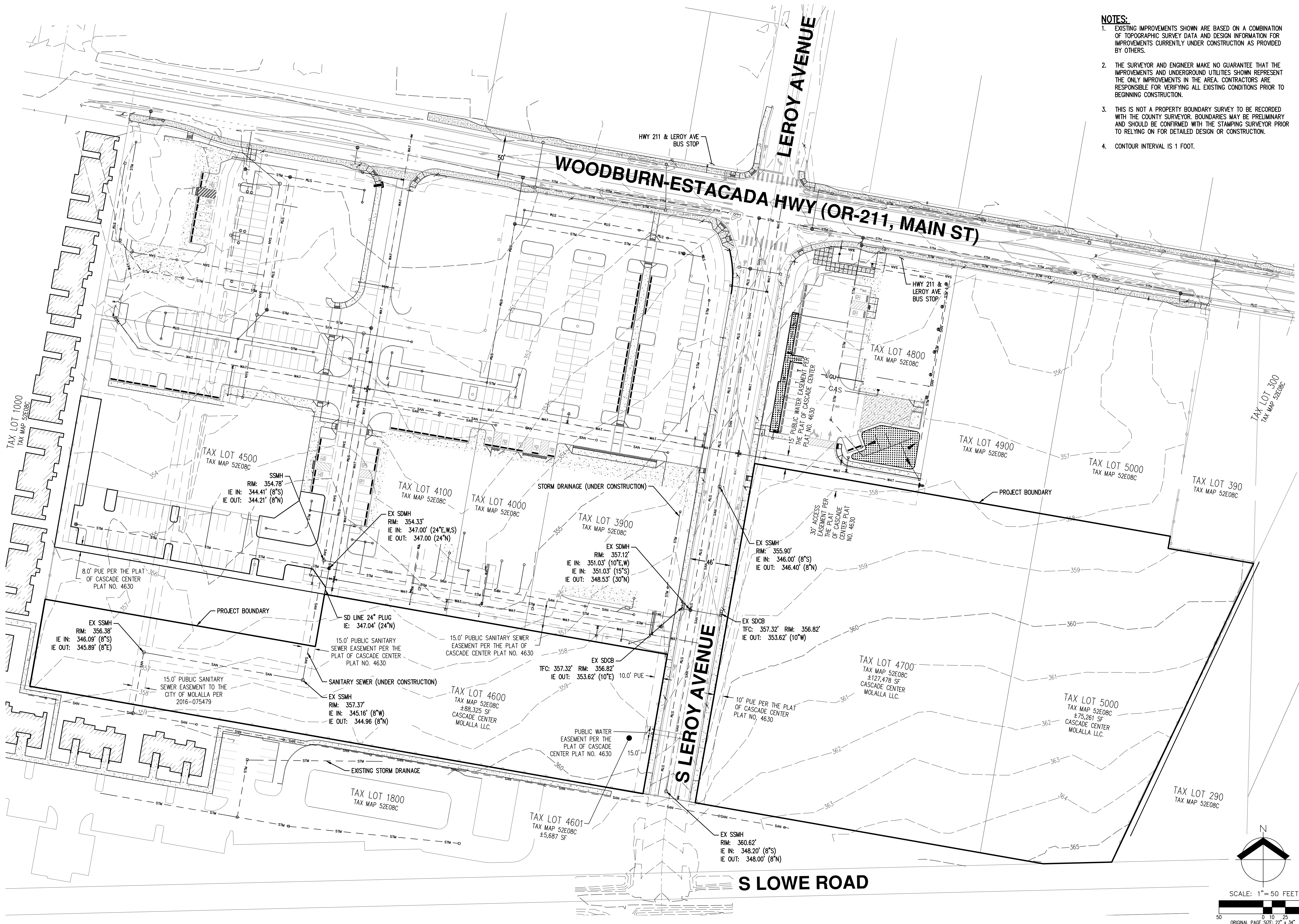
SHEET INDEX

- P-01 COVER SHEET WITH SITE AND VICINITY MAPS
- P-02 EXISTING CONDITIONS PLAN
- P-03 PRELIMINARY SITE PLAN
- P-04 PRELIMINARY SITE PLAN WITH AERIAL PHOTOGRAPH
- P-05 PRELIMINARY GRADING AND EROSION AND SEDIMENT CONTROL PLAN
- P-06 PRELIMINARY COMPOSITE UTILITY PLAN
- P-07 PRELIMINARY SITE LIGHTING PLAN
- P-08 PRELIMINARY FIRE TRUCK TURNING MOVEMENT PLAN
- P-09 PRELIMINARY LANDSCAPE PLANTING PLAN
- P-10 PRELIMINARY LANDSCAPE NOTES AND PLANT SCHEDULE



RENEWALS: DECEMBER 31, 2022
JOB NUMBER: 7710-01
DATE: 09/23/2021
DESIGNED BY: LTP
DRAWN BY: AC/JJA
CHECKED BY: MBH

- NOTES:**
- EXISTING IMPROVEMENTS SHOWN ARE BASED ON A COMBINATION OF TOPOGRAPHIC SURVEY DATA AND DESIGN INFORMATION FOR IMPROVEMENTS CURRENTLY UNDER CONSTRUCTION AS PROVIDED BY OTHERS.
 - THE SURVEYOR AND ENGINEER MAKE NO GUARANTEE THAT THE IMPROVEMENTS AND UNDERGROUND UTILITIES SHOWN REPRESENT THE ONLY IMPROVEMENTS IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
 - THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY SURVEYOR. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO RELYING ON FOR DETAILED DESIGN OR CONSTRUCTION.
 - CONTOUR INTERVAL IS 1 FOOT.

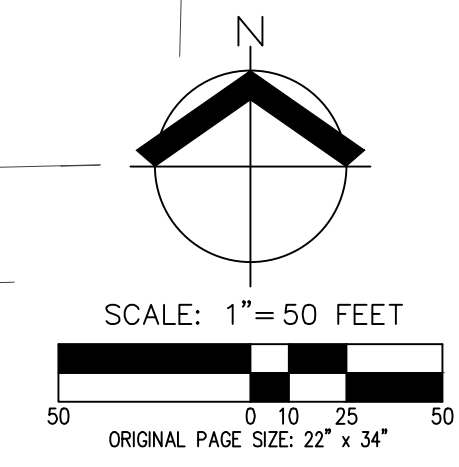


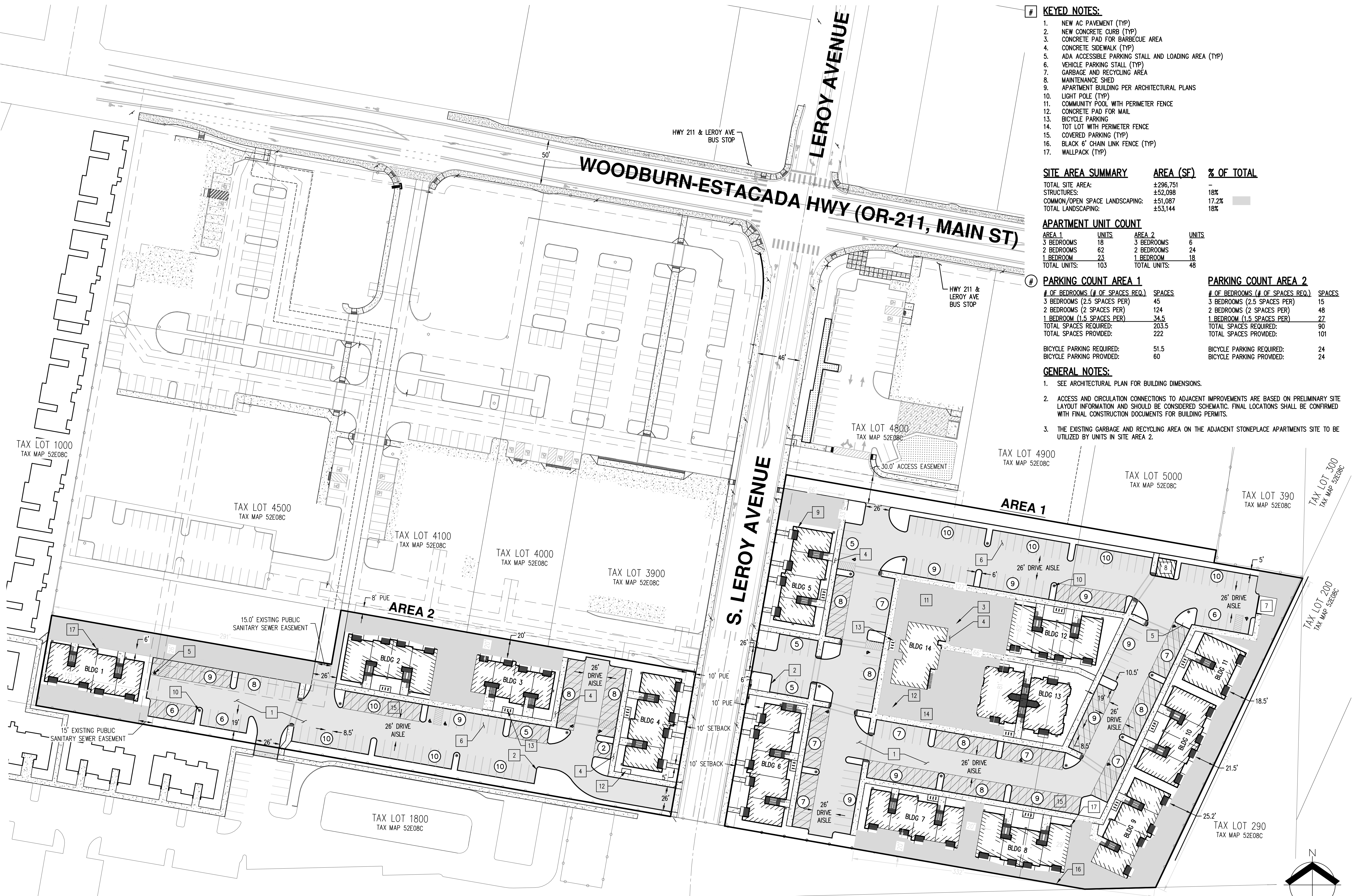
**EXISTING CONDITIONS PLAN
 CASCADE PLACE
 MULTI-FAMILY
 MOLALLA, OREGON**



REVISIONS:	DECEMBER 31, 2022
JOB NUMBER:	7710-01
DATE:	09/23/2021
DESIGNED BY:	LTP
DRAWN BY:	AC/JJA
CHECKED BY:	MBH

P-02





- # KEYED NOTES:**
1. NEW AC PAVEMENT (TYP)
 2. NEW CONCRETE CURB (TYP)
 3. CONCRETE PAD FOR BARBECUE AREA
 4. CONCRETE SIDEWALK (TYP)
 5. ADA ACCESSIBLE PARKING STALL AND LOADING AREA (TYP)
 6. VEHICLE PARKING STALL (TYP)
 7. GARBAGE AND RECYCLING AREA
 8. MAINTENANCE SHED
 9. APARTMENT BUILDING PER ARCHITECTURAL PLANS
 10. LIGHT POLE (TYP)
 11. COMMUNITY POOL WITH PERIMETER FENCE
 12. CONCRETE PAD FOR MAIL
 13. BICYCLE PARKING
 14. TOT LOT WITH PERIMETER FENCE
 15. COVERED PARKING (TYP)
 16. BLACK 6" CHAIN LINK FENCE (TYP)
 17. WALLPACK (TYP)

SITE AREA SUMMARY

	AREA (SF)	% OF TOTAL
TOTAL SITE AREA:	±296,751	-
STRUCTURES:	±52,098	18%
COMMON/OPEN SPACE LANDSCAPING:	±51,087	17.2%
TOTAL LANDSCAPING:	±53,144	18%

APARTMENT UNIT COUNT

AREA 1	UNITS	AREA 2	UNITS
3 BEDROOMS	18	3 BEDROOMS	6
2 BEDROOMS	62	2 BEDROOMS	24
1 BEDROOM	23	1 BEDROOM	18
TOTAL UNITS:	103	TOTAL UNITS:	48

PARKING COUNT AREA 1

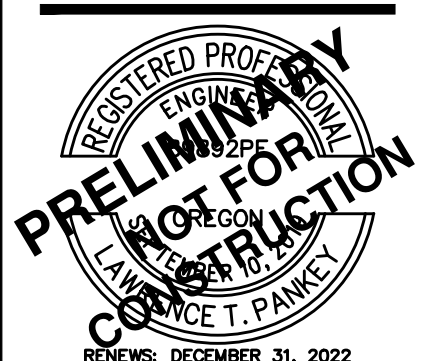
# OF BEDROOMS (# OF SPACES REQ.)	SPACES
3 BEDROOMS (2.5 SPACES PER)	45
2 BEDROOMS (2 SPACES PER)	124
1 BEDROOM (1.5 SPACES PER)	34.5
TOTAL SPACES REQUIRED:	203.5
TOTAL SPACES PROVIDED:	222
BICYCLE PARKING REQUIRED:	51.5
BICYCLE PARKING PROVIDED:	60

PARKING COUNT AREA 2

# OF BEDROOMS (# OF SPACES REQ.)	SPACES
3 BEDROOMS (2.5 SPACES PER)	15
2 BEDROOMS (2 SPACES PER)	48
1 BEDROOM (1.5 SPACES PER)	27
TOTAL SPACES REQUIRED:	90
TOTAL SPACES PROVIDED:	101
BICYCLE PARKING REQUIRED:	24
BICYCLE PARKING PROVIDED:	24

- GENERAL NOTES:**
1. SEE ARCHITECTURAL PLAN FOR BUILDING DIMENSIONS.
 2. ACCESS AND CIRCULATION CONNECTIONS TO ADJACENT IMPROVEMENTS ARE BASED ON PRELIMINARY SITE LAYOUT INFORMATION AND SHOULD BE CONSIDERED SCHEMATIC. FINAL LOCATIONS SHALL BE CONFIRMED WITH FINAL CONSTRUCTION DOCUMENTS FOR BUILDING PERMITS.
 3. THE EXISTING GARBAGE AND RECYCLING AREA ON THE ADJACENT STONEPLACE APARTMENTS SITE TO BE UTILIZED BY UNITS IN SITE AREA 2.

**PRELIMINARY SITE PLAN
 CASCADE PLACE
 MULTI-FAMILY
 MOLALLA, OREGON**



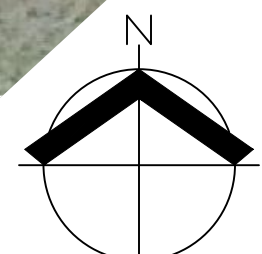
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PRELIMINARY SITE PLAN WITH AERIAL PHOTOGRAPH
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON



RENEWS: DECEMBER 31, 2022
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 CHECKED BY: MBH



SCALE: 1" = 50 FEET
 0 10 25 50
 ORIGINAL PAGE SIZE: 22" x 34"

PRELIMINARY GRADING AND EROSION AND SEDIMENT CONTROL PLAN

**CASCADE PLACE
 MULTI-FAMILY
 MOLALLA, OREGON**



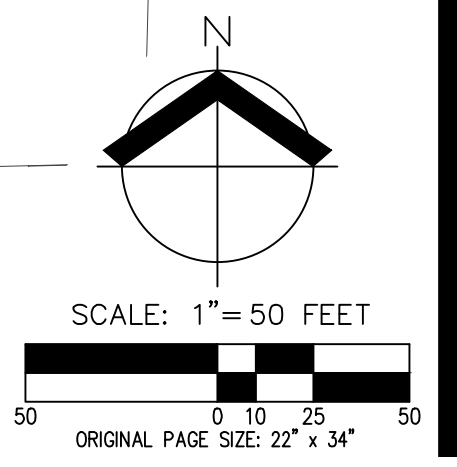
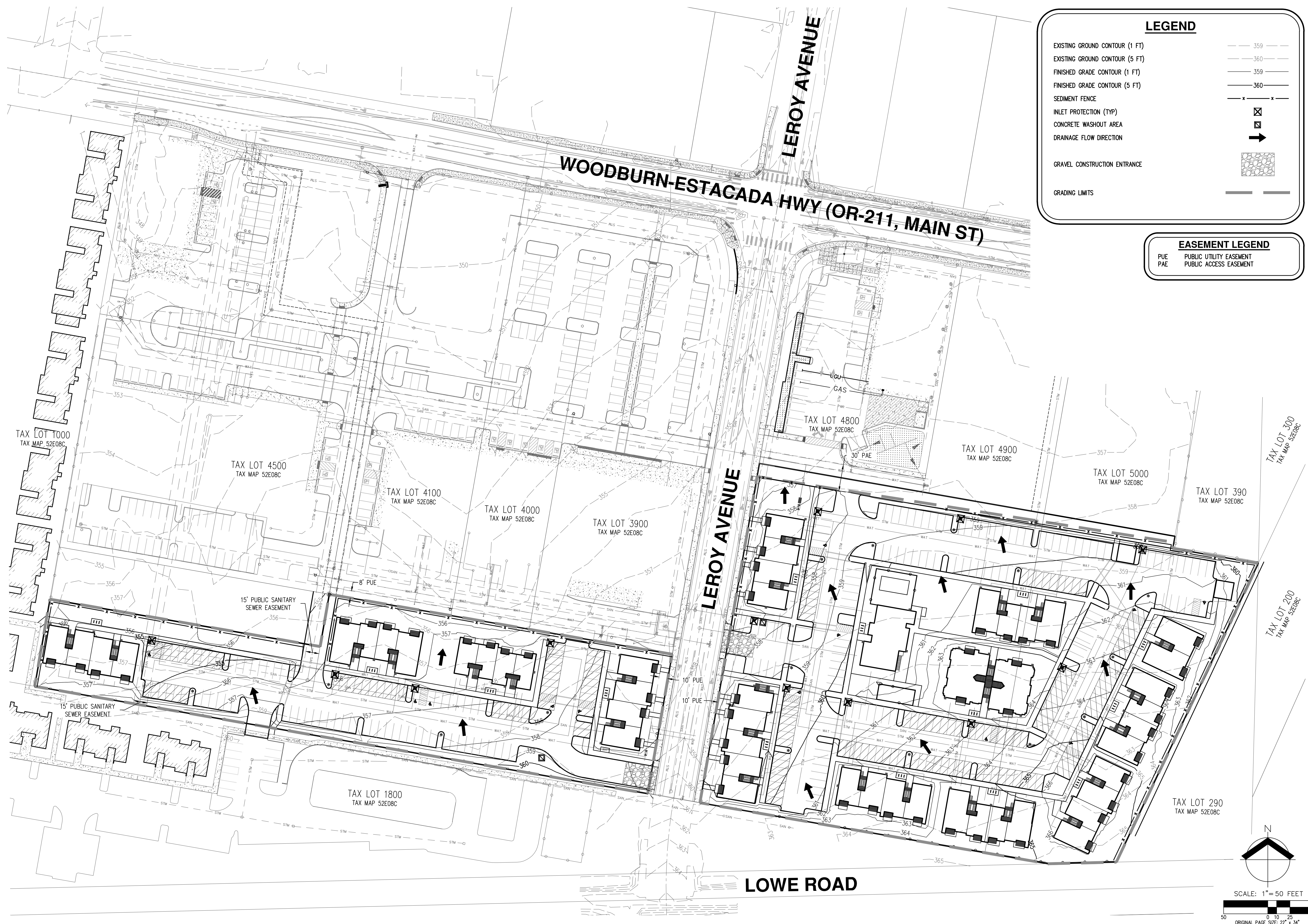
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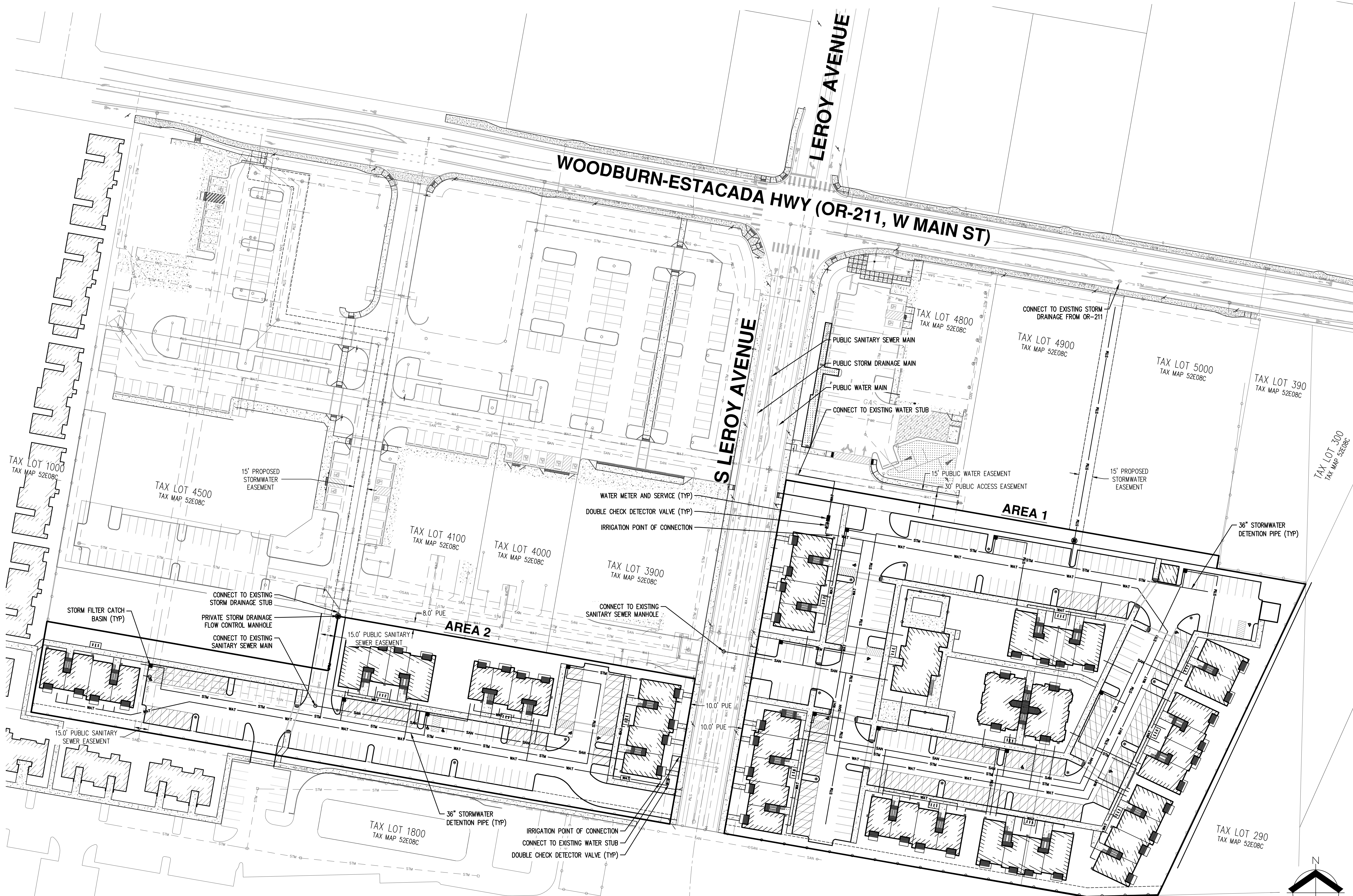
LEGEND

- EXISTING GROUND CONTOUR (1 FT) 359
- EXISTING GROUND CONTOUR (5 FT) 360
- FINISHED GRADE CONTOUR (1 FT) 359
- FINISHED GRADE CONTOUR (5 FT) 360
- SEDIMENT FENCE
- INLET PROTECTION (TYP)
- CONCRETE WASHOUT AREA
- DRAINAGE FLOW DIRECTION
- GRAVEL CONSTRUCTION ENTRANCE
- GRADING LIMITS

EASEMENT LEGEND

- PUE PUBLIC UTILITY EASEMENT
- PAE PUBLIC ACCESS EASEMENT

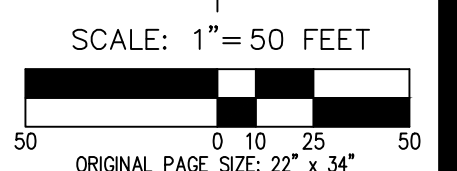
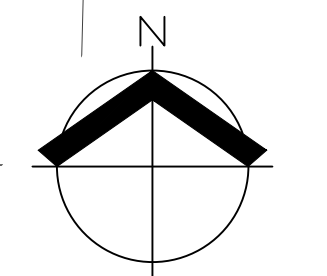




PRELIMINARY COMPOSITE UTILITY PLAN
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON



RENEWALS:	DECEMBER 31, 2022
JOB NUMBER:	7710-01
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SITE AREA 2 LIGHT LEVEL SUMMARY

PARKING AREA AND OUTDOOR SERVICE AREAS

MINIMUM LIGHT LEVEL
 -TARGET: 0.2 fc
 -ACHIEVED: 0.2 fc
 AVERAGE LIGHT LEVEL
 -TARGET: ≥1.1 fc
 -ACHIEVED: 1.1 fc
 UNIFORMITY RATIO (MAX/MIN)
 -TARGET: ≤20.0
 -ACHIEVED: 17.5

WALKWAYS

AVERAGE LIGHT LEVEL
 -TARGET: ≥0.2 fc
 -ACHIEVED: 1.6 fc

BUILDING ENTRANCES

MINIMUM LIGHT LEVEL
 -TARGET: ≥2.0 fc
 -ACHIEVED: 2.0 fc

SITE AREA 1 LIGHT LEVEL SUMMARY

PARKING AREA AND OUTDOOR SERVICE AREAS

MINIMUM LIGHT LEVEL
 -TARGET: 0.2 fc
 -ACHIEVED: 0.2 fc
 AVERAGE LIGHT LEVEL
 -TARGET: ≥0.8 fc
 -ACHIEVED: 1.5 fc
 UNIFORMITY RATIO (MAX/MIN)
 -TARGET: ≤20.0
 -ACHIEVED: 23.0

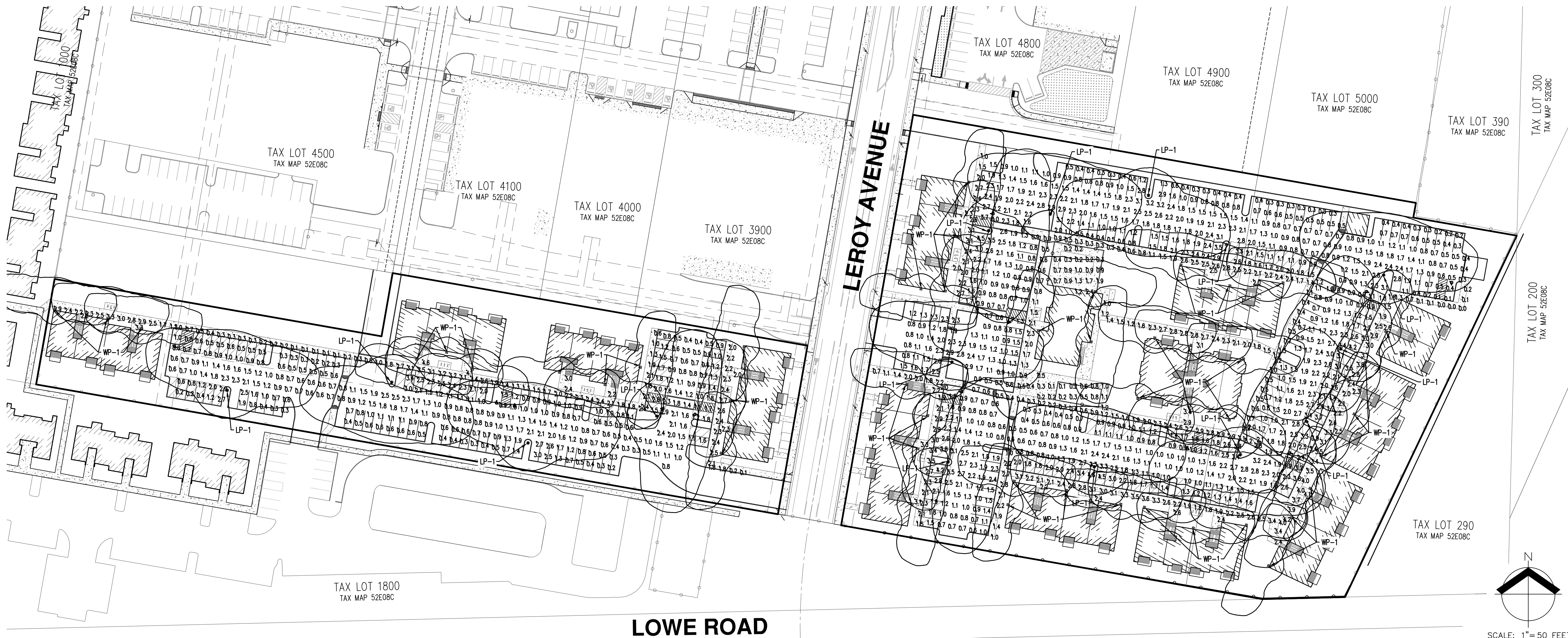
WALKWAYS

AVERAGE LIGHT LEVEL
 -TARGET: ≥0.2 fc
 -ACHIEVED: 1.5 fc

BUILDING ENTRANCES

MINIMUM LIGHT LEVEL
 -TARGET: ≥2.0 fc
 -ACHIEVED: 2.0 fc

LUMINAIRE AND POLE SCHEDULE										
LABEL	TAG	DESCRIPTION	MOUNTING HEIGHT (FT)	ARM LENGTH (FT)	POLE TYPE	QTY	TOTAL LUMENS	LUM. WATTS	LLF	
LP-1	NEW	US ARCHITECTURAL LIGHTING VALULUME LED (VLL-LED-PLD-III-40LED-700mA-WW-1-RAL-8019-T)	20	0.5	AL	15	9,223	65	0.85	
WP-1	NEW	MCGRAW-EDISON GWC GALLEON WALL (GMC-SA1A-730-U-SL2-GM)	15	-	-	46	4,874	143	0.85	



PRELIMINARY SITE LIGHTING PLAN
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON

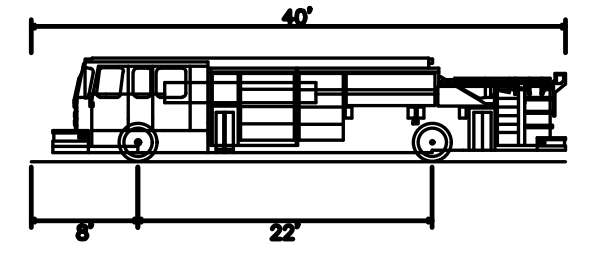


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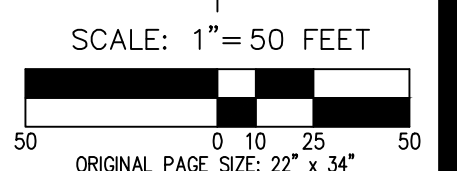
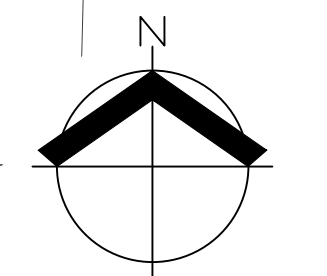
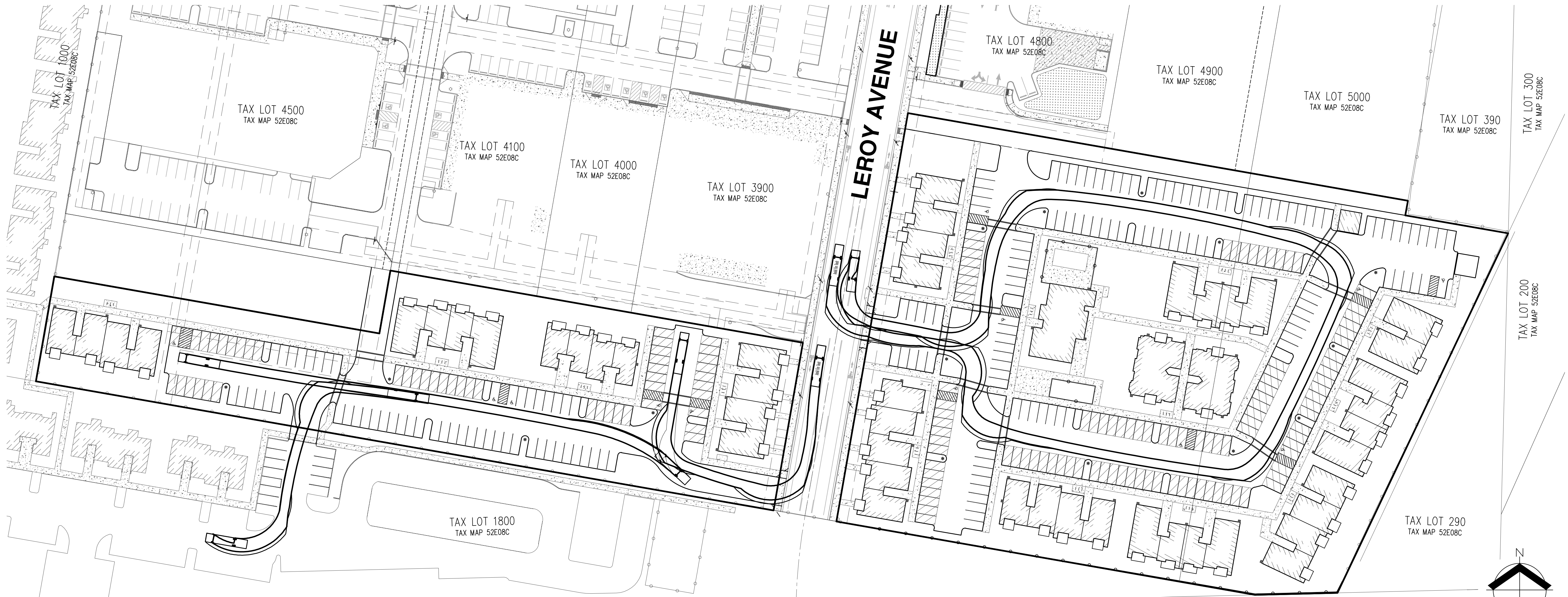
PRELIMINARY FIRE TRUCK TURNING MOVEMENT PLAN
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON

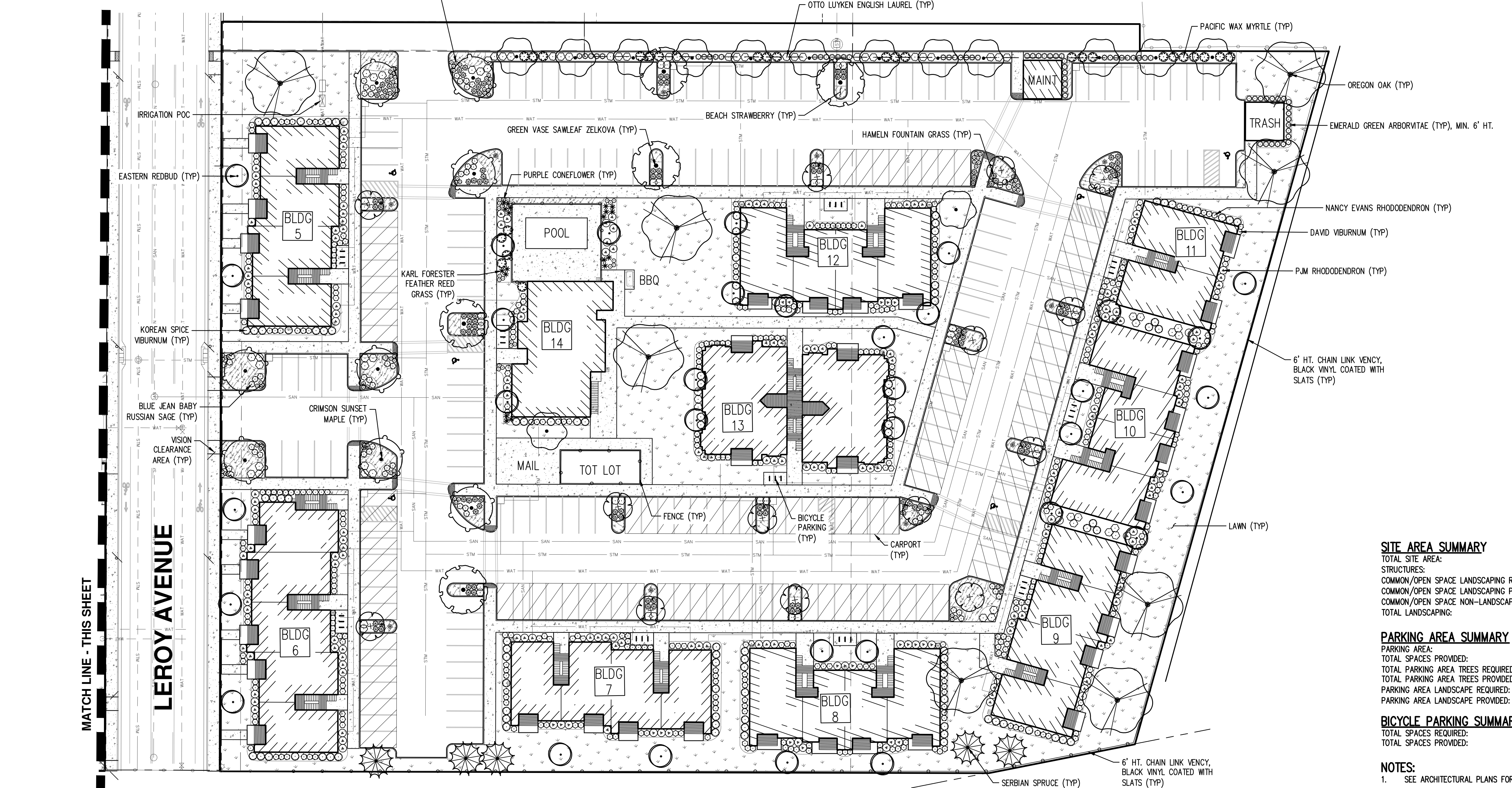
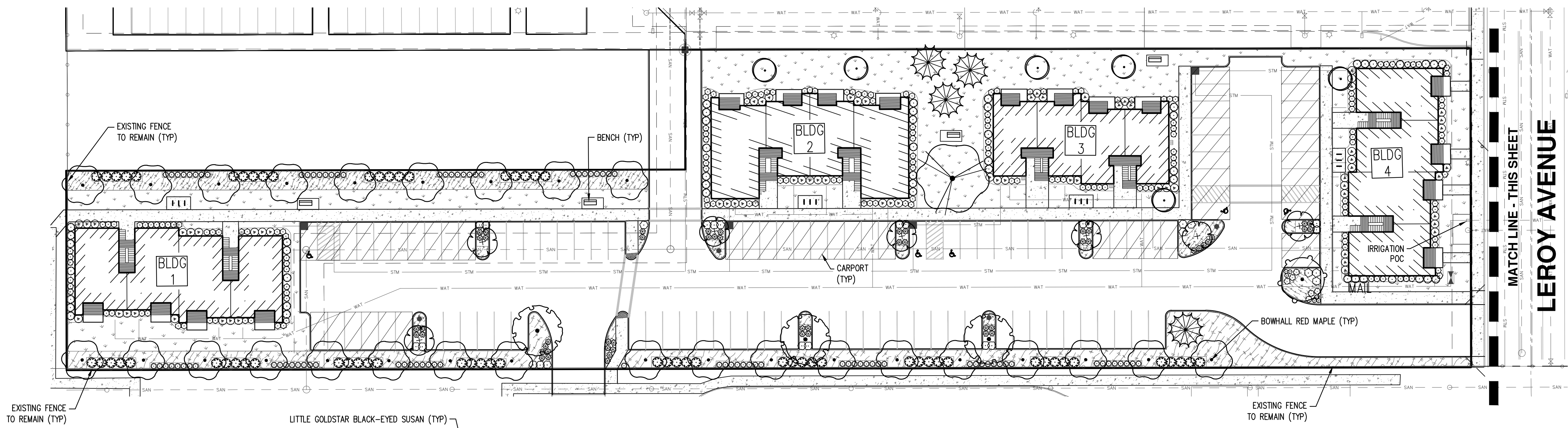
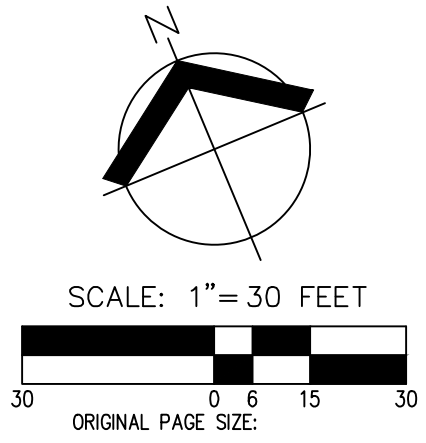


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Pumper Fire Truck	40.00ft
Overall Length	38.167ft
Overall Width	8.00ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.165ft
Track Width	88.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°





SITE AREA SUMMARY		AREA (SF)	% OF TOTAL
TOTAL SITE AREA:		±296,751 SF	
STRUCTURES:		±52,098 SF	(18%)
COMMON/OPEN SPACE LANDSCAPING REQUIRED:		44,513 SF	(15%)
COMMON/OPEN SPACE LANDSCAPING PROVIDED:		±51,087 SF	(17.2%)
COMMON/OPEN SPACE NON-LANDSCAPING:		±8,996 SF	(3%)
TOTAL LANDSCAPING:		±53,144 SF	(18%)

PARKING AREA SUMMARY		±112,734 SF	
PARKING AREA:		323 SPACES	
TOTAL SPACES PROVIDED:		27 TREES (1 PER 12 SPACES)	
TOTAL PARKING AREA TREES PROVIDED:		40 TREES	
PARKING AREA LANDSCAPE REQUIRED:		±11,273 SF (112,734 SF X 10%)	
PARKING AREA LANDSCAPE PROVIDED:		±12,146 SF	(10.8%)

BICYCLE PARKING SUMMARY		76	
TOTAL SPACES REQUIRED:		84	
TOTAL SPACES PROVIDED:			

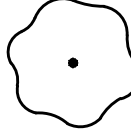




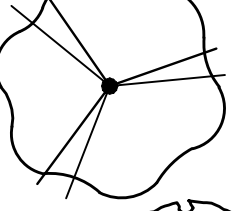
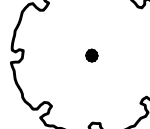



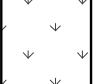
NOTES:
 1. SEE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.

PRELIMINARY LANDSCAPE PLANTING PLAN
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON



JOB NUMBER:	7710-01
DATE:	09/23/2021
DESIGNED BY:	ZTN/NKP
DRAWN BY:	ZTN/NKP
CHECKED BY:	KAH

PRELIMINARY PLANT SCHEDULE

TREES	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	ACER RUBRUM 'BOWHALL'	BOWHALL RED MAPLE	2" CAL MIN./B&B	AS SHOWN
	ACER TRUNCATUM X PLATANOIDES 'JFS-KW202' TM	CRIMSON SUNSET MAPLE	2" CAL MIN./B&B	AS SHOWN
	CARPINUS BETULUS 'FRANS FONTAINE'	FRANS FONTAINE HORNBEAM	2" CAL. B&B	AS SHOWN
	CERCIS CANADENSIS	EASTERN REDBUD	2" CAL MIN./B&B	AS SHOWN
	PICEA OMORIKA	SERBIAN SPRUCE	6'-7' HT. B&B	AS SHOWN
	QUERCUS GARRYANA	OREGON OAK	2" CAL MIN./B&B	AS SHOWN
	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE SAWLEAF ZELKOVA	2" CAL. B&B/MIN	AS SHOWN
SHRUBS	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
*	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	1 GAL CONT.	36" o.c.
o	ECHINACEA PURPUREA	PURPLE CONEFLOWER	1 GAL CONT.	24" o.c.
	MYRICA CALIFORNICA	PACIFIC WAX MYRTLE	5 GAL CONT.	60" o.c.
	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN FOUNTAIN GRASS	1 GAL CONT.	36" o.c.
o	PEROVSKIA ATRIPLICIFOLIA 'BLUE JEAN BABY'	BLUE JEAN BABY RUSSIAN SAGE	1 GAL CONT.	36" o.c.
o	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN ENGLISH LAUREL	3 GAL CONT.	48" o.c.
o	RHODODENDRON X 'NANCY EVANS'	NANCY EVANS RHODODENDRON	3 GAL CONT.	36" o.c.
o	RHODODENDRON X 'P.J.M.'	PJM RHODODENDRON	3 GAL CONT.	48" o.c.
o	RUDEBECKIA FULGIDA 'LITTLE GOLDSTAR'	LITTLE GOLDSTAR BLACK-EYED SUSAN	1 GAL CONT.	24" o.c.
o	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	6' HT. B&B	36" o.c.
o	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	3 GAL CONT.	48" o.c.
o	VIBURNUM DAVIDII	DAVID VIBURNUM	3 GAL CONT.	36" o.c.
GROUND COVERS	DESCRIPTION			
	FRAGARIA CHILOENSIS	BEACH STRAWBERRY	4" POTS	24" o.c.
	LAWN - SEED OR SOD			

PRELIMINARY LANDSCAPE NOTES:

- PRELIMINARY LANDSCAPE PLAN IS INTENDED TO PORTRAY DESIGN INTENT ONLY. PLAN CHANGES, INCLUDING CHANGES TO PLANT VARIETY, LOCATIONS, AND OTHER PLAN ELEMENTS MAY OCCUR PRIOR TO FINAL PLAN APPROVAL, WHERE ALLOWED BY CITY OF MOLALLA STANDARDS.
- ALL LANDSCAPING SHALL CONFORM TO APPLICABLE CITY OF MOLALLA STANDARDS (DEVELOPMENT CODE 17-3.4) AND TO AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1, CURRENT EDITION. ALL LANDSCAPING MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH RECOGNIZED, BEST-PRACTICE INDUSTRY STANDARDS, SUCH AS THOSE ADOPTED BY THE OREGON LANDSCAPE CONTRACTORS BOARD (OLCB).
- CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AND PROVIDING IRRIGATION, AS NECESSARY, FOR ALL LANDSCAPE AREAS, PER MOLALLA DEVELOPMENT CODE 17-3.4.030(C)(17). IRRIGATION SYSTEM SHALL BE DESIGN-BUILD BY THE LANDSCAPE CONTRACTOR.
- ALL PLANT MATERIAL SHALL BE OF HIGH GRADE, HEALTHY, EVENLY BRANCHED, TYPICAL FOR THEIR SPECIES, AND MEET THE SIZE AND GRADING OF THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1). CONTAINERIZED PLANT STOCK SHALL BE FULLY ROOTED, BUT NOT ROOT-BOUND, IN THE CONTAINERS IN WHICH THEY ARE DELIVERED.
- SOIL PREPARATION: ADEQUATE TOPSOIL SHALL BE PROVIDED AND AMENDED AS NECESSARY FOR HEALTHY PLANT ESTABLISHMENT, PER DEVELOPMENT CODE 17-3.4.030(C)(17).
- MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH IN PLANTING BEDS, TAKING CARE TO NOT COVER FOLIAGE OR BURY ROOT CROWNS. WHERE STREET TREES ARE PLANTED IN LAWN AREAS, A 3' DIAMETER MULCH RING SHALL BE APPLIED AROUND EACH TREE TO FACILITATE EASE OF MAINTENANCE AND TO RETAIN SOIL MOISTURE.



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Exhibit B: City Land Use Application Forms



Planning & Community Development
 117 N. Molalla Avenue
 Molalla, OR. 97038
 (503) 759-0219
 Fax: (503) 829-3676

Applicant's Consultant:
 AKS Engineering & Forestry,
 LLC- Zach Pelz, AICP
 PelzZ@aks-eng.com
 503-400-6028
 3700 River Road N, Suite 1
 Keizer, OR 97303

<i>FOR OFFICE USE ONLY:</i>	
Planning File No. : _____	City Approval: _____
Date Received: _____	Title _____
Fee: _____	Date: _____
Land Use Type: II	Fee Paid: _____
Received by: _____	

APPLICATION FOR LAND USE ACTION

Type of Land Use Action Requested: (check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Annexation | <input type="checkbox"/> Conditional Use |
| <input type="checkbox"/> Plan Amendment (Proposed Zone _____) | <input type="checkbox"/> Partition (# of lots _____) |
| <input type="checkbox"/> Planned Unit Development | <input type="checkbox"/> Subdivision (# of lots _____) |
| <input checked="" type="checkbox"/> Site Design Review | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Variance (list standards to be varied in description) | |

Owner/Applicant:

Applicant: Jeff Bivens, I & E Construction Phone: Contact Applicant's Consultant
 Applicant Address: 27375 SW Parkway Avenue, Wilsonville, OR 97070 Email: Contact Applicant's Consultant
 Owner: Cascade Center Molalla, LLC Phone: Contact Applicant's Consultant
 Owner Address: 27375 SW Parkway Avenue, Wilsonville, OR 97070 Email: Contact Applicant's Consultant
 Contact for additional info: AKS Engineering and Forestry, LLC (information provided above, highlighted)

Property Information:

Address: 200 S Leroy Ave., 201 S Leroy Ave., 720 W Main St., and 850 W Main St. Molalla, OR
 Assessors _____
 Map/Taxlot #: Map: 52E08C Tax Lots: 4500, 4600, 4700, and 5000
 Current Use of _____ Zoning _____
 Site: Vacant Designation: General Commercial (C-2)
 Intended Use: Multifamily Homes

Proposed Action:

I & E Construction (Applicant) is applying for Site Design Review for a multifamily residential housing community consisting of approximately 150 dwelling units including open space, pedestrian facilities, and parking. This proposal will create a harmonious mixed-use neighborhood consisting of high-demand housing that is adjacent to conveniently located commercial uses on neighboring lots.

Proposed Use: Residential Multifamily

Proposed No. of Phases (one each year): 1


Authorizing Signatures:

I hereby certify that the information on this application and attachments are correct and that the property affected by this application is in the exclusive ownership or control of the applicant, or that the applicant has the consent of all partners in ownership of the affected property. An authorization letter from the property owner has been attached in the event that the owner's signature has not been provided below.

Property Owner(s):

Kiril Ivanov

Print or Type



Signature

Print or Type

Signature

Applicant(s) or Authorized Agent:

Jeff Bivens

Print or Type



Signature

Print or Type

Signature

The following materials must be submitted with your application or it will not be accepted at the counter. Once taken at the counter, the City has up to 30 days to review the materials submitted to determine if we have everything we need to complete the review. Applicant can verify submittal includes specific materials necessary for the application per checklist.

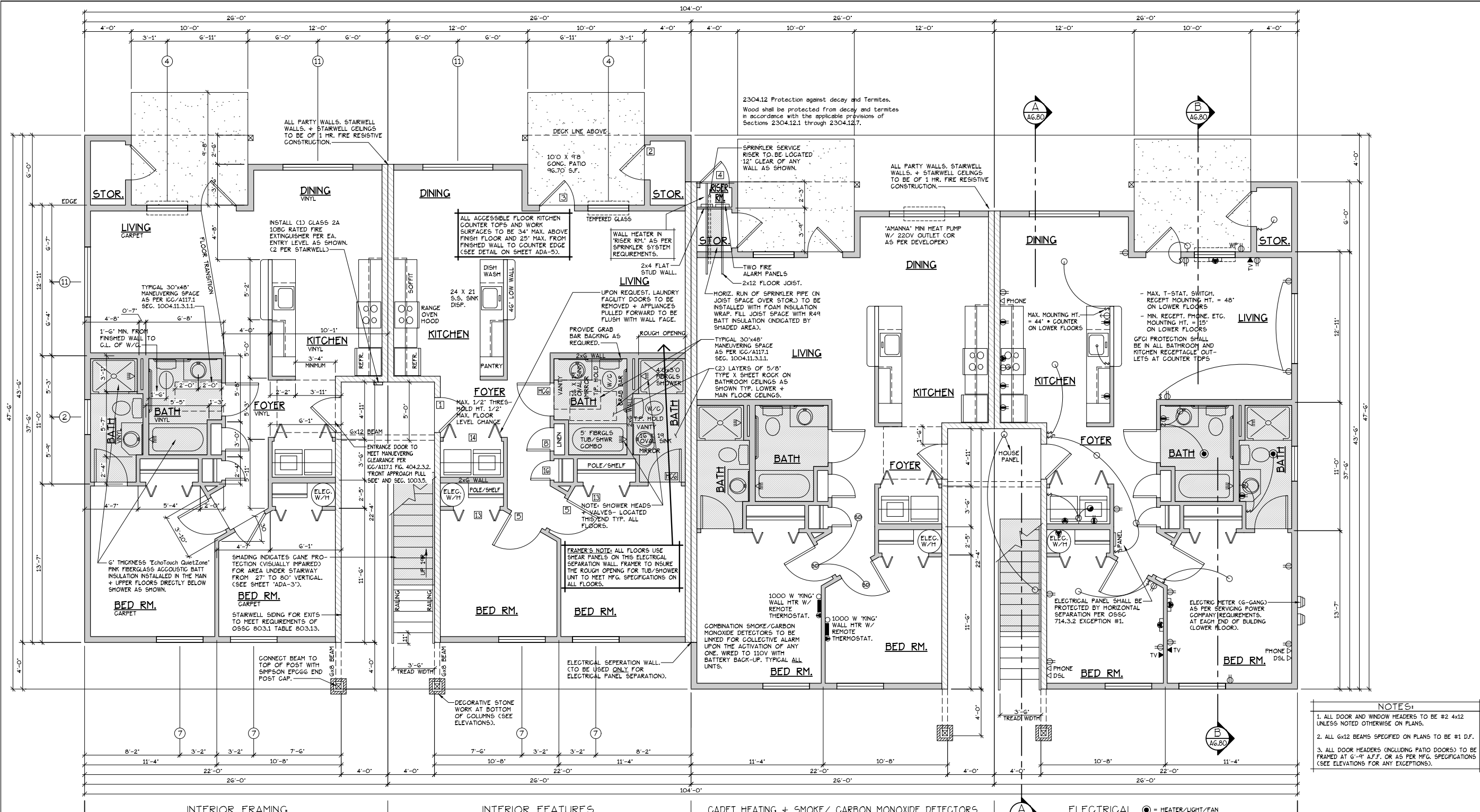
- 3 Copies of Application Form*** completely filled out and signed by the property owner (or person with authority to make decisions on the property).
- Copy of Deed** to verify ownership, easements, etc.
- At least 3 folded** sets of plans*
- At least 3 copies** of narrative addressing application criteria*
- Fee** (along with calculations utilized to determine fee if applicable)

***Please Note** that the required numbers of copies identified on the checklist are required for completeness; however, upon initial submittal applicants are encouraged to submit only 3 copies for completeness review. Prior to completeness, the required number of copies identified on the checklist and one full electronic copy will be required to be submitted.

Exhibit C: Architectural Plans

LOWER FLOOR PLAN

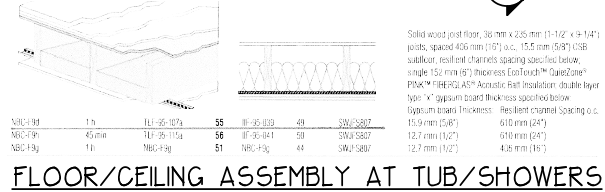
CASCADE PLACE APARTMENTS



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

LOWER FLOOR PLAN
SCALE: 1/4" = 1'-0"
(HANDICAP ADAPTABLE/ACCESSIBLE)
A UNIT = 952 S.F.
TYPE A UNITS
BLD. 1,7,+9

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAILS FOR SHEETROCK APPLICATION.



SEE 'GENERAL STRUCTURAL NOTES' ON SHEET AG.20 BEFORE BEGINNING ANY CONSTRUCTION.

DOOR SCHEDULE

NO.	WIDTH	HEIGHT	THICK	TYP.	MATL.	FIN.	TYP.	MATL.	FIN.	REMARKS
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	A	METAL	PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD WEATHERSTRIP CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	B	METAL	PAINT	G PANEL W/ THRESHOLD WEATHERSTRIP AND KEYS LOCK
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	C	METAL	PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD + WEATHERSTRIP W/ THRESHOLD WEATHERSTRIP AND KEYS LOCK
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	D	METAL	PAINT	**
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	**
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN	POCKET DOOR, ***
8	2'-6"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
9	2'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN	B-PASS DOOR
10	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN	B-PASS DOOR
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN	B-FOLD DOOR
12	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN	B-FOLD DOOR
13	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN	B-FOLD DOOR
14	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	N	HEMLOCK	STAIN	B-FOLD DOOR

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1 SEC. 1004.5.2.1 WHEN FULLY OPENED.

WINDOW SCHEDULE

NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS
1	3'0 X 1'0	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12
2	3'0 X 1'6	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12
3	3'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4X12
4	3'6 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
5	4'0 X 3'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
6	4'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
7	4'0 X 5'0	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)
8	5'0 X 2'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
9	5'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
10	5'0 X 5'0	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)
11	6'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
12	3'0 X 4'0	GASEMENT	MILGARD	WHITE	YES	GASEMENT W/ SCREEN	DF #1 4X12

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.G.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 3G" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONGEALING SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER SQUARE FOOT.
 8. ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

HANDICAP UNIT NOTES:

THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OESG 2019 REVISED TO BE EFFECTIVE JANUARY 1, 2020. CHAPTER 11 OF THE OESG 2019 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI 117.1-1003, WITHIN ICC/ANSI A117.1 CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS. CHAPTER 10 SETS OUT THE CODE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.

THE INTENT IS THAT 'ALL' GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

WITHIN THE PROJECT THERE ARE ALSO 'TYPE B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1003.

WITHIN THE PROJECT THERE ARE ALSO 'TYPE B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004. ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE 'TYPE B' UNITS UNLESS SPECIFICALLY DESIGNATED 'TYPE A' UNITS. WITHIN THESE 'TYPE B' UNITS THE MAIN BATHROOM (OR ONLY BATHROOM) SHALL BE DESIGNATED AS AN 'OPTION B' ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.

ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 5 THAT SET OUT SPECIFIC INFORMATION FROM OESG 2019, CHAPTER 10 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN



MAIN FLOOR PLAN

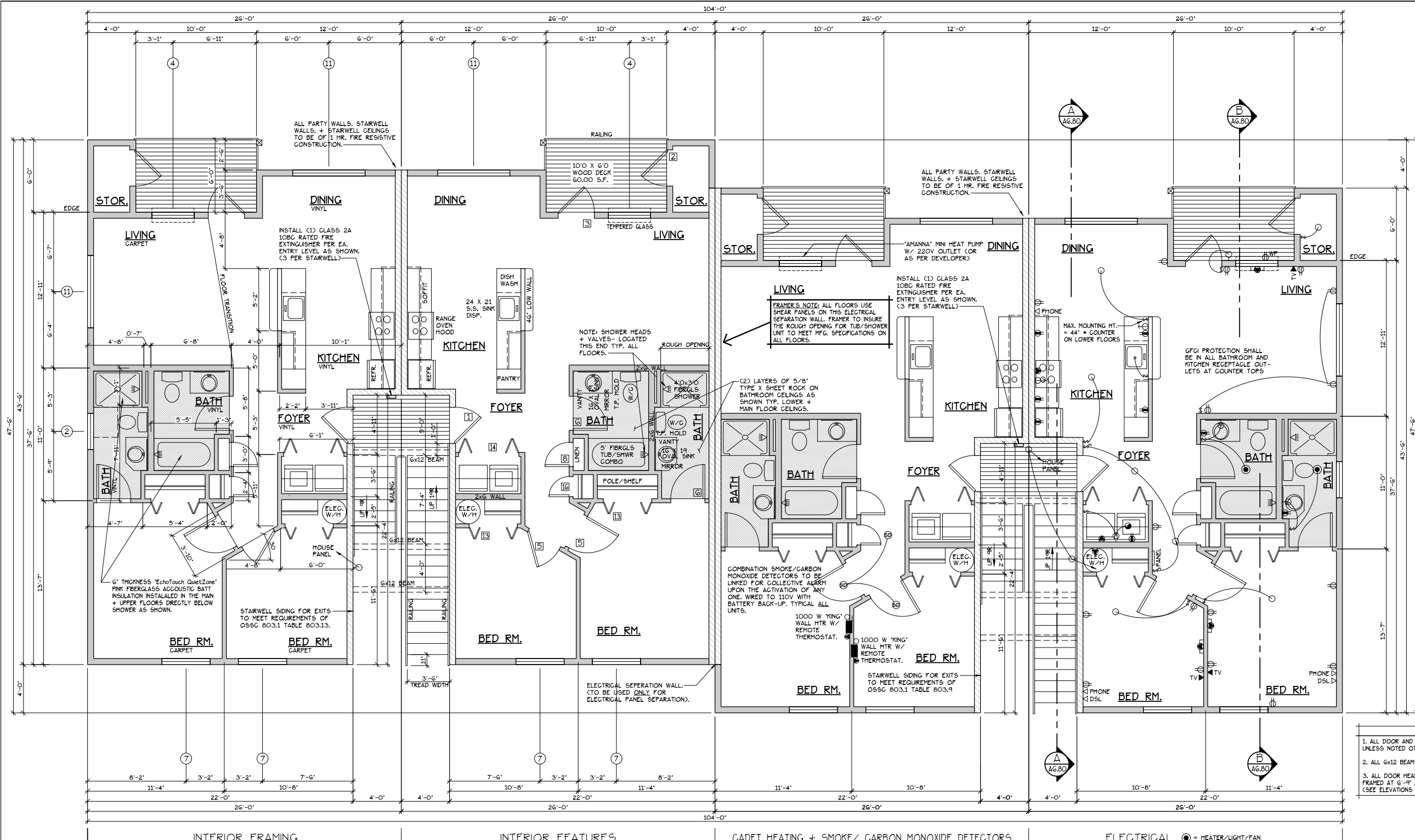
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A1.41



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

INTERIOR FRAMING | INTERIOR FEATURES | CADET HEATING + SMOKE/ CARBON MONOXIDE DETECTORS | ELECTRICAL ● = HEATER/LIGHT/FAN

MAIN FLOOR PLAN
SCALE: 1/4" = 1'-0"

TYPE A UNITS

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

'A' UNIT = 952 S.F.

BLD. 1.7+9

DOOR SCHEDULE										
DOORS					FRAMES					REMARKS
ID	WIDTH	HEIGHT	THICK	TYPE	MATL.	FIN.	TYPE	MATL.	FIN.	
D1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
D2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYPAD LOCK.
D3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD & WEATHERSTRIP W/ THRESHOLD, WEATHERSTRIP AND KEYPAD LOCK.
D4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT	
D5	3'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	E	HEMLOCK	STAIN	
D6	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN	
D7	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	G	HEMLOCK	STAIN	
D8	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	H	HEMLOCK	STAIN	
D9	2'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	I	HEMLOCK	STAIN	
D10	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	J	HEMLOCK	STAIN	POCKET DOOR
D11	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	K	HEMLOCK	STAIN	POCKET DOOR, ***
D12	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	L	HEMLOCK	STAIN	B-PASS DOOR
D13	5'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	M	HEMLOCK	STAIN	B-PASS DOOR
D14	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	N	HEMLOCK	STAIN	B-PASS DOOR
D15	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	O	HEMLOCK	STAIN	B-FOLD DOOR
D16	5'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	P	HEMLOCK	STAIN	B-FOLD DOOR
D17	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	Q	HEMLOCK	STAIN	B-FOLD DOOR
D18	11'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	R	HEMLOCK	STAIN	B-FOLD DOOR

WINDOW SCHEDULE									
ID	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
W1	3'0 X 1'0	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
W2	3'0 X 1'6	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
W3	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12		
W4	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
W5	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
W6	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
W7	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
W8	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
W9	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
W10	5'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
W11	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
W12	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4x12		

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4, + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLOURESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1 SEC. 1004.5.2.1 WHEN FULLY OPENED.

CONSTRUCTION TYPE V B SPRINKLED.

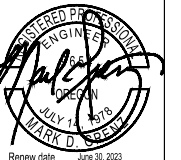
SEE 'GENERAL STRUCTURAL NOTES' ON SHEET AG.20 BEFORE BEGINNING ANY CONSTRUCTION.

UPPER FLOOR PLAN

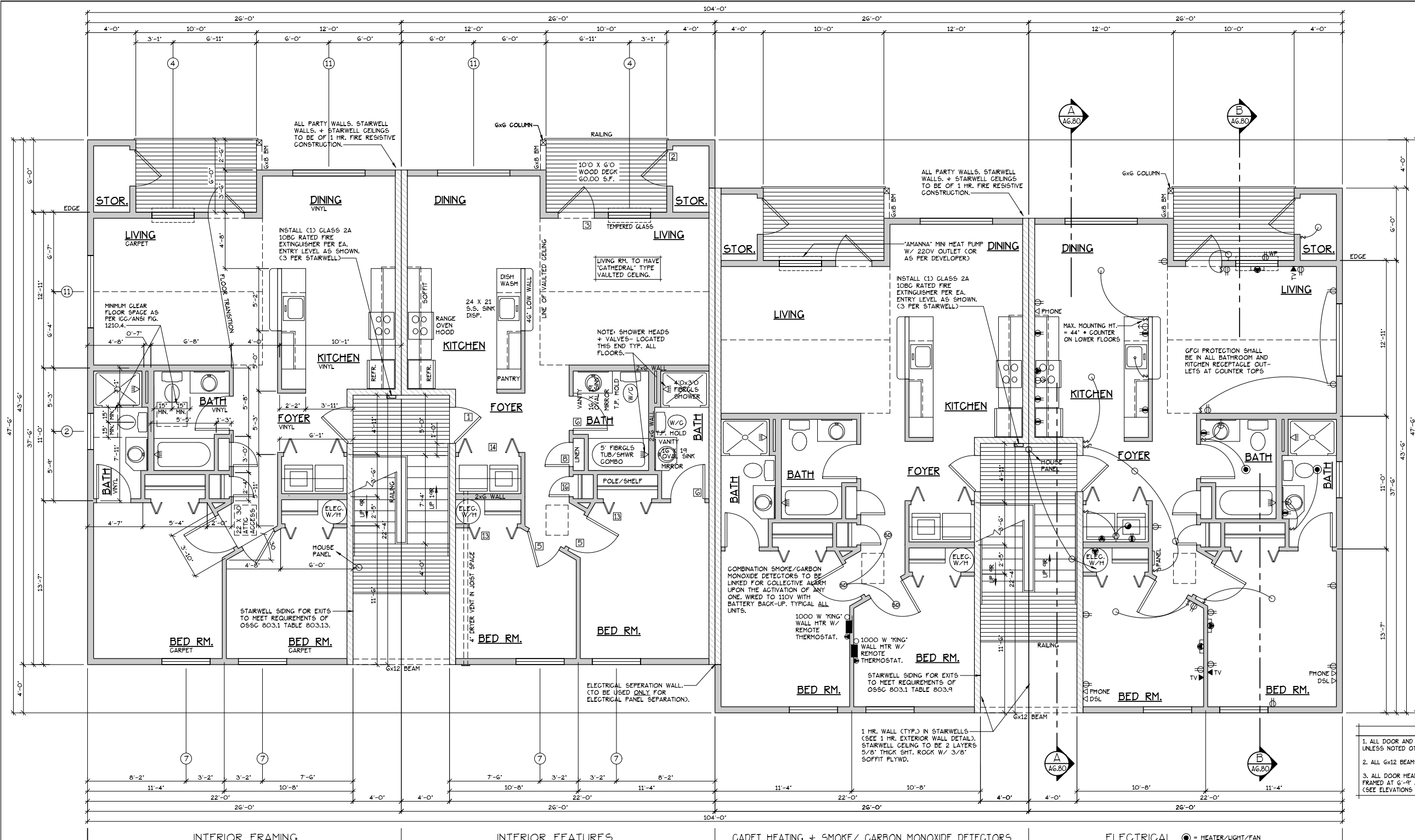
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A150



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"
TYPE A UNITS
'A' UNIT = 952 S.F.
BLD. 1.7,+9

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

DOOR SCHEDULE									
NO.	DOORS			FRAMES			REMARKS		
	WIDTH	HEIGHT	THICK	MATL.	FIN.	TYE	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN
9	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN
10	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN
11	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN
12	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN
13	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
1	3'0 X 1'0	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12		
2	3'0 X 1'6	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ SCREEN	DF #1 4X12		
3	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ FROSTED GLASS	DF #1 4X12		
4	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
5	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
6	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
7	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
8	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
9	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
10	5'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
11	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
12	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4X12		

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

NOTE: MAN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT. OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

CONSTRUCTION TYPE V B SPRINKLED.

BUILDING ELEVATIONS

CASCADE PLACE APARTMENTS

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

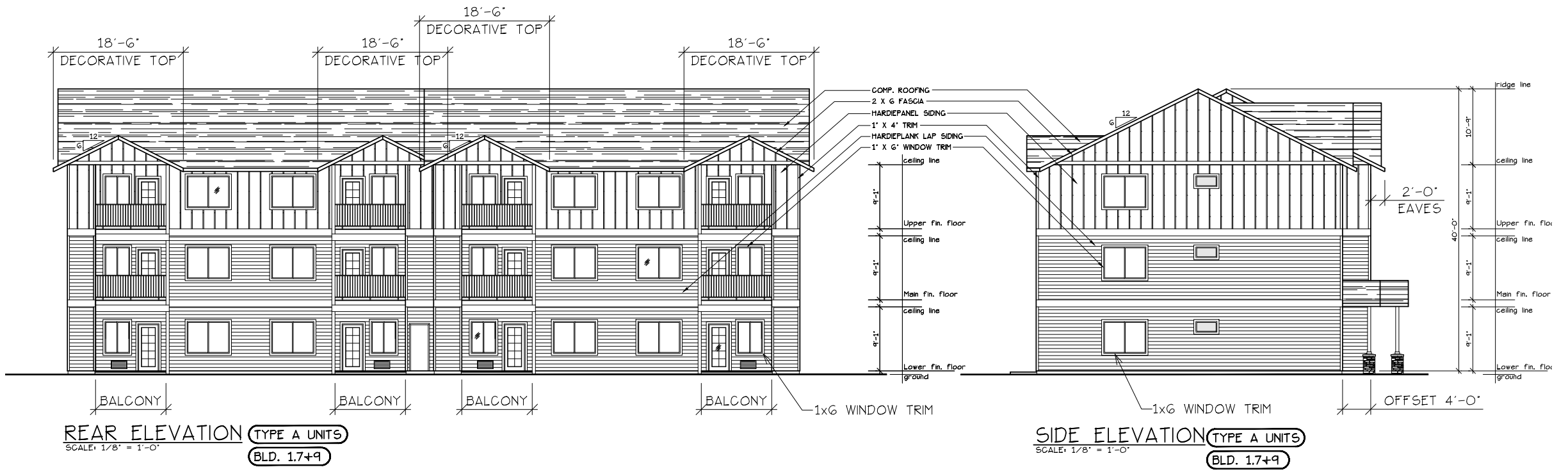
Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN

JOB # 7312



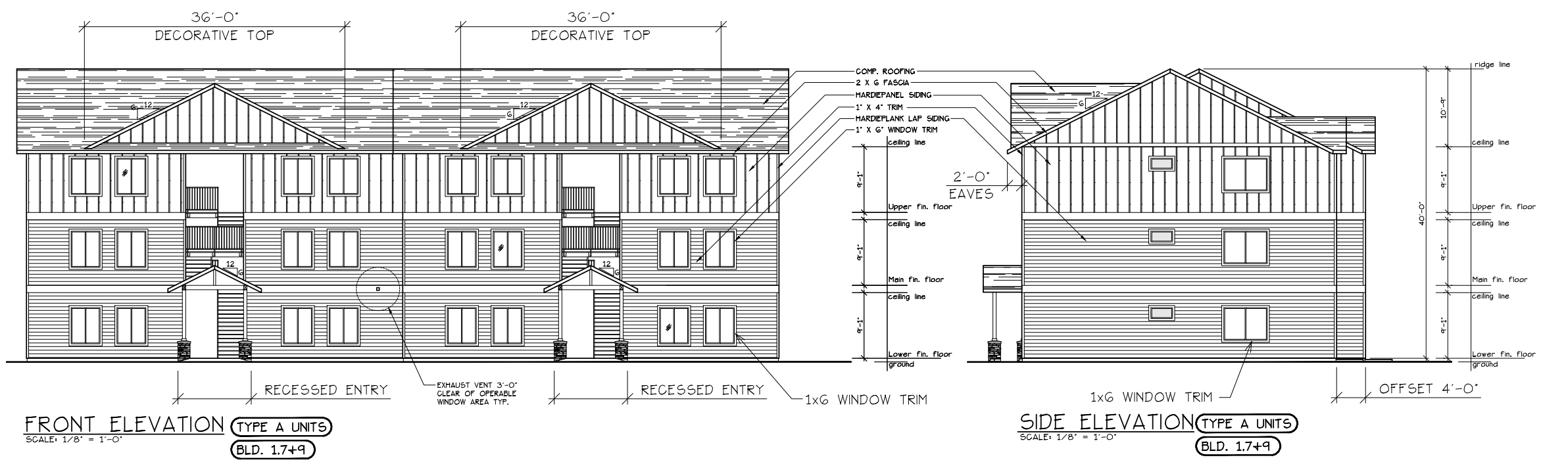
Renew Date: June 30, 2025

A1.90



REAR ELEVATION (TYPE A UNITS)
SCALE: 1/8" = 1'-0"
BLD. 1.7+9

SIDE ELEVATION (TYPE A UNITS)
SCALE: 1/8" = 1'-0"
BLD. 1.7+9



FRONT ELEVATION (TYPE A UNITS)
SCALE: 1/8" = 1'-0"
BLD. 1.7+9

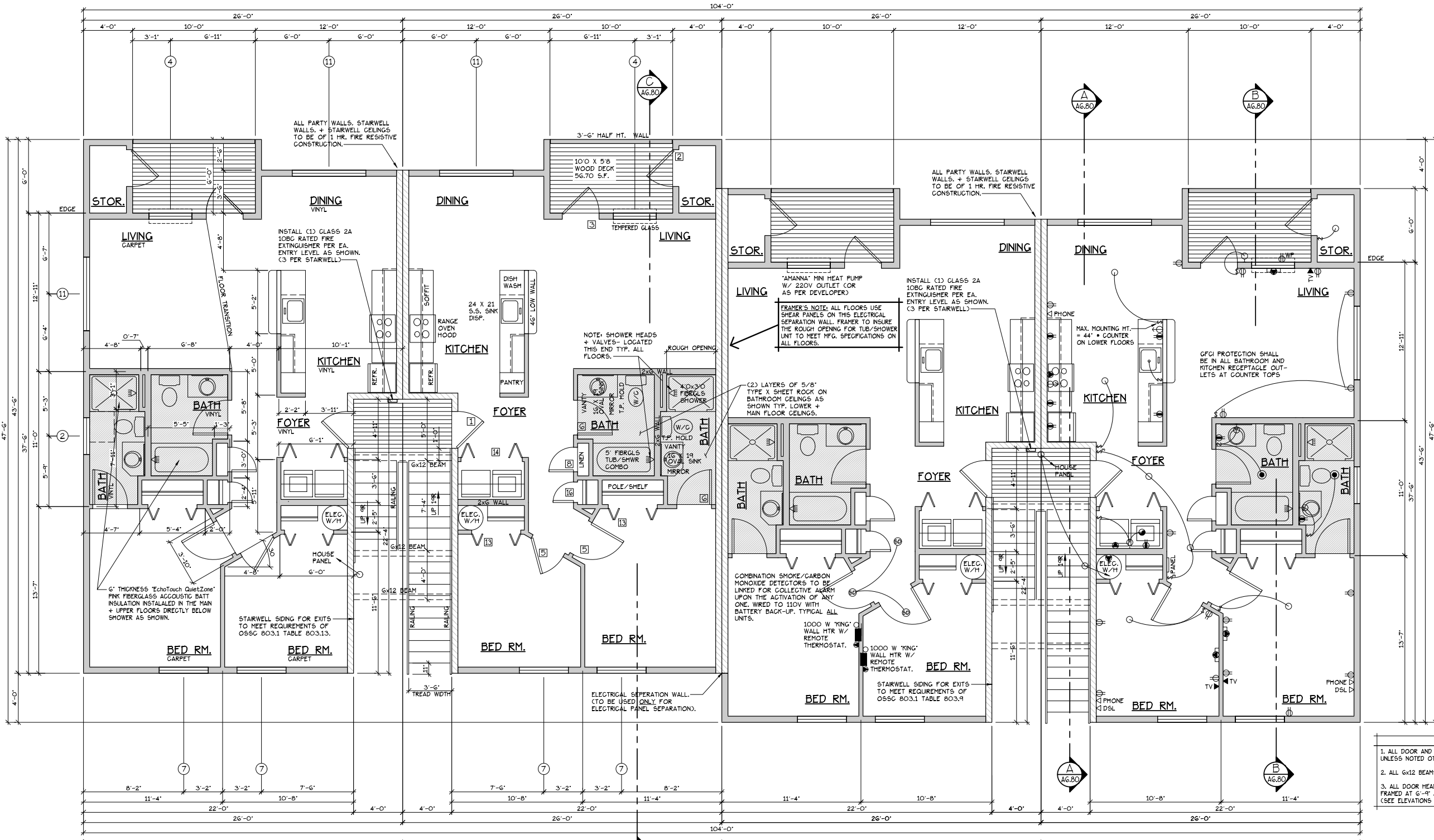
SIDE ELEVATION (TYPE A UNITS)
SCALE: 1/8" = 1'-0"
BLD. 1.7+9

BUILDING TYPE 1 (12 TYPE A UNITS)
*BUILDINGS: 1,7+9

- ARCHITECTURAL FEATURES:**
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - OFFSETS (4' OFFSET IN FACADE).
 - DECORATIVE TOP (PITCHED ROOF).

MAIN FLOOR PLAN

CASCADE PLACE APARTMENTS



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

MAIN FLOOR PLAN
SCALE: 1/4" = 1'-0"

TYPE A UNITS

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

'A' UNIT = 952 S.F.

BLD. 4+5

DOOR SCHEDULE										
DOORS					FRAMES					REMARKS
#	WIDTH	HEIGHT	THICK	TYE	MATL.	FIN.	TYE	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT	G PANEL 60 MIN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD & WEATHERSTRIP
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT	W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK
5	3'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	E	HEMLOCK	STAIN	**
6	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR
7	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	G	HEMLOCK	STAIN	POCKET DOOR, ***
8	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
9	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	I	HEMLOCK	STAIN	B-PASS DOOR
10	5'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	J	HEMLOCK	STAIN	B-PASS DOOR
11	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	K	HEMLOCK	STAIN	B-FOLD DOOR
12	5'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	L	HEMLOCK	STAIN	B-FOLD DOOR
13	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	M	HEMLOCK	STAIN	B-FOLD DOOR
14	11'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	N	HEMLOCK	STAIN	B-FOLD DOOR

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

WINDOW SCHEDULE									
#	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
1	3'0 X 1'0	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
2	3'0 X 1'6	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
3	3'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12		
4	3'6 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
5	4'0 X 3'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
6	4'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
7	4'0 X 5'0	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
8	5'0 X 2'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
9	5'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
10	5'0 X 5'0	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
11	6'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
12	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4x12		

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4, + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET AG.20 BEFORE BEGINNING ANY CONSTRUCTION.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLOURESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

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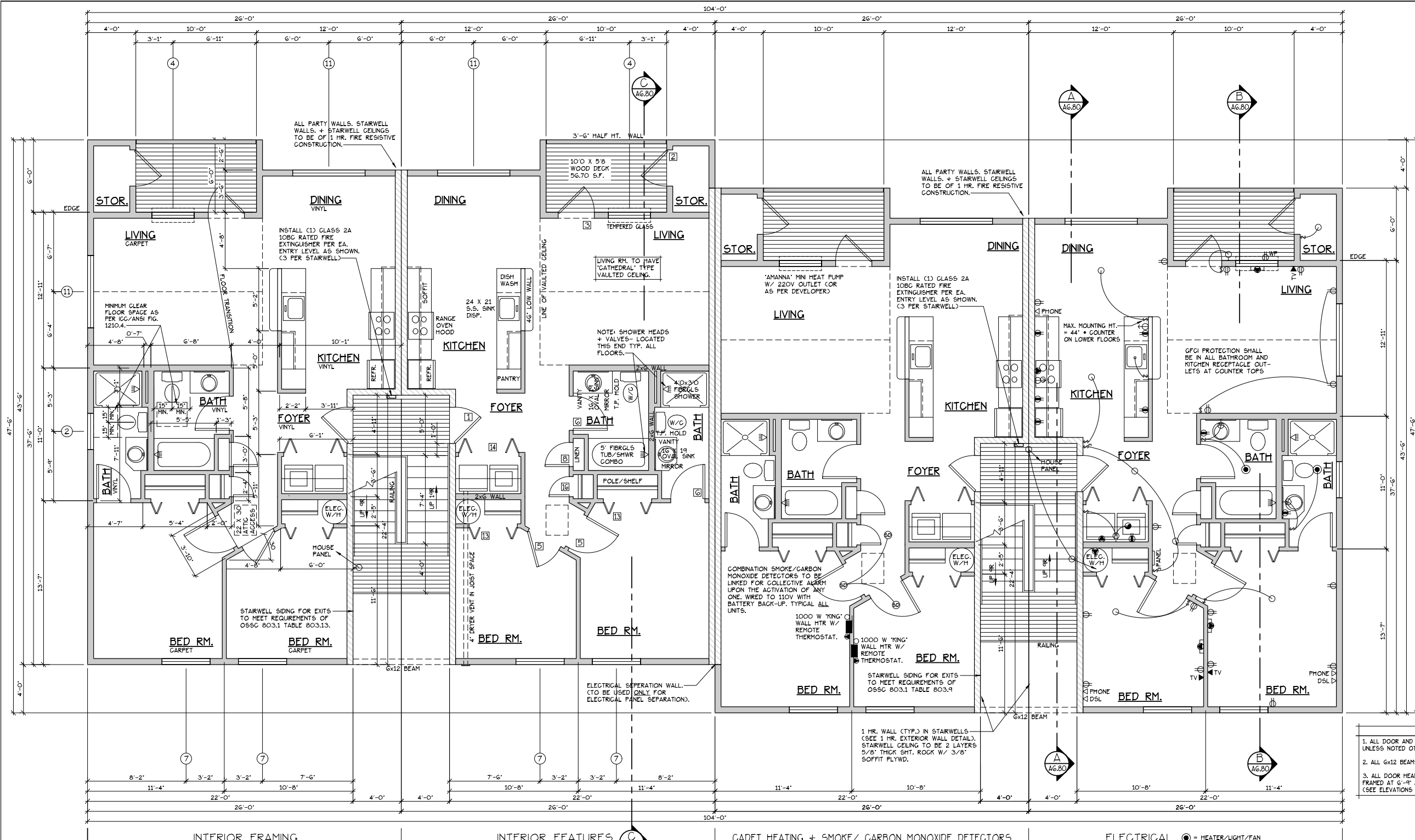
Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A2.41

UPPER FLOOR PLAN

CASCADE PLACE APARTMENTS



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"
TYPE A UNITS
'A' UNIT = 952 S.F.
BLD. 4+5

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

DOOR SCHEDULE									
#	DOORS			FRAMES			REMARKS		
	WIDTH	HEIGHT	THICK	MATL.	FIN.	TYE	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN
9	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN
10	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN
11	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN
12	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN
13	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN

WINDOW SCHEDULE									
#	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
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3	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4X12		
4	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
5	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
6	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
7	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
8	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
9	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
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11	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
12	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4X12		

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

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- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT. OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

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Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



Renew Date: July 31, 2023
A2.50

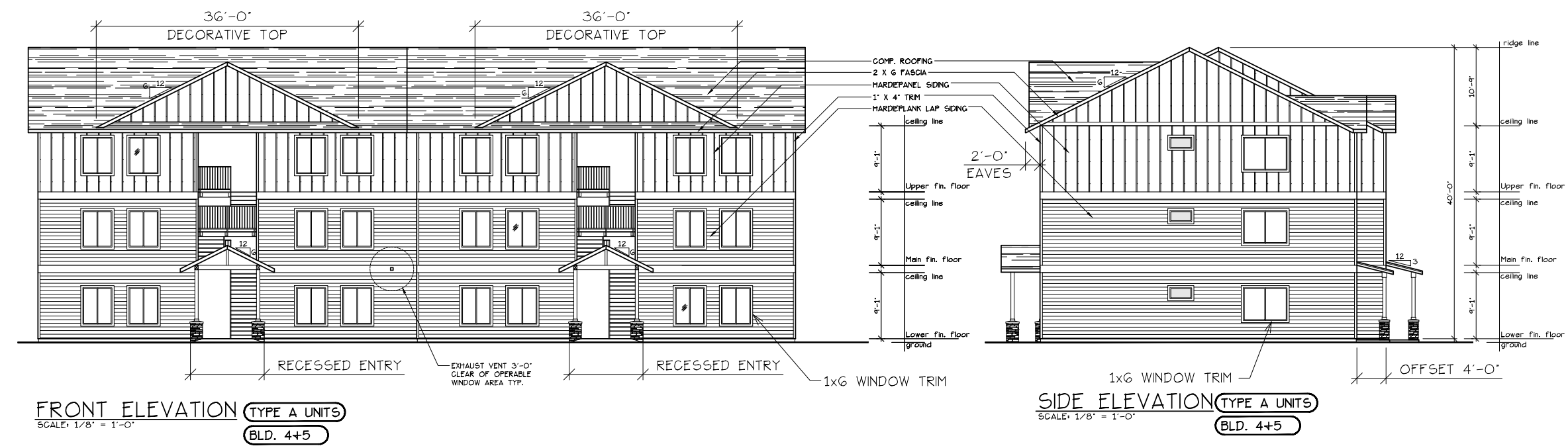
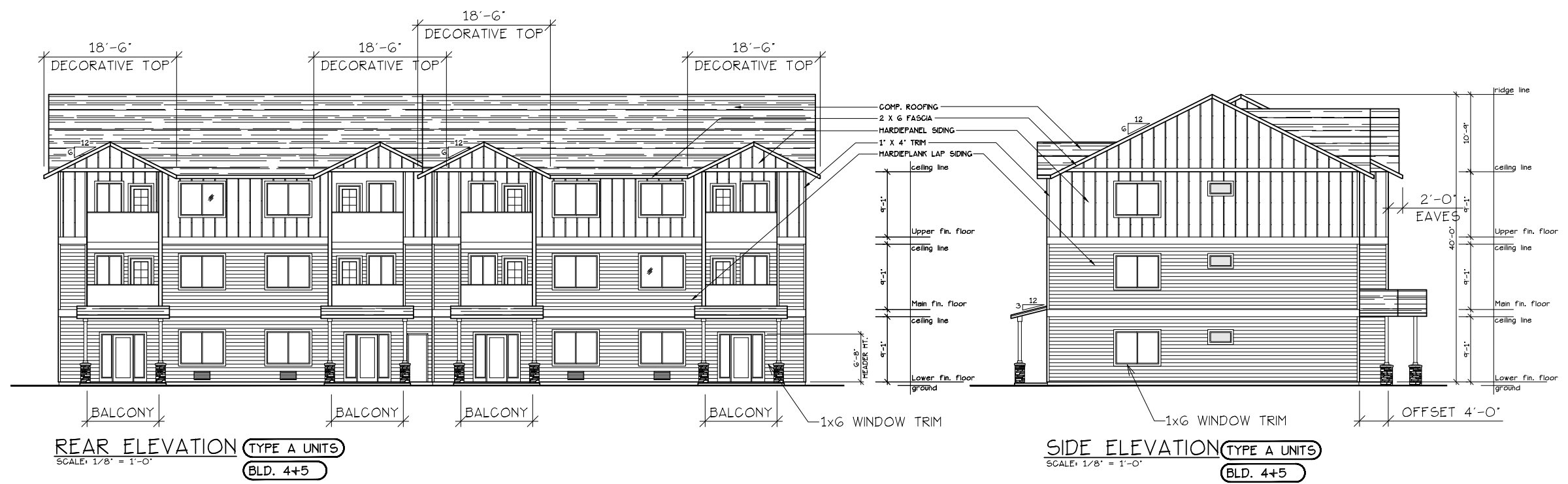
BUILDING ELEVATIONS

CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

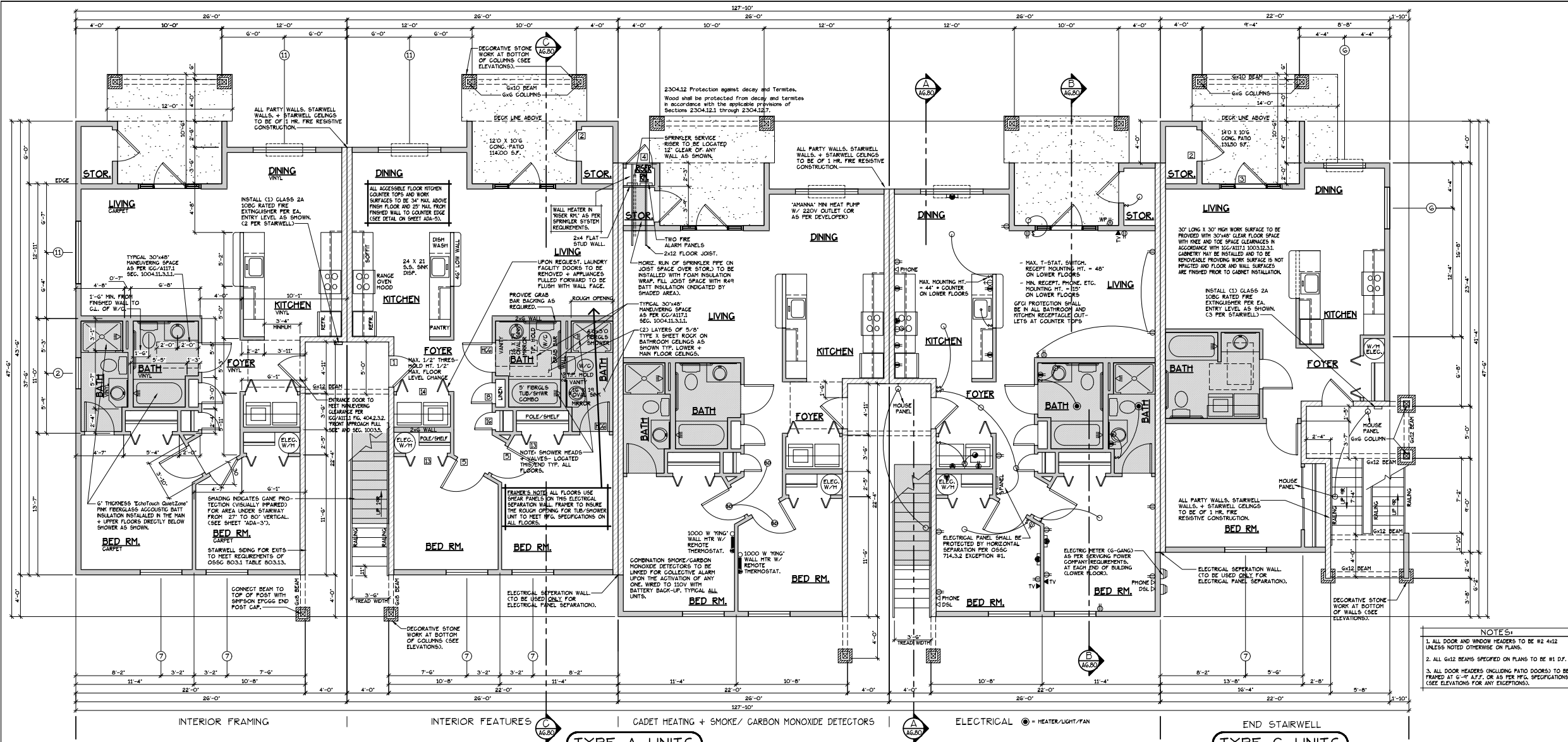
DESIGN: P.L.M.
 DRAWN: G.J.D.
 CHECKED: M.D.G.
 DATE: Jul-21
 SCALE: AS SHOWN
 JOB # 7312

REGISTERED PROFESSIONAL ENGINEER
 JULY 14, 1976
 MARK D. GREY
 Renew Date: June 30, 2025



BUILDING TYPE 2 (12 TYPE A UNITS)
 *BUILDINGS: 4+5

- ARCHITECTURAL FEATURES:**
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - OFFSETS (4' OFFSET IN FACADE).
 - DECORATIVE TOP (PITCHED ROOF).



LOWER FLOOR PLAN
 SCALE: 3/16" = 1'-0"
 (HANDICAP ADAPTABLE/ACCESSIBLE)
 'A' UNIT = 952 S.F.

BLD. 6
 CONSTRUCTION TYPE V B SPRINKLED
 SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

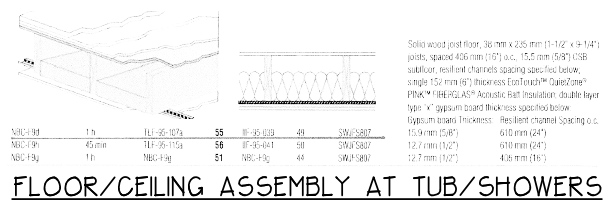
- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 8'-4" R.I.T. OR AS PER PERM. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

DOOR SCHEDULE											
DOORS			FRAMES			REMARKS					
#	WIDTH	HEIGHT	THICK	TYP.	MATL.	FIN.	TYP.	MATL.	FIN.		
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.	
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PANT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK	
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PANT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD & WEATHERSTRIP	
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PANT	W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK	
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	**	
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR	
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN	POCKET DOOR, ***	
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	POCKET DOOR, ***	
9	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN	B-PASS DOOR	
10	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN	B-PASS DOOR	
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN	B-FOLD DOOR	
12	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN	B-FOLD DOOR	
13	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN	B-FOLD DOOR	
14	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	N	HEMLOCK	STAIN	B-FOLD DOOR	

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
 ** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

WINDOW SCHEDULE											
#	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS				
1	3'0" X 1'0"	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12				
2	3'0" X 1'6"	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12				
3	3'0" X 4'6"	VNYL SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4X12				
4	3'6" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12				
5	4'0" X 3'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12				
6	4'0" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12				
7	4'0" X 5'0"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)				
8	5'0" X 2'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12				
9	5'0" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12				
10	5'0" X 5'0"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)				
11	6'0" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12				
12	3'0" X 4'0"	GASEMENT	MILGARD	WHITE	YES	GASEMENT W/ SCREEN	DF #1 4X12				

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS & HARDWARE TO COMPLY WITH ICC/A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.



FLOOR/CEILING ASSEMBLY AT TUB/SHOWERS

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE & OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. & 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 3G" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.

GENERAL NOTES:

1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
4. ALL BATH FANS TO HAVE MIN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
8. ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

HANDICAP UNIT NOTES:

THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OESG 2019 REVISED TO BE EFFECTIVE JANUARY 1, 2020. CHAPTER 11 OF THE OESG 2019 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI A117.1-1003, WITHIN ICC/ANSI A117.1, CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS. CHAPTER 10 SETS OUT THE CODE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.

THE INTENT IS THAT 'ALL' GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

WITHIN THE PROJECT THERE ARE ALSO 'TYPE B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1003.

WITHIN THE PROJECT THERE ARE ALSO 'TYPE C' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004. ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE 'TYPE B' UNITS UNLESS SPECIFICALLY DESIGNATED 'TYPE A' UNITS. WITHIN THESE 'TYPE B' UNITS THE MAIN BATHROOM (OR ONLY BATHROOM) SHALL BE DESIGNATED AS AN 'OPTION B' ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.

ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 5 THAT SET OUT SPECIFIC INFORMATION FROM OESG 2019, CHAPTER 10 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT SPECIFIC MINIMUM ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.

LOWER FLOOR PLAN

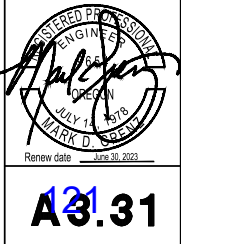
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT THE WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

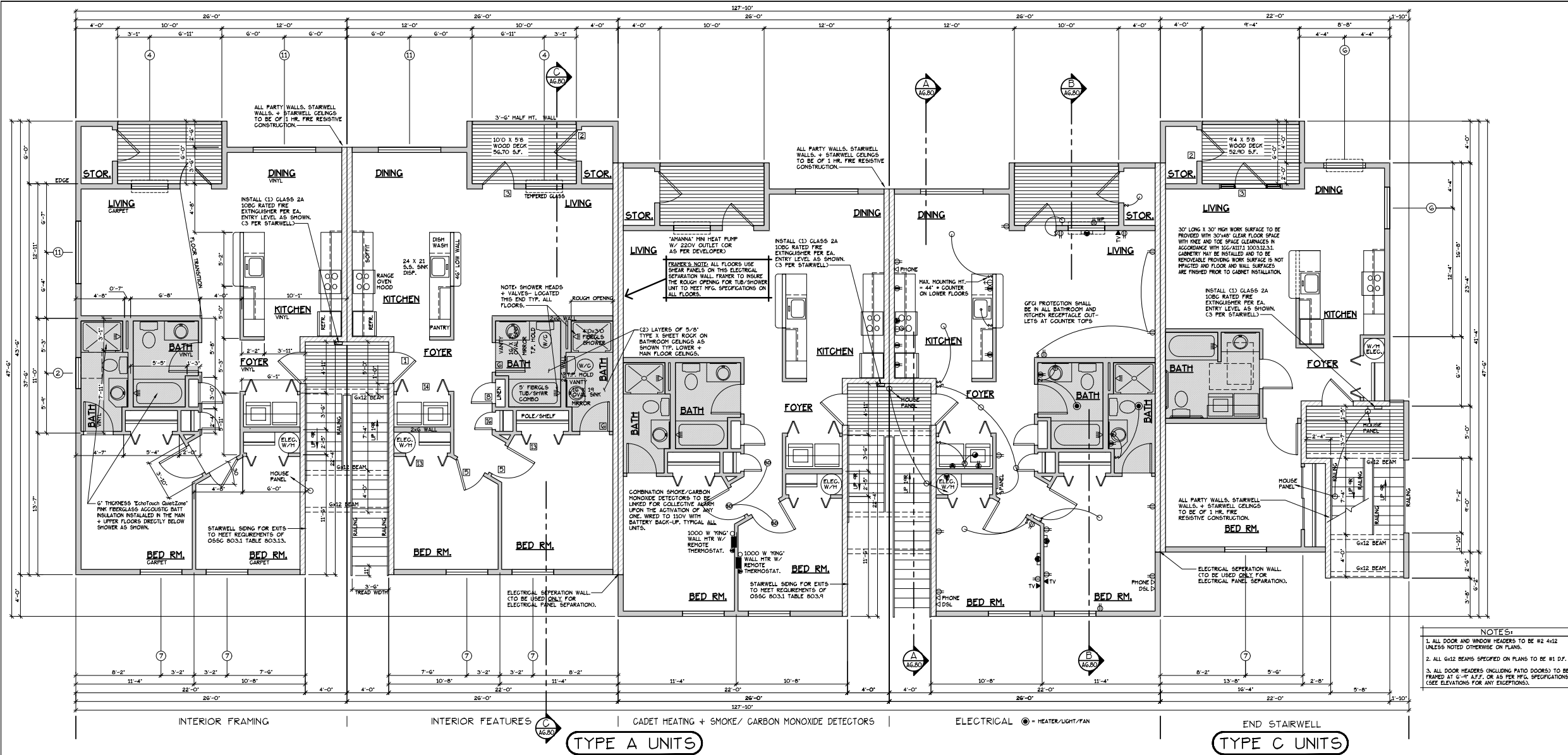
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
 Drawn: G.L.D.
 Checked: M.D.G.
 Date: Jul-21
 Scale: AS SHOWN

JOB # 7312



CASCADE PLACE APARTMENTS
MAIN FLOOR PLAN



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL G12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 8'-4" A.F.F. OR AS PER IFC SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

MAIN FLOOR PLAN
SCALE: 3/16" = 1'-0"
*A' UNIT = 952 S.F.
BLD. G
CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

DOOR SCHEDULE										
NO.	DOORS			FRAMES			REMARKS			
	WIDTH	HEIGHT	THICK	MATL.	FIN.	TYF.	MATL.	FIN.		
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYPED LOCK
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD + WEATHERSTRIP
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT	W/ THRESHOLD, WEATHERSTRIP AND KEYPED LOCK
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	**
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	**
9	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR
10	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	POCKET DOOR, **
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	POCKET DOOR, **
12	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-PASS DOOR
13	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-PASS DOOR
14	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-PASS DOOR
15	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
16	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
17	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
18	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
							NO.	SIZE	TYPE
1	3'0" X 1'0"	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1	4x12	
2	3'0" X 1'6"	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1	4x12	
3	3'0" X 4'6"	VNLY SGL.	MILGARD	WHITE	YES	SINGLE MUNG W/ SCREEN	DF #1	4x12	
4	3'6" X 4'6"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
5	4'0" X 3'6"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
6	4'0" X 4'6"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
7	4'0" X 5'0"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1	Gx8 (SEE ALT. HEADER DETAIL SHT. A29.4D)	
8	5'0" X 2'6"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
9	5'0" X 4'6"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
10	5'0" X 5'0"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1	Gx8 (SEE ALT. HEADER DETAIL SHT. A29.4D)	
11	6'0" X 4'6"	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
12	3'0" X 4'0"	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1	4x12	

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION DETAIL ON SHEET A29.4D.

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET AG.20 BEFORE BEGINNING ANY CONSTRUCTION.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 GPM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLOURESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

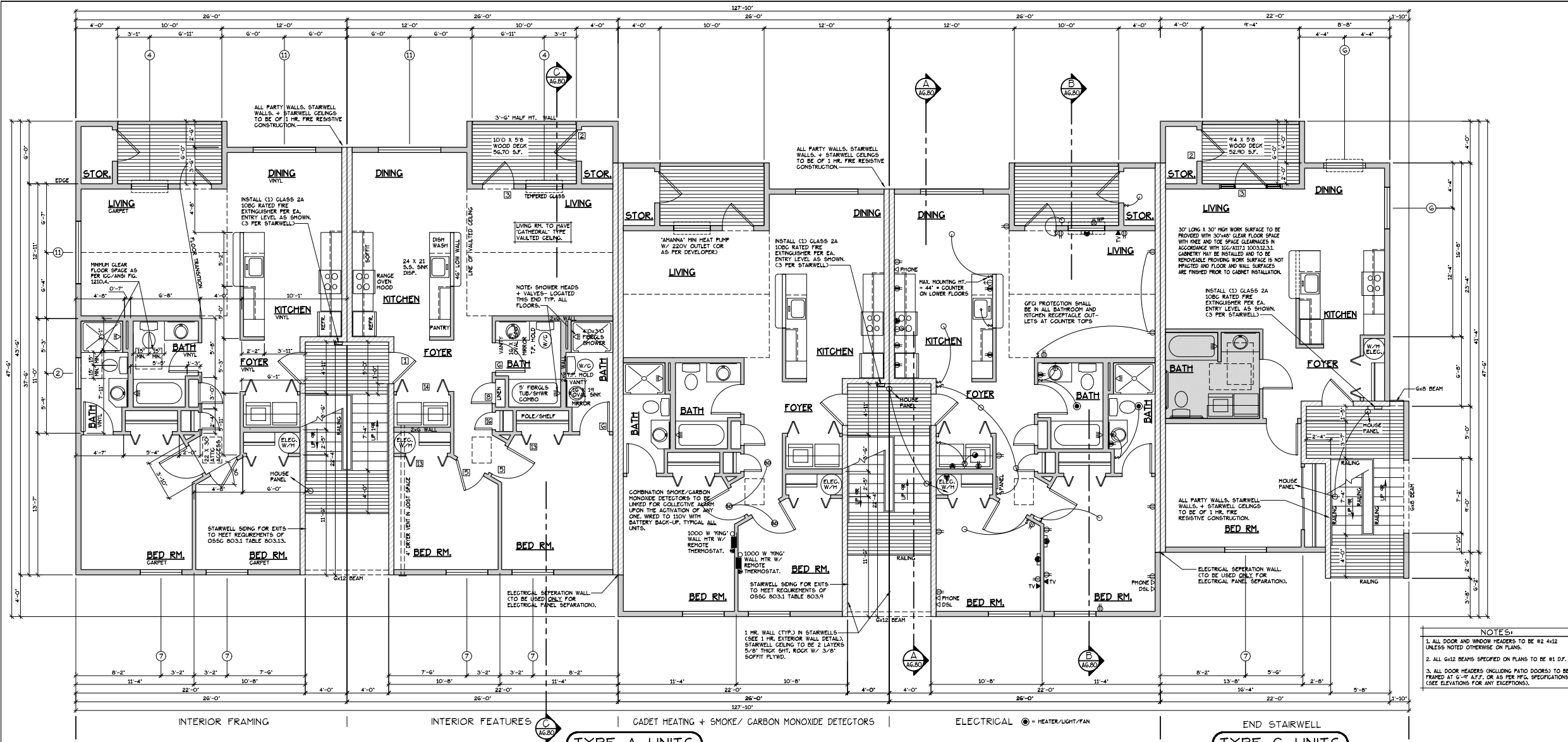
Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A3.41

UPPER FLOOR PLAN

CASCADE PLACE APARTMENTS



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL G/12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER IFC SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

UPPER FLOOR PLAN
SCALE: 3/16" = 1'-0"
'A' UNIT = 952 S.F.
BLD. 6
CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

DOOR SCHEDULE										
NO.	DOORS			FRAMES			REMARKS			
	WIDTH	HEIGHT	THICK	MATL.	FIN.	TYP.	MATL.	FIN.		
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYED LOCK
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD + WEATHERSTRIP
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT	W/ THRESHOLD, WEATHERSTRIP AND KEYED LOCK
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	**
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	
9	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR
10	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR, **
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-PASS DOOR
12	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-PASS DOOR
13	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-PASS DOOR
14	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-FOLD DOOR
15	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-FOLD DOOR
16	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-FOLD DOOR
17	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	B-FOLD DOOR

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
							NO.	SIZE	TYPE
1	3'0" X 1'0"	VNLY STAT.	MLGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1	4x12	
2	3'0" X 1'6"	VNLY STAT.	MLGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1	4x12	
3	3'0" X 4'6"	VNLY SGL.	MLGARD	WHITE	YES	SINGLE MUNG W/ SCREEN	DF #1	4x12	
4	3'6" X 4'6"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
5	4'0" X 3'6"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
6	4'0" X 4'6"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
7	4'0" X 5'0"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1	Gx8 (SEE ALT. HEADER DETAIL SHT. A29.40)	
8	5'0" X 2'6"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
9	5'0" X 4'6"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
10	5'0" X 5'0"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1	Gx8 (SEE ALT. HEADER DETAIL SHT. A29.40)	
11	6'0" X 4'6"	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
12	3'0" X 4'0"	CASEMENT	MLGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1	4x12	

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

NOTE: MAN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET AG.20 BEFORE BEGINNING ANY CONSTRUCTION.

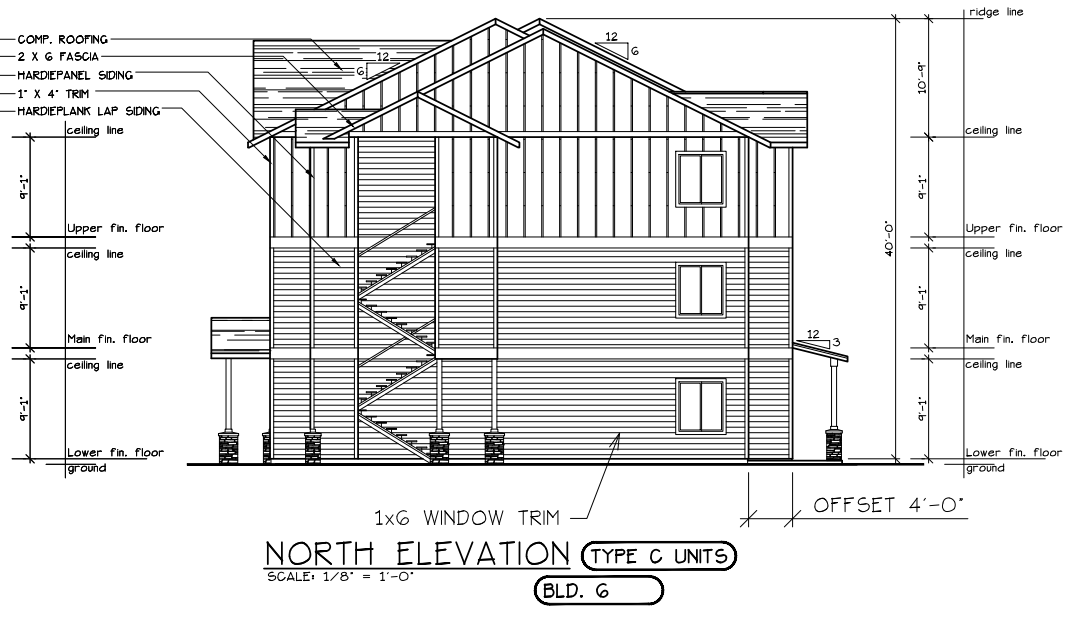
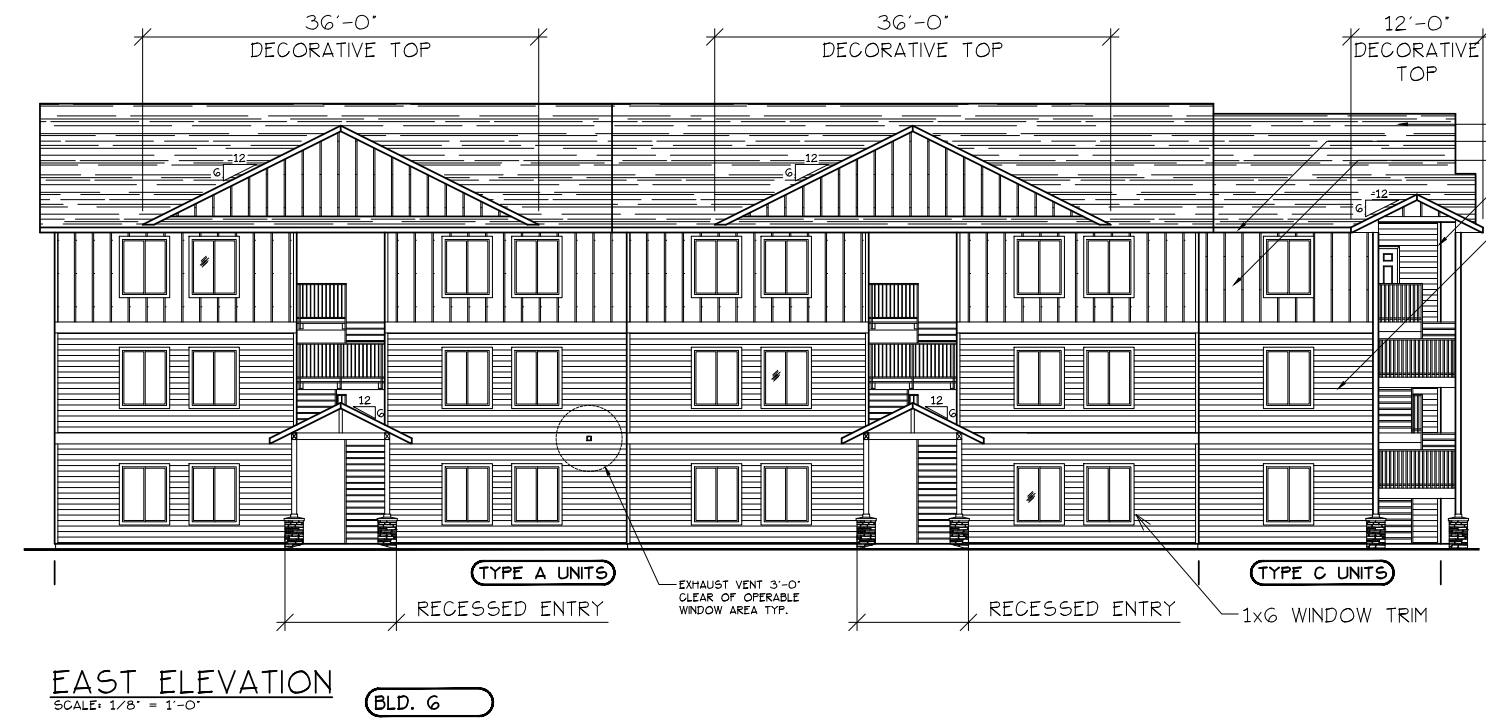
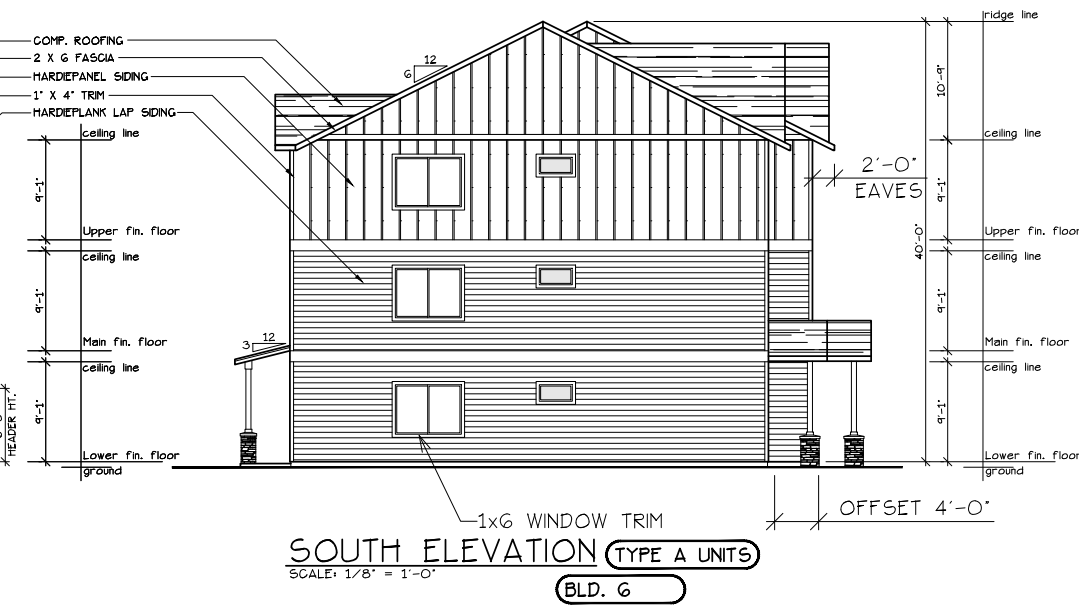
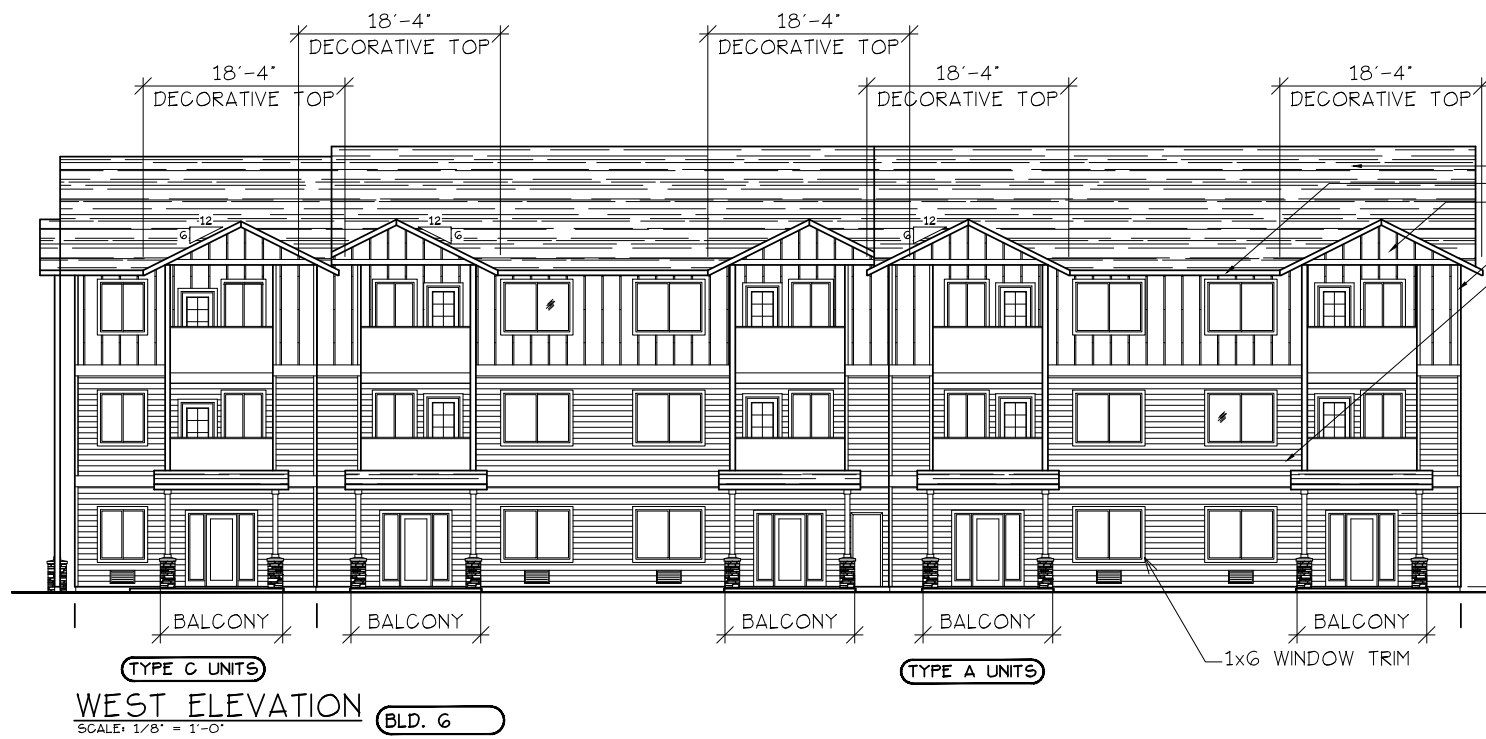
- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLOURESCENT. OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



133
A6.50



- ARCHITECTURAL FEATURES:**
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - OFFSETS (4' OFFSET IN FACADE).
 - DECORATIVE TOP (PITCHED ROOF).

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN

BLD-15-SP-03-PLASTY
A34567

JOB # 7312

BUILDING TYPE 3 (12 TYPE A UNITS, 3 TYPE C UNITS)

*BUILDINGS: 6



LOWER FLOOR PLAN

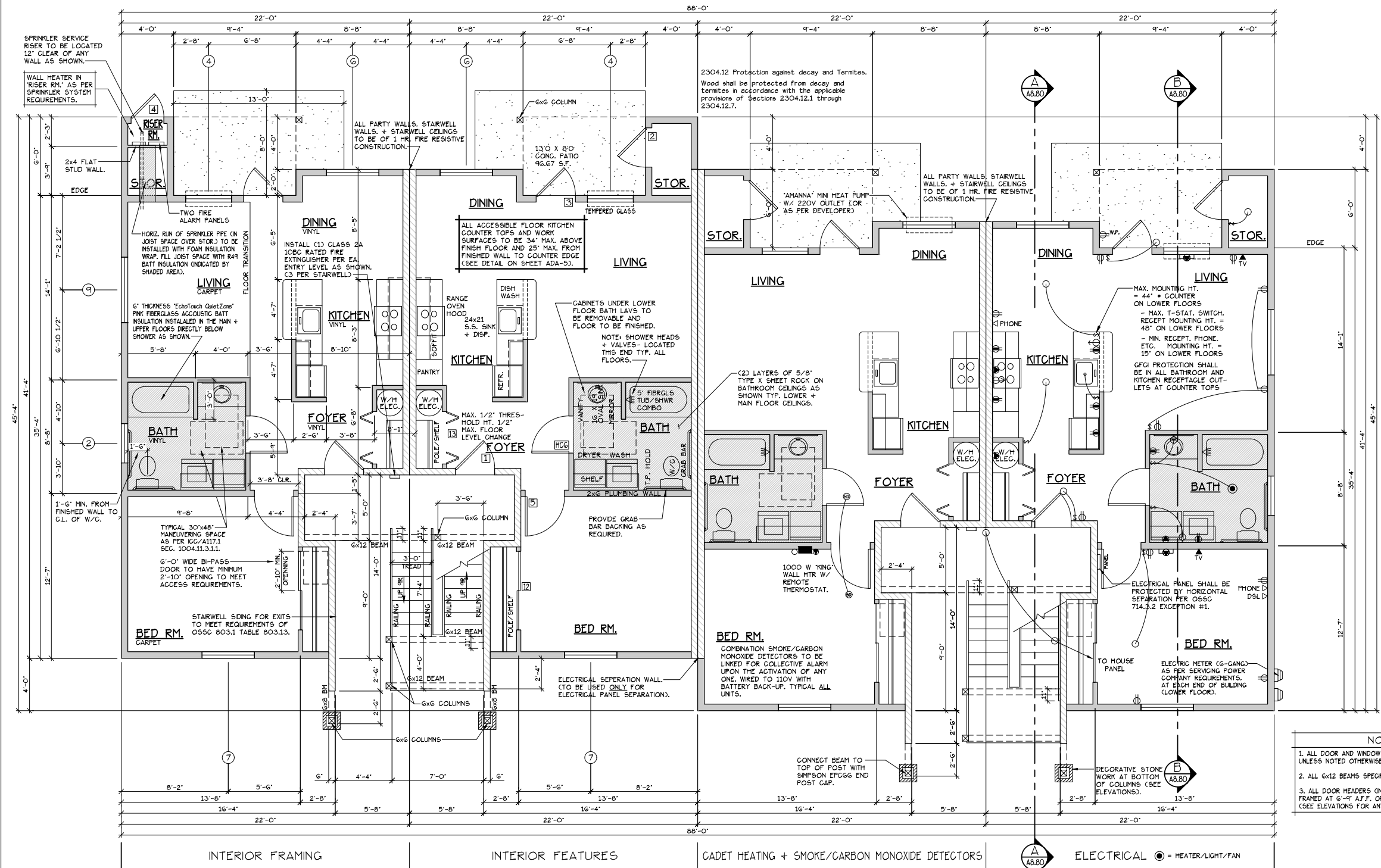
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN

JOB # 7312
REGISTERED PROFESSIONAL ENGINEER
JULY 14, 1978
MARK D. GREY
Renew Date: June 30, 2023

A4.31



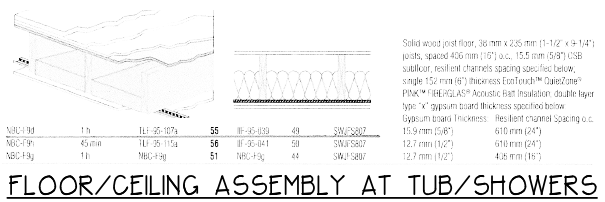
- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4X12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6X12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

LOWER FLOOR PLAN
SCALE: 1/4" = 1'-0"
(HANDICAP ADAPTABLE/ACCESSIBLE)
TYPE C UNIT = 728 S.F.

TYPE C UNITS
BLD. 3

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

IF3 907.2.10.3 SMOKE ALARMS, SINGLE AND MULTIPLE-STATION SMOKE ALARMS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 907.2.11.
IF3 907.2.11 SINGLE AND MULTIPLE-STATION SMOKE ALARMS, LISTED SINGLE AND MULTIPLE-STATION SMOKE ALARMS COMPLYING WITH UL 217 SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 907.2.11.1 THROUGH 907.2.11.4 AND NFPA 72.



FLOOR/CEILING ASSEMBLY AT TUB/SHOWERS

DOOR SCHEDULE										
NO.	DOORS		FRAMES				REMARKS			
	WIDTH	HEIGHT	THICK	TYP.	MATL.	FIN.	TYP.	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	B	METAL	PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	C	METAL	PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, KEYS AND LOCK.
3	6'-8"	6'-8"	1 3/4"	MTL.	CLAD	PAINT	D	METAL	PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD & WEATHERSTRIP W/ THRESHOLD, WEATHERSTRIP AND KEYS AND LOCK.
4	3'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	E	HEMLOCK	STAIN	**
5	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR
6	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR, **
7	2'-6"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	G	HEMLOCK	STAIN	B-PASS DOOR
8	2'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	G	HEMLOCK	STAIN	B-PASS DOOR
9	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	G	HEMLOCK	STAIN	B-PASS DOOR
10	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
11	5'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
12	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
13	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	H	HEMLOCK	STAIN	B-FOLD DOOR
14	11'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	E	HEMLOCK	STAIN	B-FOLD DOOR

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WITH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
1	3'0 X 1'0	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12		
2	3'0 X 1'6	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12		
3	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4X12		
4	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
5	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
6	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
7	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 Gx8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
8	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
9	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
10	5'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 Gx8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
11	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12		
12	3'0 X 4'0	GASEMENT	MILGARD	WHITE	YES	GASEMENT W/ SCREEN	DF #1 4X12		

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.
NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.
NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.
NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.

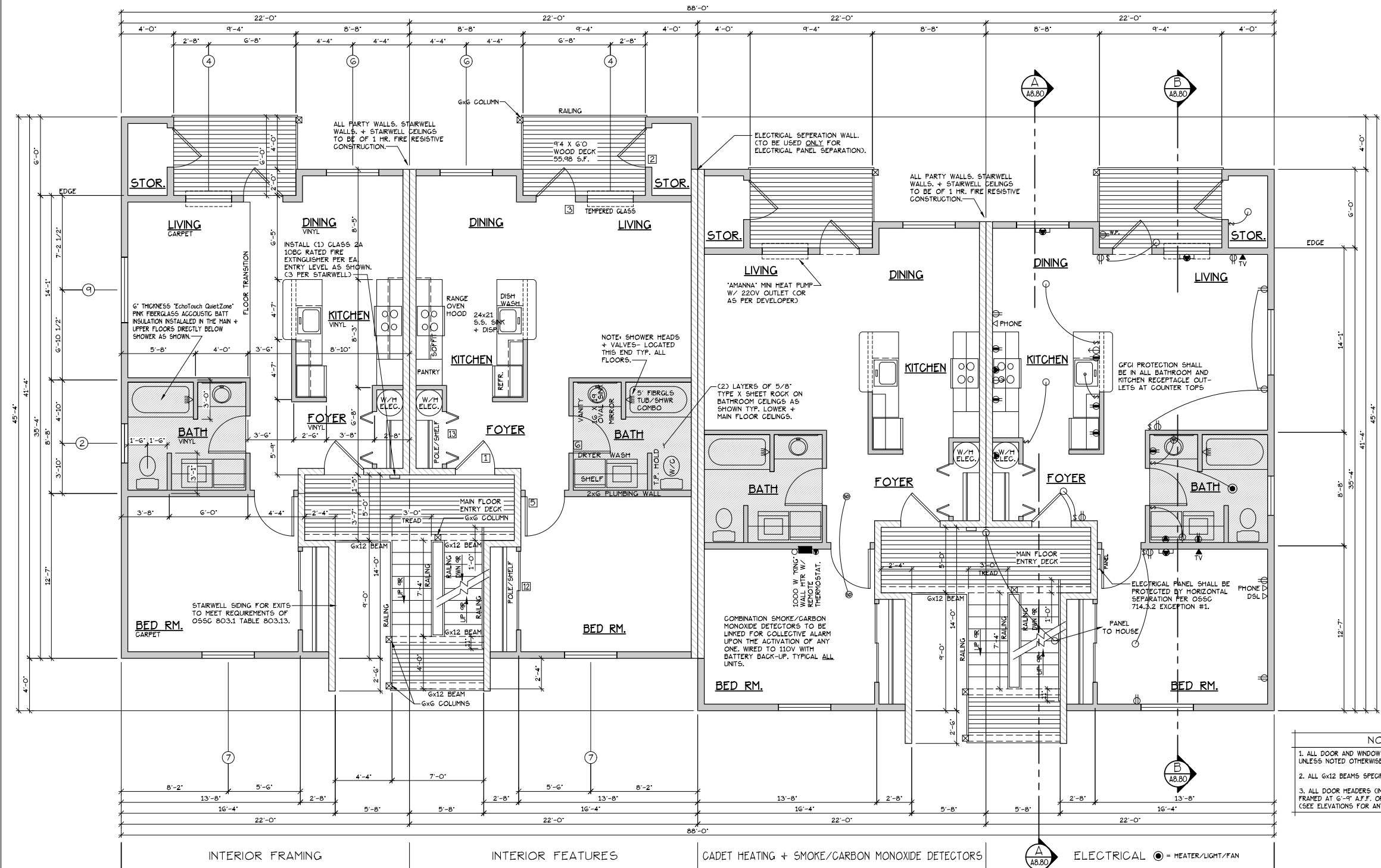
- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM, RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET A8.20 BEFORE BEGINNING ANY CONSTRUCTION.

HANDICAP UNIT NOTES:

THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OESG 2019 REVISED TO BE EFFECTIVE JANUARY 1, 2020. CHAPTER 11 OF THE OESG 2019 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI A117.1-1003, WITHIN ICC/ANSI A117.1, CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS. CHAPTER 10 SETS OUT THE CODE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.
THE INTENT IS THAT 'ALL' GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.
WITHIN THE PROJECT THERE ARE ALSO TYPE 'B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1003.
WITHIN THE PROJECT THERE ARE ALSO TYPE 'B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004. ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE TYPE 'B' UNITS UNLESS SPECIFICALLY DESIGNATED TYPE 'A' UNITS. WITHIN THESE TYPE 'B' UNITS THE MAIN BATHROOM (OR ONLY BATHROOM) SHALL BE DESIGNATED AS AN OPTION 'B' ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.
ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 5 THAT SET OUT SPECIFIC INFORMATION FROM OESG 2019, CHAPTER 10 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT SPECIFIC MINIMUM ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.

CASCADE PLACE APARTMENTS
MAIN FLOOR PLAN



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

MAIN FLOOR PLAN
SCALE: 1/4" = 1'-0"
"C" UNIT = 728 S.F.

TYPE C UNITS
BLD. 3

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

IF1 907.2.10.3 SMOKE ALARMS. SINGLE AND MULTIPLE-STATION SMOKE ALARMS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 907.2.11.
IF3 907.2.11 SINGLE AND MULTIPLE-STATION SMOKE ALARMS. LISTED SINGLE AND MULTIPLE-STATION SMOKE ALARMS COMPLYING WITH UL 217 SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 907.2.11.1 THROUGH 907.2.11.4 AND NFPA 72.

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET AB.20 BEFORE BEGINNING ANY CONSTRUCTION.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER O55C 718.2.2 AND O55C 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLDG.
 7. AS PER O55C HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

DOOR SCHEDULE									
#	DOORS			FRAMES			REMARKS		
	WIDTH	HEIGHT	THICK	MATL.	FIN.	FRM.	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PANT
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PANT
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PANT
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN
9	2'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN
10	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN
12	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN
13	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN
14	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	N	HEMLOCK	STAIN
15	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	O	HEMLOCK	STAIN
16	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	P	HEMLOCK	STAIN
17	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	Q	HEMLOCK	STAIN

WINDOW SCHEDULE									
#	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
1	3'0 X 1'0	VNLY STAT.	MLGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
2	3'0 X 1'6	VNLY STAT.	MLGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
3	3'0 X 4'6	VNLY SGL.	MLGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12		
4	3'6 X 4'6	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
5	4'0 X 3'6	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
6	4'0 X 4'6	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
7	4'0 X 5'0	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
8	5'0 X 2'6	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
9	5'0 X 4'6	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
10	5'0 X 5'0	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
11	6'0 X 4'6	VNLY SLD.	MLGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
12	3'0 X 4'0	CASEMENT	MLGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4x12		

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) O55C U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 O55C SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

CONSTRUCTION TYPE V B SPRINKLED.

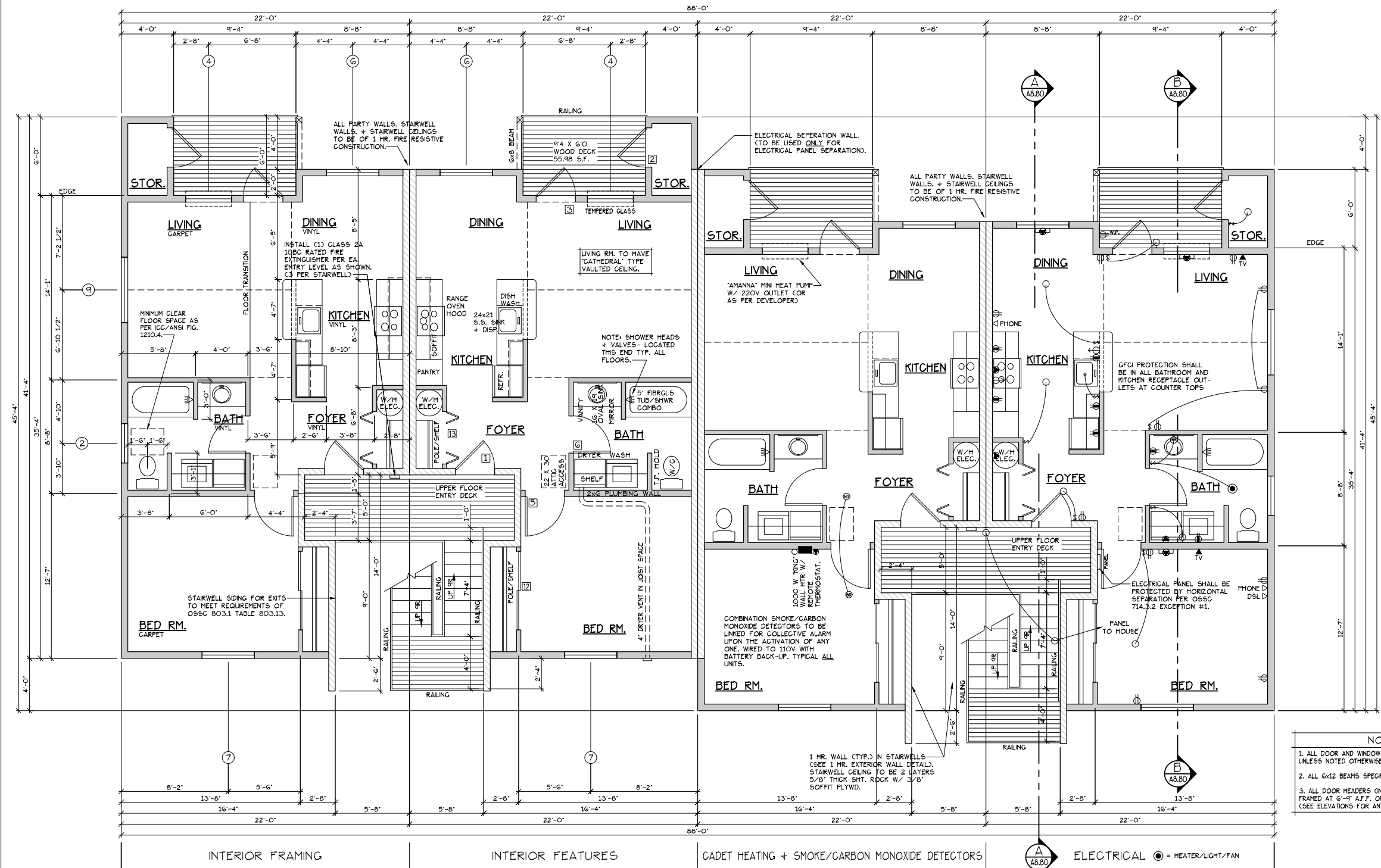
NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN



A4.41

CASCADE PLACE APARTMENTS
UPPER FLOOR PLAN



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"
"C" UNIT = 728 S.F.
TYPE C UNITS
BLD. 3

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

IF1 907.2.10.3 SMOKE ALARMS. SINGLE AND MULTIPLE-STATION SMOKE ALARMS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 907.2.11.
IF1 907.2.11 SINGLE AND MULTIPLE-STATION SMOKE ALARMS. LISTED SINGLE AND MULTIPLE-STATION SMOKE ALARMS COMPLYING WITH UL 217 SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 907.2.11.1 THROUGH 907.2.11.4 AND NFPA 72.

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET A8.20 BEFORE BEGINNING ANY CONSTRUCTION.

GENERAL NOTES:

1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER O55C 718.2.2 AND O55C 718.2.3.
3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
4. ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
7. AS PER O55C HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
8. ALL "TYPE A" ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

DOOR SCHEDULE									
NO.	DOORS			FRAMES		REMARKS			
	WIDTH	HEIGHT	THICK	MATL.	FIN.	FRM.	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN
9	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN
10	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN
12	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN
13	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN
14	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	N	HEMLOCK	STAIN
15	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	O	HEMLOCK	STAIN

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
							NO.	SIZE	TYPE
1	3'0 X 1'0	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1	4x12	
2	3'0 X 1'6	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1	4x12	
3	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1	4x12	
4	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
5	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
6	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
7	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1	6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)	
8	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
9	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
10	5'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1	6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)	
11	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1	4x12	
12	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1	4x12	

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) O55C U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 O55C SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.C. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

CONSTRUCTION TYPE V B SPRINKLED.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN

JOB # 7312



Renew Date: July 31, 2023
A14.50

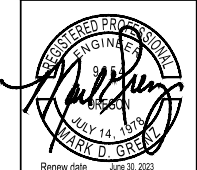
BUILDING ELEVATIONS

CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

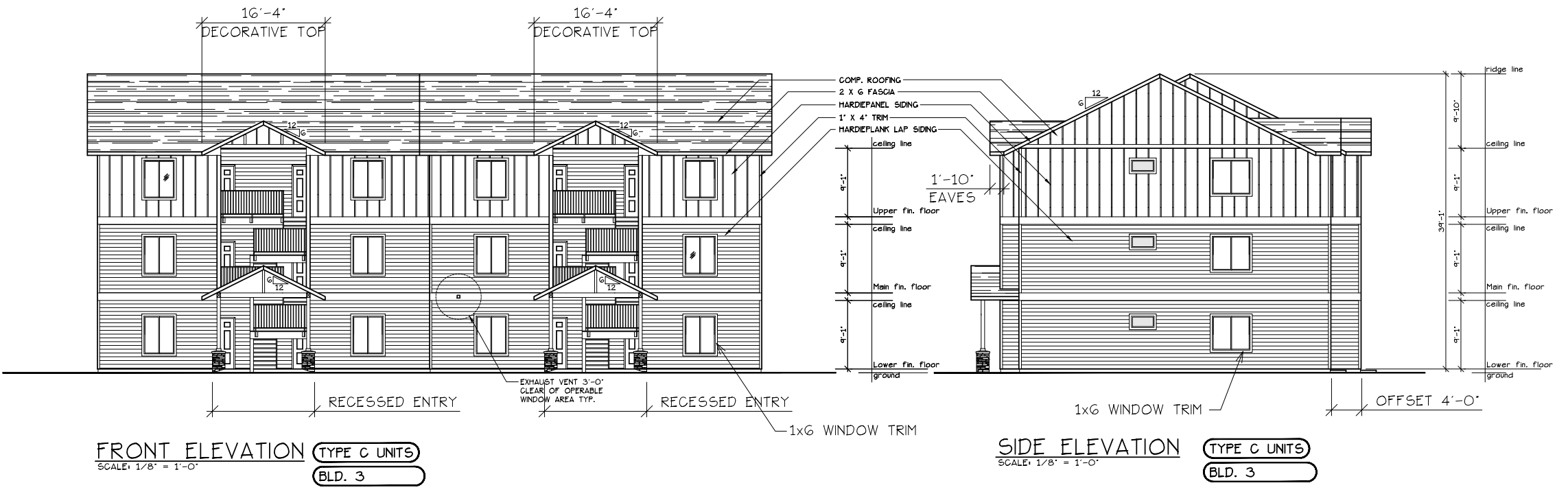
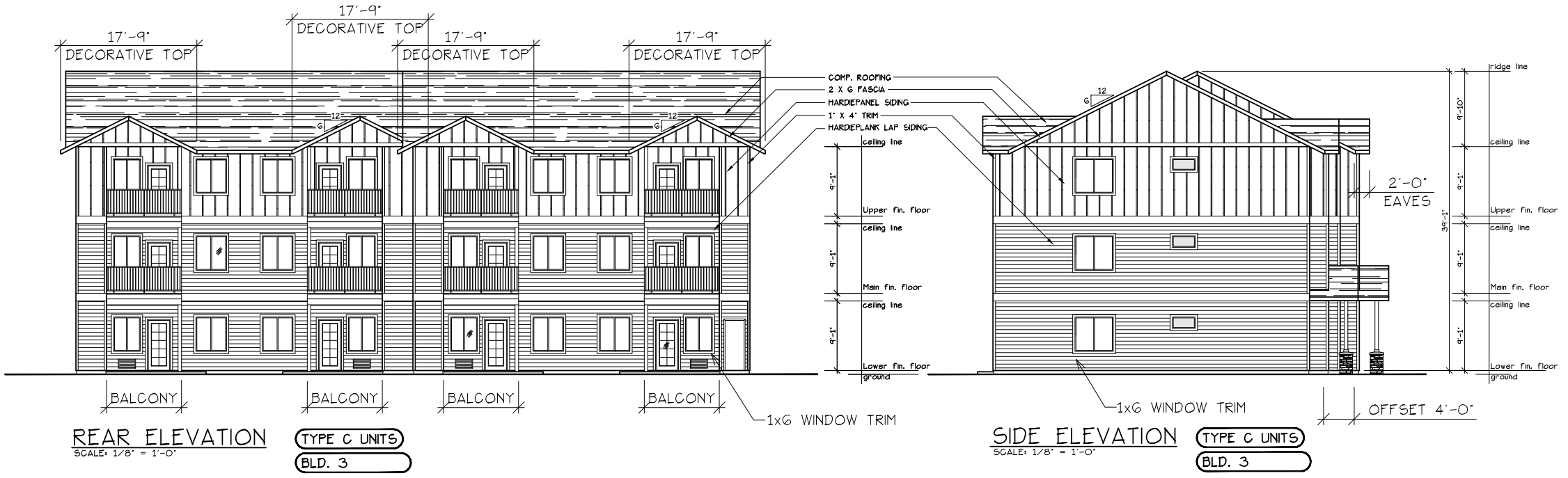
Design: P.L.M. G.I.D. M.D.G.
 Drawn: G.I.D. M.D.G.
 Date: Jul-21
 Scale: AS SHOWN

JOB # 7312



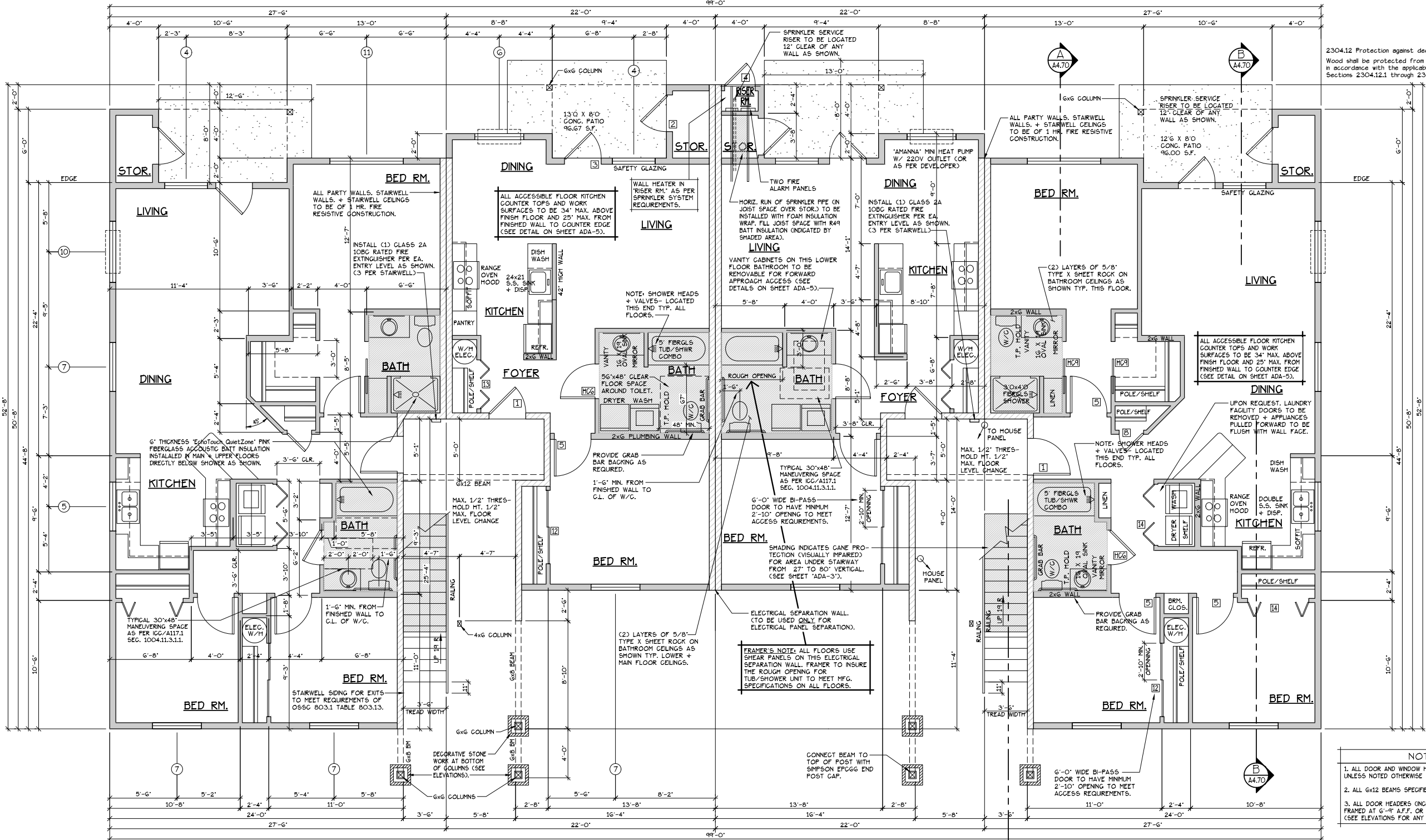
Renew Date: June 30, 2025

A4.90

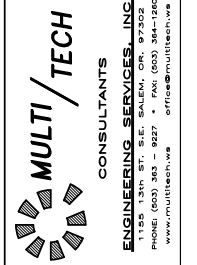


BUILDING TYPE 4 (12 TYPE C UNITS)
 *BUILDINGS: 3

- ARCHITECTURAL FEATURES:**
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - OFFSETS (4' OFFSET IN FACADE).
 - DECORATIVE TOP (PITCHED ROOF).



2304.12 Protection against decay and Termites.
Wood shall be protected from decay and termites in accordance with the applicable provisions of Sections 2304.12.1 through 2304.12.7.



LOWER FLOOR PLAN

CASCADE PLACE APARTMENTS

- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

SEE "GENERAL STRUCTURAL NOTES" ON SHEET A4.20 BEFORE BEGINNING ANY CONSTRUCTION.

HANDICAP UNIT NOTES:

THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OS5C 2019 REVISED TO BE EFFECTIVE JANUARY 1, 2020. CHAPTER 11 OF THE OS5C 2019 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI A117.1-1003, WITHIN ICC/ANSI A117.1 CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS. CHAPTER 10 SETS OUT THE CODE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.

THE INTENT IS THAT "ALL" GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

WITHIN THE PROJECT THERE ARE ALSO TYPE 'B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1003.

WITHIN THE PROJECT THERE ARE ALSO TYPE 'A' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004. ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE TYPE 'B' UNITS UNLESS SPECIFICALLY DESIGNATED TYPE 'A' UNITS. WITHIN THESE TYPE 'B' UNITS THE MAIN BATHROOM (OR ONLY BATHROOM) SHALL BE DESIGNATED AS AN OPTION 'B' ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.

ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 5 THAT SET OUT SPECIFIC INFORMATION FROM OS5C 2019, CHAPTER 10 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT SPECIFIC MINIMUM ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT THE WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.I.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN

JOB # 7312



Renew Date: Jan 31, 2023

A6.31

LOWER FLOOR PLAN
SCALE: 1/4" = 1'-0"
(HANDICAP ADAPTABLE/ACCESSIBLE) **BLD. 2.8.10+12**
"C" UNIT = 728 S.F. "D" UNIT = 1190 S.F.

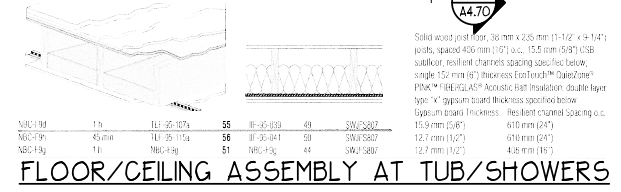
DOOR SCHEDULE													
DOORS			FRAMES			REMARKS							
#	WIDTH	HEIGHT	THICK	MATL.	FIN.	TYE	MATL.	FIN.					
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.			
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PANT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK			
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PANT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD & WEATHERSTRIP W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK			
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PANT	**			
5	3'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	E	HEMLOCK	STAN	POCKET DOOR			
6	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
7	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
8	2'-6"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
9	2'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
10	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
11	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
12	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
13	5'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
14	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
15	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
16	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			
17	11'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAN	F	HEMLOCK	STAN	POCKET DOOR			

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

CONSTRUCTION TYPE V B SPRINKLED.
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

WINDOW SCHEDULE											
#	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS				
1	3'0" X 1'0"	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12				
2	3'0" X 1'6"	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12				
3	3'0" X 4'6"	VNYL SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12				
4	3'6" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12				
5	4'0" X 3'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12				
6	4'0" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12				
7	4'0" X 5'0"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)				
8	5'0" X 2'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12				
9	5'0" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12				
10	5'0" X 5'0"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)				
11	6'0" X 4'6"	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12				
12	3'0" X 4'0"	GASEMENT	MILGARD	WHITE	YES	GASEMENT W/ SCREEN	DF #1 4x12				

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.5.C. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE "OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS" DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.



FLOOR/CEILING ASSEMBLY AT TUB/SHOWERS

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.G.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OES5C U-0.32.

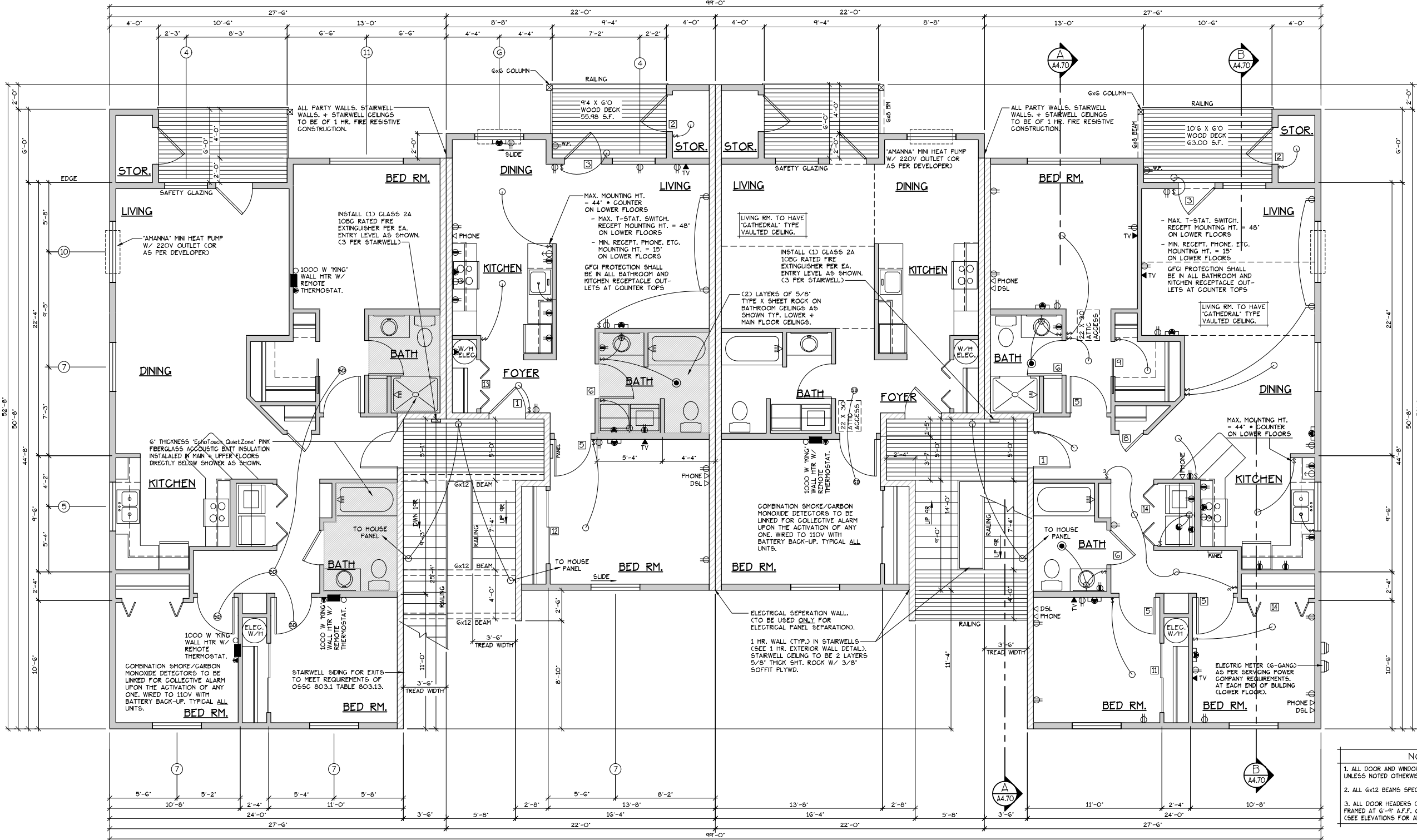
NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OS5C SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE "WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION" DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.

MAIN & UPPER FLOOR PLANS

CASCADE PLACE APARTMENTS



NOTES:

1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

CADET HEATING + SMOKE/CARBON MONOXIDE DETECTORS | ELECTRICAL ● = HEATER/LIGHT/FAN | CADET HEATING + SMOKE/CARBON MONOXIDE DETECTORS | ELECTRICAL ● = HEATER/LIGHT/FAN

TYPE D UNIT

TYPE C UNITS

TYPE D UNIT

MAIN FLOOR PLAN
SCALE: 1/4" = 1'-0"
'C' UNIT = 728 S.F.
'D' UNIT = 1190 S.F.

BLD. 2.8.10+12

UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"

SEE "GENERAL STRUCTURAL NOTES" ON SHEET A4.20 BEFORE BEGINNING ANY CONSTRUCTION.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER O55C 718.2.2 AND O55C 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'G.
 7. AS PER O55C HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

DOOR SCHEDULE									
DOORS		FRAMES				REMARKS			
NO.	WIDTH	HEIGHT	THICK	MATL.	FIN.	TYP.	MATL.	FIN.	
(1)	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PAINT
(2)	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PAINT
(3)	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PAINT
(4)	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	D	METAL	PAINT
(5)	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN
(6)	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN
(7)	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN
(8)	2'-6"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN
(9)	2'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	I	HEMLOCK	STAIN
(10)	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	J	HEMLOCK	STAIN
(11)	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	K	HEMLOCK	STAIN
(12)	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	L	HEMLOCK	STAIN
(13)	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	M	HEMLOCK	STAIN
(14)	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	N	HEMLOCK	STAIN
(15)	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	O	HEMLOCK	STAIN
(16)	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	P	HEMLOCK	STAIN
(17)	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	Q	HEMLOCK	STAIN

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
(1)	3'0 X 1'0	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
(2)	3'0 X 1'6	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
(3)	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12		
(4)	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
(5)	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
(6)	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
(7)	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
(8)	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
(9)	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
(10)	5'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
(11)	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
(12)	3'0 X 4'0	GASEMENT	MILGARD	WHITE	YES	GASEMENT W/ SCREEN	DF #1 4x12		

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) O55C U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 O55C SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE "WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION" DETAIL ON SHEET A29.40.

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE "OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS" DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNO.

CONSTRUCTION TYPE V B SPRINKLED.

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A6.41

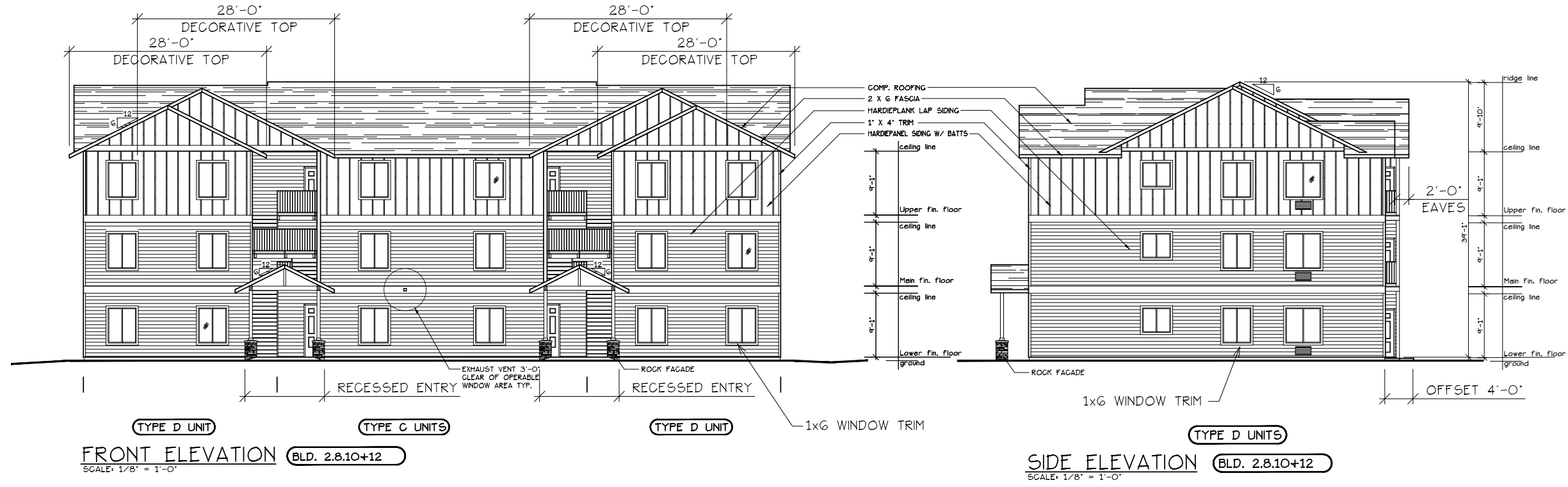
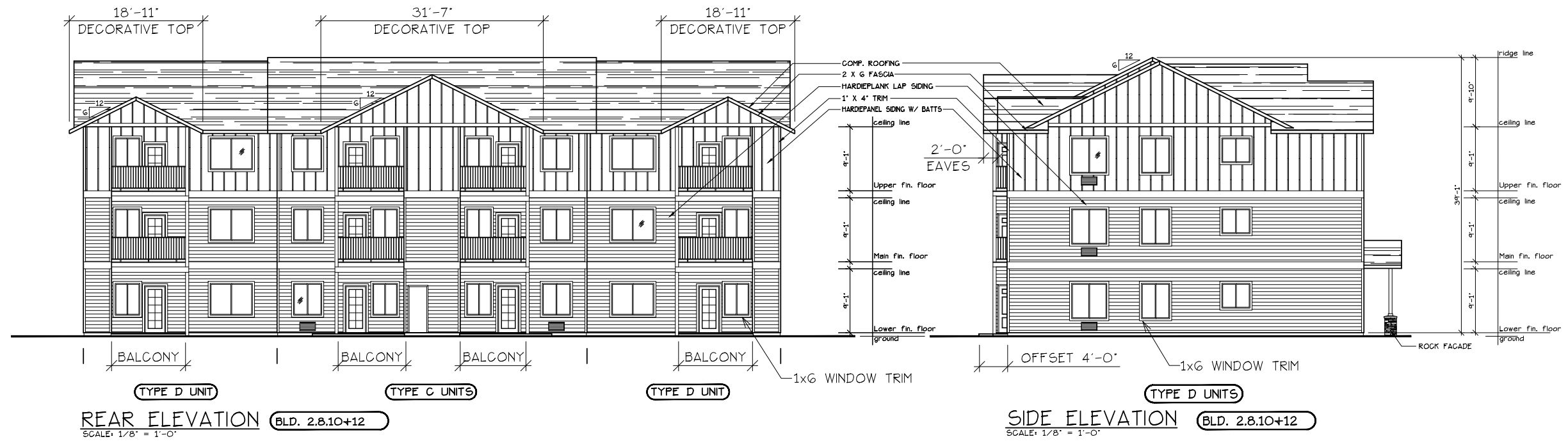
NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M. G.J.D. M.D.G.
Drawn: G.J.D. M.D.G.
Date: Jul-21
Scale: AS SHOWN

JOB # 7312

REGISTERED PROFESSIONAL ENGINEER
JULY 14, 1978
MARK D. GREY
Renew Date: June 30, 2025

A5.90



- ARCHITECTURAL FEATURES:**
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - OFFSETS (4' OFFSET IN FACADE).
 - DECORATIVE TOP (PITCHED ROOF).

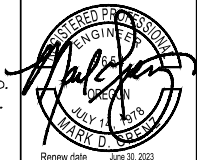
BUILDING TYPE 5 (6 TYPE C UNITS, 6 TYPE D UNITS)
*BUILDINGS: 2,8,10+12

LOWER FLOOR PLAN

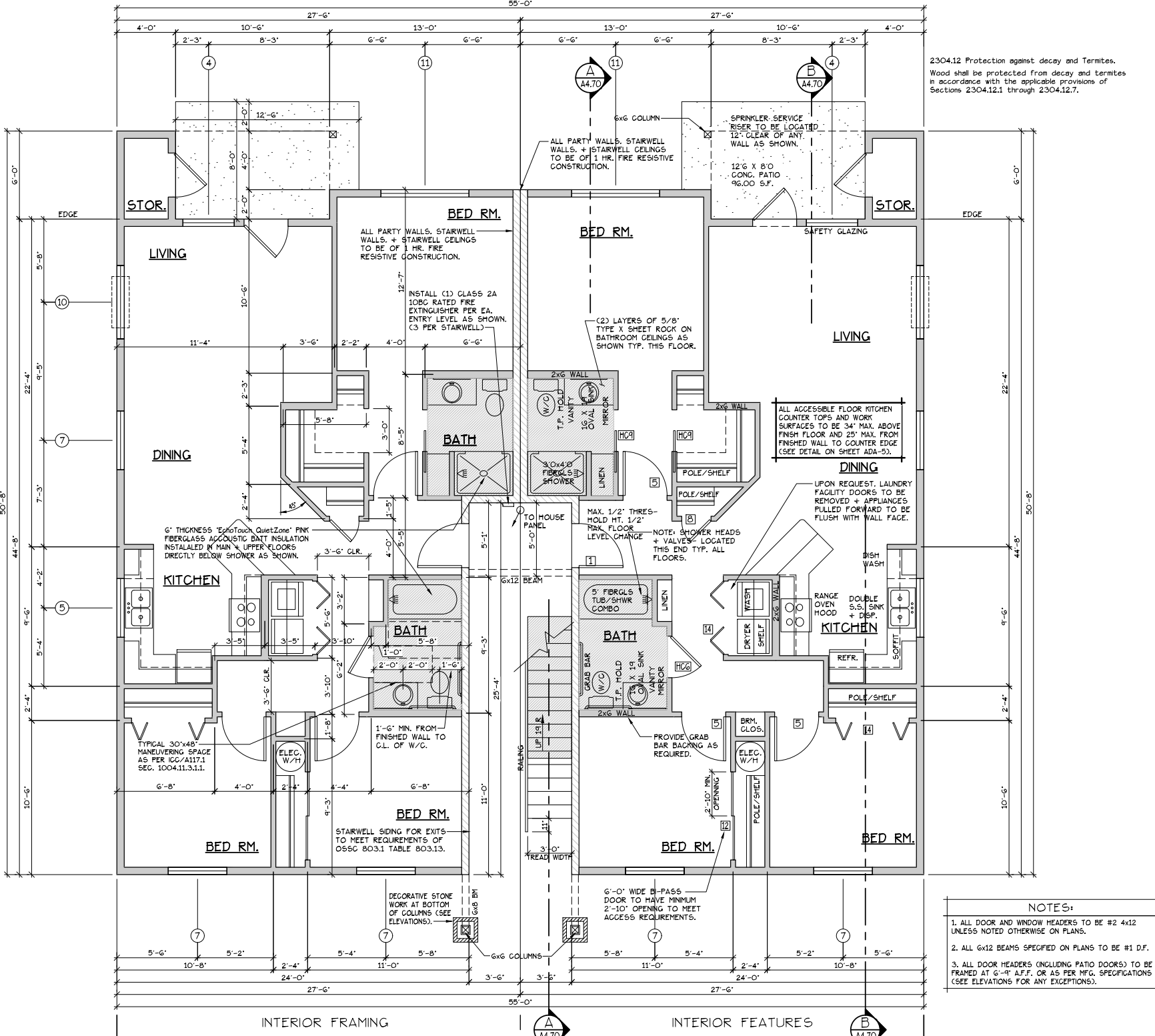
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A6.31



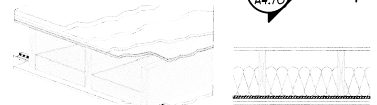
2304.12 Protection against decay and Termites.
Wood shall be protected from decay and termites in accordance with the applicable provisions of Sections 2304.12.1 through 2304.12.7.

- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4X12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6X12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

LOWER FLOOR PLAN
SCALE: 1/4" = 1'-0"
(HANDICAP ADAPTABLE/ACCESSIBLE)
"D" UNIT = 1190 S.F.

TYPE D UNIT BLD. 11

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.



FLOOR/CEILING ASSEMBLY AT TUB/SHOWERS

Table with 4 columns: Material, Thickness, Density, and Unit Weight. Rows include 1/2" Gypsum Board, 1/2" Rigid Insulation, 2" Concrete, and 1/2" Gypsum Board.

DOOR SCHEDULE

NO.	WIDTH	HEIGHT	THICK	TYPE	MATL.	FIN.	FRAMES	REMARKS
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A METAL PAINT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B METAL PAINT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C METAL PAINT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD + WEATHERSTRIP W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK
4	3'-0"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	**
5	2'-10"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	POCKET DOOR
6	2'-10"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	POCKET DOOR, **
7	2'-10"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	POCKET DOOR, **
8	4'-0"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-PASS DOOR
9	5'-8"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-PASS DOOR
10	6'-0"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-PASS DOOR
11	4'-0"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-FOLD DOOR
12	5'-0"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-FOLD DOOR
13	6'-0"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-FOLD DOOR
14	11'-8"	6'-8"	1 3/8"	H.C.	BROCH	STAIN	F HEMLOCK STAIN	B-FOLD DOOR

WINDOW SCHEDULE

NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS
1	3'0 X 1'0	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4X12
2	3'0 X 1'6	VNYL STAT.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4X12
3	3'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ FROSTED GLASS	DF #1 4X12
4	3'6 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
5	4'0 X 3'6	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
6	4'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
7	4'0 X 5'0	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6X8 (SEE ALT. HEADER DETAIL SHT. A29.40)
8	5'0 X 2'6	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
9	5'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
10	5'0 X 5'0	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6X8 (SEE ALT. HEADER DETAIL SHT. A29.40)
11	6'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4X12
12	3'0 X 4'0	GASEMENT	MILGARD	WHITE	YES	GASEMENT W/ SCREEN	DF #1 4X12

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.G.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE 'WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION' DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.

SEE "GENERAL STRUCTURAL NOTES" ON SHEET A4.20 BEFORE BEGINNING ANY CONSTRUCTION.

HANDICAP UNIT NOTES:

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MN. 80 CFM, RANGE HOOD EXHAUST FANS TO HAVE MN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 7. AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OESG 2019 REVISED TO BE EFFECTIVE JANUARY 1, 2020. CHAPTER 11 OF THE OESG 2019 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI A117.1-1003, WITHIN ICC/ANSI A117.1, CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS, CHAPTER 10 SETS OUT THE CODE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.

THE INTENT IS THAT 'ALL' GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

WITHIN THE PROJECT THERE ARE ALSO TYPE 'B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1003.

ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE TYPE 'B' UNITS UNLESS SPECIFICALLY DESIGNATED TYPE 'A' UNITS. WITHIN THESE TYPE 'B' UNITS THE MAIN BATHROOM (OR ONLY BATHROOM) SHALL BE DESIGNATED AS AN OPTION 'B' ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.

ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 5 THAT SET OUT SPECIFIC INFORMATION FROM OESG 2019, CHAPTER 10 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.

MAIN FLOOR PLAN

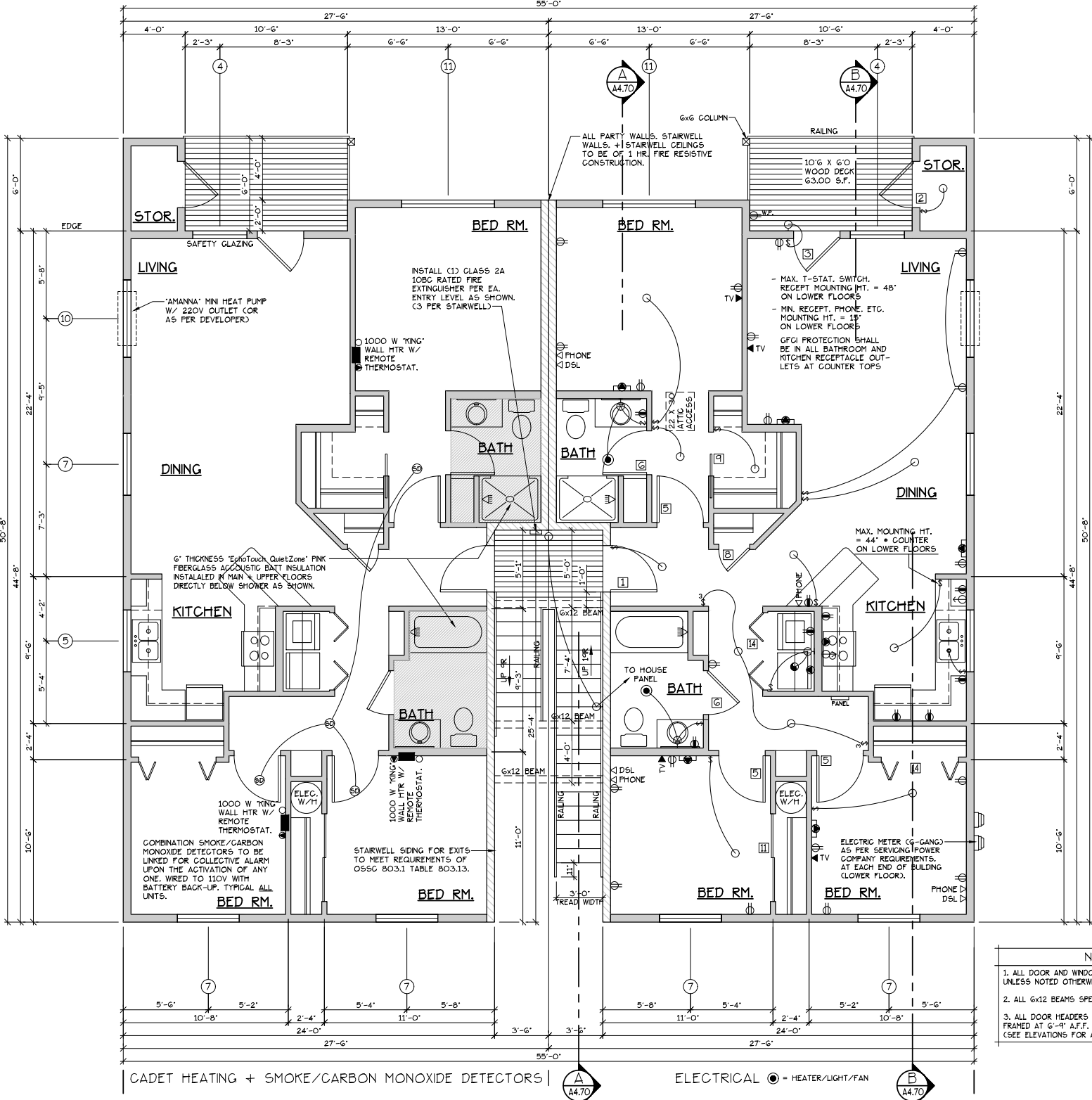
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A6.41



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE "GENERAL STRUCTURAL NOTES" ON SHEET A4.20 BEFORE BEGINNING ANY CONSTRUCTION.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OSGC 718.2.2 AND OSGC 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'G.
 7. AS PER OSGC HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLOURESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE A ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

MAIN FLOOR PLAN TYPE D UNIT BLD. 11
SCALE: 1/4" = 1'-0"
D' UNIT = 1190 S.F.

[F] 907.2.10.3 SMOKE ALARMS, SINGLE AND MULTIPLE-STATION SMOKE ALARMS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 907.2.11.
[F] 907.2.11 SINGLE AND MULTIPLE-STATION SMOKE ALARMS, LISTED SINGLE AND MULTIPLE-STATION SMOKE ALARMS COMPLYING WITH UL 217 SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 907.2.11.1 THROUGH 907.2.11.4 AND NFPA 72.

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

DOORS		FRAMES		REMARKS					
NO.	WIDTH	HEIGHT	THICK	TYP.	MATL.	FIN.	TYP.	MATL.	FIN.
[1]	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT
[2]	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PANT
[3]	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PANT
[4]	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT
[5]	3'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[6]	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[7]	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[8]	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[9]	2'-10"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[10]	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[11]	5'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[12]	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[13]	4'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[14]	5'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[15]	6'-0"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN
[16]	11'-8"	6'-8"	1 3/8"	H.C.	BRCH	STAIN	F	HEMLOCK	STAIN

WINDOW SCHEDULE									
NO.	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
[1]	3'0 X 1'0	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
[2]	3'0 X 1'6	VNLY STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
[3]	3'0 X 4'6	VNLY SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12		
[4]	3'6 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
[5]	4'0 X 3'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
[6]	4'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
[7]	4'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
[8]	5'0 X 2'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
[9]	5'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
[10]	5'0 X 5'0	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 6x8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
[11]	6'0 X 4'6	VNLY SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
[12]	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4x12		

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESGC U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OSGC SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE "WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION" DETAIL ON SHEET A29.40.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE "OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS" DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. U.N.O.

CONSTRUCTION TYPE V B SPRINKLED.

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1 SEC. 1004.5.2.1 WHEN FULLY OPENED.

UPPER FLOOR PLAN

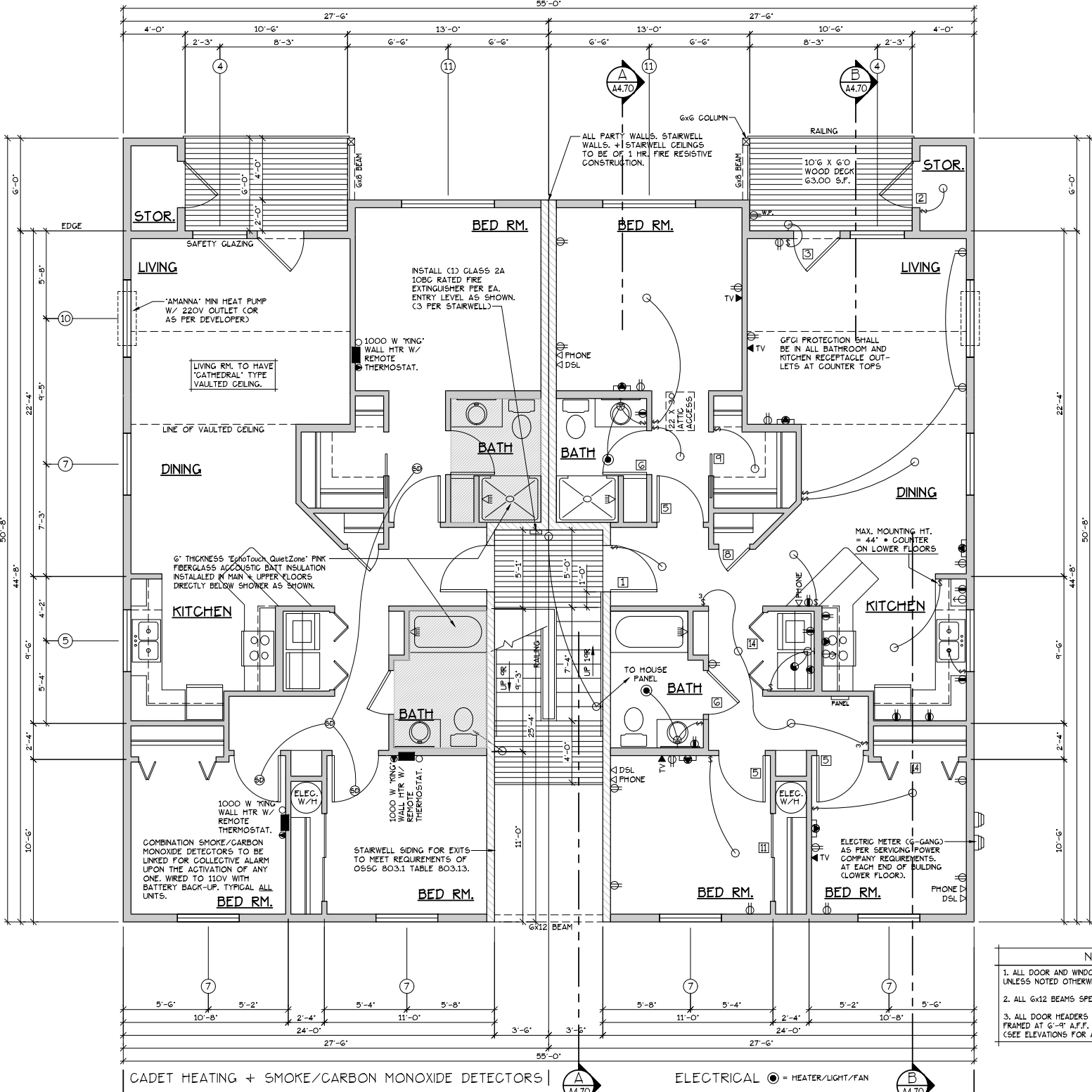
CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A650



- NOTES:**
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
 2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
 3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

NOTE: MAIN + UPPER FLOOR DOORS ARE SIZED THE SAME AS LOWER FLOOR DOORS. DOOR SIZE OPTIONS FOR MAIN + UPPER FLOORS ARE AS FOLLOWS:
BED RM. = 2'-6" DOOR
BATH RM. = 2'-4" DOOR.

SEE "GENERAL STRUCTURAL NOTES" ON SHEET A4.20 BEFORE BEGINNING ANY CONSTRUCTION.

- GENERAL NOTES:**
1. ALL EXTERIOR WALLS TO BE 2 X 4 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 2. FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OSGC 718.2.2 AND OSGC 718.2.3.
 3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 4. ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 6. ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'G.
 7. AS PER OSGC HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLOURESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 8. ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"
"D" UNIT = 1190 S.F.
TYPE D UNIT BLD. 11

IF 907.2.10.3 SMOKE ALARMS, SINGLE AND MULTIPLE-STATION SMOKE ALARMS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 907.2.11.
IF 907.2.11 SINGLE AND MULTIPLE-STATION SMOKE ALARMS, LISTED SINGLE AND MULTIPLE-STATION SMOKE ALARMS COMPLYING WITH UL 217 SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 907.2.11.1 THROUGH 907.2.11.4 AND NFPA 72.

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK ATTACHMENT.

DOOR SCHEDULE										
DOORS					FRAMES					REMARKS
#	WIDTH	HEIGHT	THICK	TYPE	MATL.	FIN.	TYPE	MATL.	FIN.	
1	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT	G PANEL 60 MN RATED ASSY. W/ THRESHOLD, WEATHERSTRIP, CLOSURES.
2	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	B	METAL	PANT	G PANEL W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK
3	3'-0"	6'-8"	1 3/4"	MTL.	CLAD	PANT	C	METAL	PANT	FULL LITE, TEMP. GLASS, LOCK, THRESHOLD + WEATHERSTRIP W/ THRESHOLD, WEATHERSTRIP AND KEYS LOCK
4	2'-6"	6'-8"	1 3/4"	MTL.	CLAD	PANT	A	METAL	PANT	
5	3'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	
6	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	
7	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	**
8	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	
9	2'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	POCKET DOOR
10	2'-10"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	POCKET DOOR, **
11	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	BI-PASS DOOR, **
12	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	F	HEMLOCK	STAIN	BI-PASS DOOR
13	5'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN	BI-PASS DOOR
14	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	G	HEMLOCK	STAIN	BI-PASS DOOR
15	4'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	BI-FOLD DOOR
16	5'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	BI-FOLD DOOR
17	6'-0"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	H	HEMLOCK	STAIN	BI-FOLD DOOR
18	11'-8"	6'-8"	1 3/8"	H.C.	BIRCH	STAIN	E	HEMLOCK	STAIN	BI-FOLD DOOR

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1, SEC. 1004.5.2.1 WHEN FULLY OPENED.

WINDOW SCHEDULE									
#	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS	HEADERS		
1	3'0 X 1'0	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
2	3'0 X 1'6	VNYL STAT.	MILGARD	WHITE	YES	STATIONARY W/ FROSTED GLASS	DF #1 4x12		
3	3'0 X 4'6	VNYL SGL.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN	DF #1 4x12		
4	3'6 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
5	4'0 X 3'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
6	4'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
7	4'0 X 3'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 Gx8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
8	5'0 X 2'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
9	5'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
10	5'0 X 5'0	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF#1 Gx8 (SEE ALT. HEADER DETAIL SHT. A29.40)		
11	6'0 X 4'6	VNYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN	DF #1 4x12		
12	3'0 X 4'0	CASEMENT	MILGARD	WHITE	YES	CASEMENT W/ SCREEN	DF #1 4x12		

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.G. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE "OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS" DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. U.N.O.

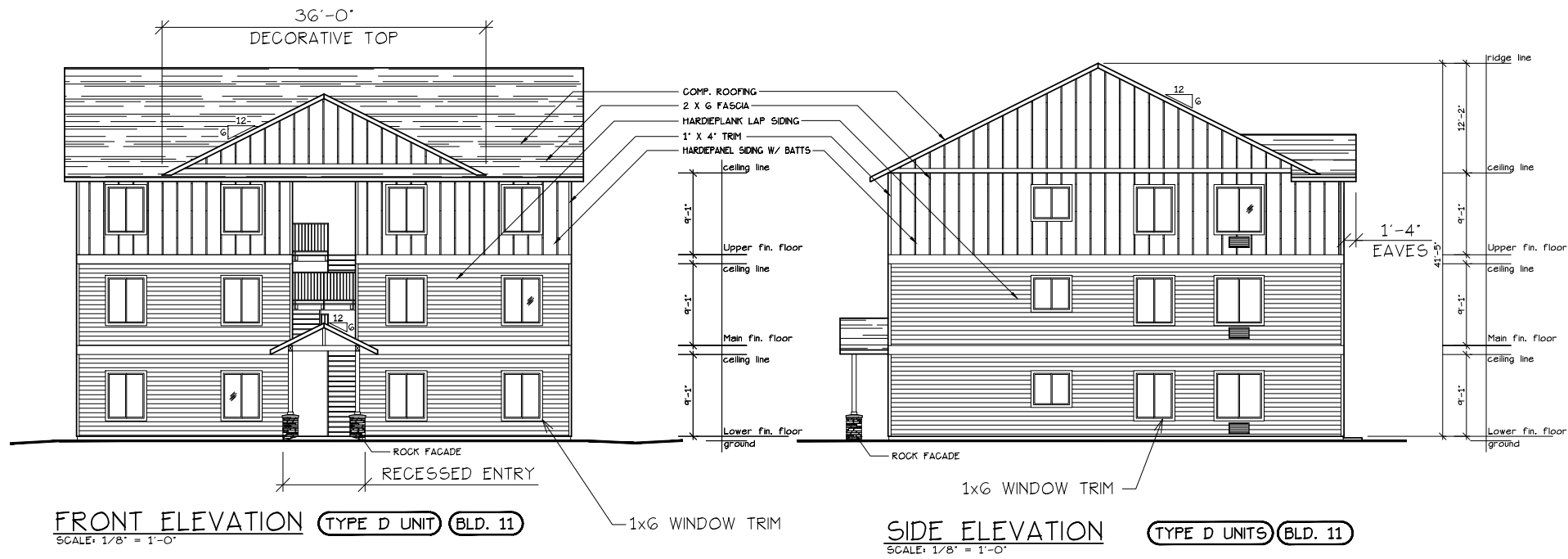
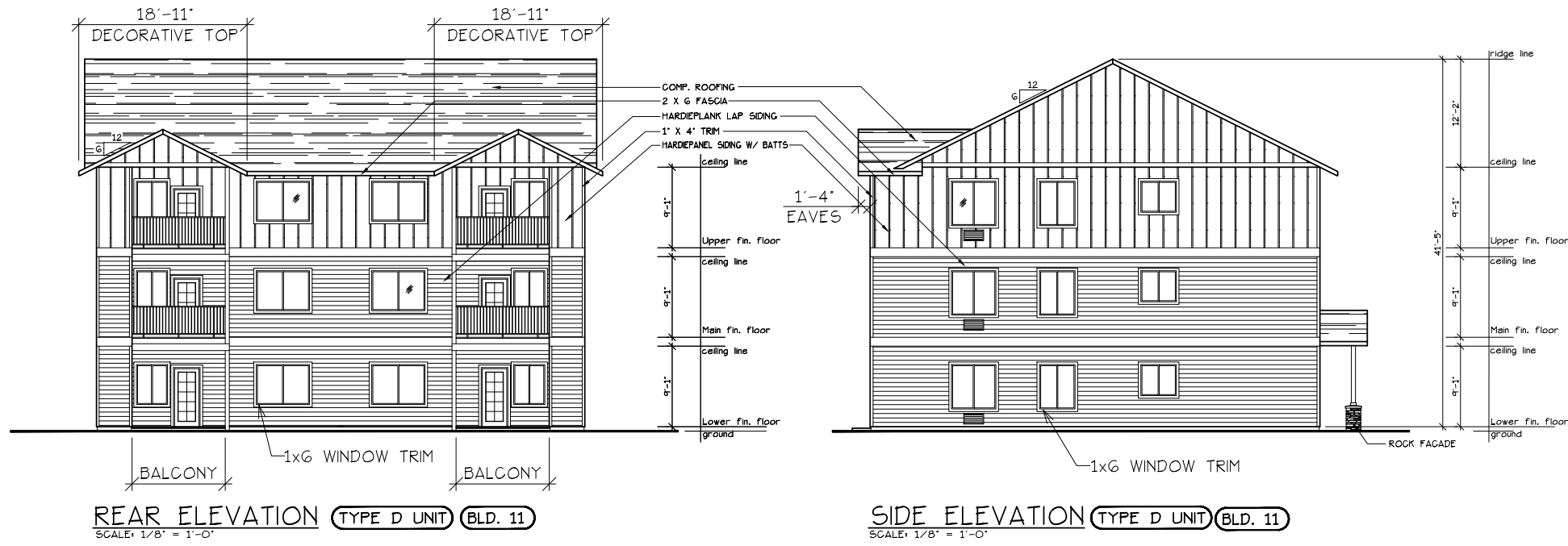
NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.

NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 36" ABOVE FINISH FLOOR SURFACE (OR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OSGC SECTIONS 1015.8.

NOTE: FOR WINDOW PLACEMENT SEE "WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION" DETAIL ON SHEET A29.40.

CONSTRUCTION TYPE V B SPRINKLED.



BUILDING TYPE 6 (6 TYPE D UNITS)
*BUILDINGS: 11

- ARCHITECTURAL FEATURES:
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - DECORATIVE TOP (PITCHED ROOF).

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

DESIGN: P.L.M.
DRAWN: G.J.D.
CHECKED: M.D.G.
DATE: Jul-21
SCALE: AS SHOWN

JOB # 7312

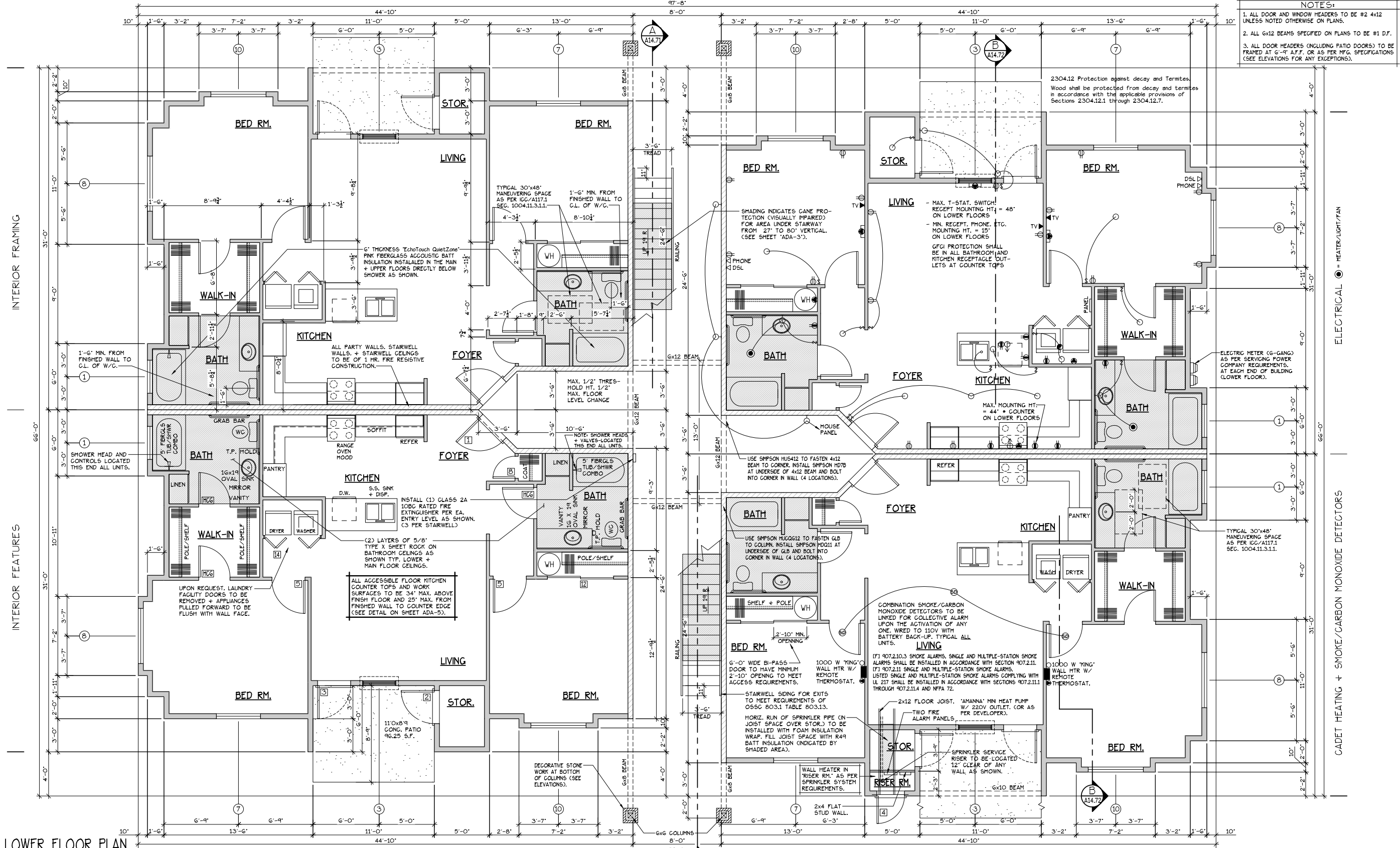
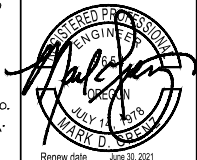


LOWER FLOOR PLAN

CASCADE PLACE APARTMENT COMPLEX

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT THE WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.L.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



NOTES:
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 DF.
3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6'-0" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

2304.12 Protection against decay and Termites. Wood shall be protected from decay and termites in accordance with the applicable provisions of Sections 2304.12.1 through 2304.12.7.

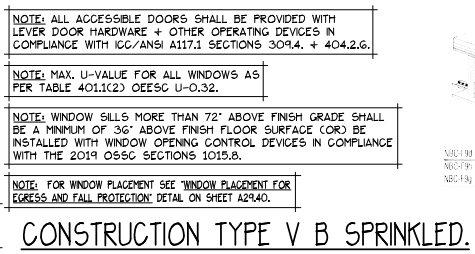
LOWER FLOOR PLAN
SCALE: 1/4" = 1'-0"
(HANDICAP ADAPTABLE/ACCESSIBLE) TYPE E UNITS BLD. 13
"E" UNIT = 1162 S.F.

CONSTRUCTION TYPE V B SPRINKLED SEE WALL DETAIL SHEETS FOR SHEETWORK APPLICATION.

SEE "GENERAL STRUCTURAL NOTES" ON SHEET A14.20 BEFORE BEGINNING ANY CONSTRUCTION.

DOORS		FRAMES		REMARKS
NO.	TYPE	MATERIAL	FINISH	
101	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
102	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
103	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
104	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
105	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
106	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
107	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
108	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
109	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
110	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
111	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
112	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
113	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
114	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
115	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
116	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
117	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
118	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
119	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR
120	3'-0" x 7'-0"	ALUMINUM	BRUSH STAIN	ENTRY DOOR

WINDOWS		HEADERS		REMARKS
NO.	TYPE	MATERIAL	FINISH	
201	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
202	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
203	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
204	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
205	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
206	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
207	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
208	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
209	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
210	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
211	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
212	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
213	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
214	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
215	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
216	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
217	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
218	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
219	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW
220	3'-0" x 4'-0"	ALUMINUM	BRUSH STAIN	ENTRY WINDOW



GENERAL NOTES:
1. ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
2. FREE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OSBC 710.2.2 AND OSBC 710.2.3.
3. PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
4. ALL BATH FANS TO HAVE MIN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
5. ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
6. ALL EXTERIOR FLOOR LIGHTING SHALL BE CONNECTED TO POWER PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD.
7. AS PER OSBC HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
8. ALL "TYPE A" ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

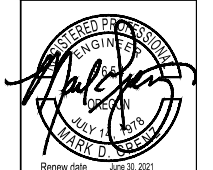
HANDICAP UNIT NOTES:
THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OSBC 2019 REVISED TO BE EFFECTIVE JANUARY 1, 2020, CHAPTER 11 OF THE OSBC 2019 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI A117.1-2003, WITH ICC/ANSI A117.1, CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS. CHAPTER 10 SETS OUT THE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.
THE INTENT IS THAT "ALL" GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.
WITHIN THE PROJECT THERE ARE ALSO TYPE "B" UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004. ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE "TYPE B" UNITS UNLESS SPECIFICALLY DESIGNATED TYPE "A" UNITS. WITHIN THESE TYPE "B" UNITS THE MAIN BATHROOM OR ONLY BATHROOM SHALL BE DESIGNATED AS AN "OPTION B" ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.
ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 9 THAT SET OUT SPECIFIC INFORMATION FROM OSBC 2019, CHAPTER 10 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT SPECIFIC MINIMUM ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.

MAIN FLOOR PLAN

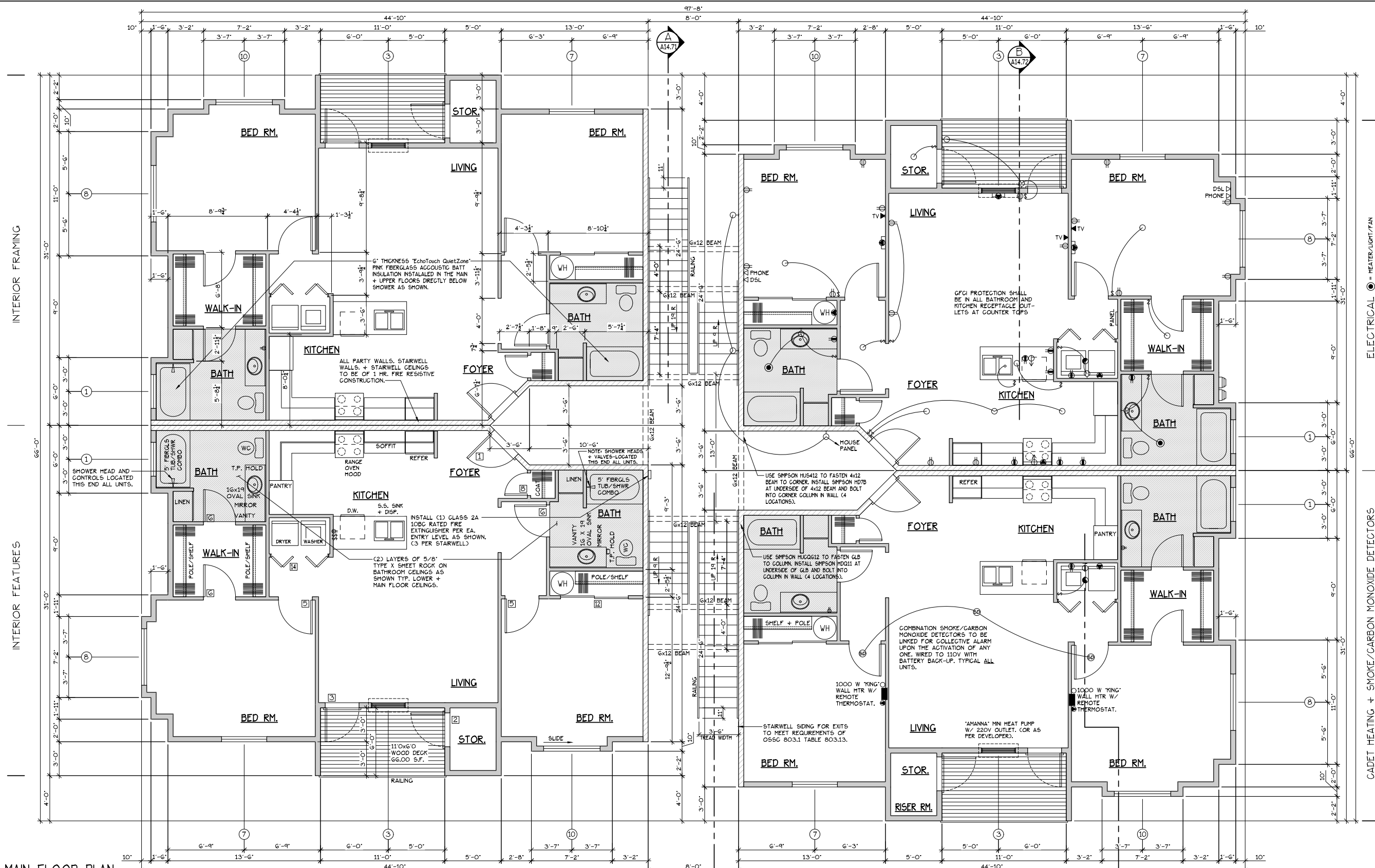
CASCADE PLACE APARTMENT COMPLEX

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: P.L.M.
Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A7.41



MAIN FLOOR PLAN
SCALE: 1/4" = 1'-0"

'E' UNIT = 1162 S.F. TYPE E UNITS BLD. 13

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET A14.20 BEFORE BEGINNING ANY CONSTRUCTION.

DOOR SCHEDULE		FRAMES		REMARKS	
NO.	DESCRIPTION	TYPE	FIN.	TYPE	FIN.
1	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
2	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
3	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
4	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
5	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
6	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
7	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
8	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
9	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
10	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
11	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
12	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
13	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
14	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
15	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
16	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
17	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
18	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
19	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
20	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
21	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
22	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
23	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
24	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
25	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
26	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
27	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
28	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
29	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH
30	3'-0" x 6'-0" SWING	1/2" ALUM.	BRCH	1/2" ALUM.	BRCH

WINDOW SCHEDULE		REMARKS	
NO.	DESCRIPTION	TYPE	FIN.
1	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
2	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
3	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
4	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
5	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
6	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
7	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
8	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
9	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
10	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
11	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
12	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
13	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
14	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
15	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
16	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
17	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
18	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
19	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
20	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
21	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
22	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
23	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
24	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
25	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
26	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
27	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
28	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
29	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE
30	3'-0" x 1'-0" VNTL. STAT.	MLGARD	WHITE

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4 + 404.2.6.
NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.
NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 3/8" ABOVE FINISH GRADE (COR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.
NOTE: FOR WINDOW PLACEMENT SEE WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION DETAIL ON SHEET A29.40.

NOTES:
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE NOTED.
2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1 SEC. 1004.5.2.1 WHEN FULLY OPENED.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.C. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13. OPERABLE PARTS SHALL COMPLY WITH SEC. 309.4. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNLO.

CONSTRUCTION TYPE V B SPRINKLED.

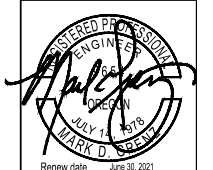
- GENERAL NOTES:**
- ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 - FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 716.2.2 AND OESG U-0.32.
 - PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROOF SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 - ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 - ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 - ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
 - AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 90 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 - ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

UPPER FLOOR PLAN

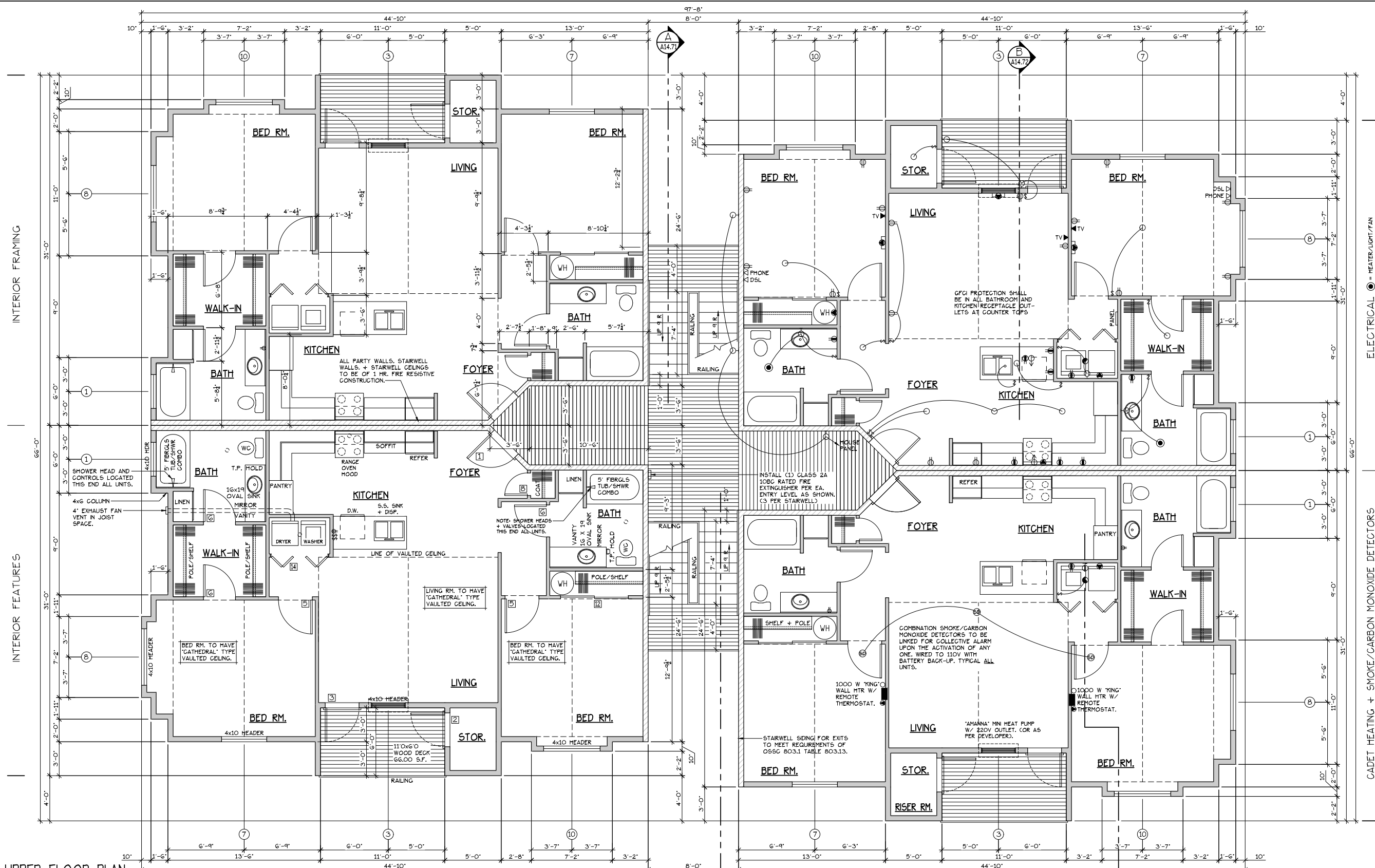
CASCADE PLACE APARTMENT COMPLEX

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT THE WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

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Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN
JOB # 7312



A750



UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"

'E' UNIT = 1162 S.F. TYPE E UNITS BLD. 13

CONSTRUCTION TYPE V B SPRINKLED
SEE WALL DETAIL SHEETS FOR SHEETROCK APPLICATION.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET A14.20 BEFORE BEGINNING ANY CONSTRUCTION.

DOOR SCHEDULE		FRAMES		REMARKS
NO.	DESCRIPTION	TYPE	FINISH	
1	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
2	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
3	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
4	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
5	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
6	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
7	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
8	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
9	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...
10	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN	...

WINDOW SCHEDULE		HEADERS	
NO.	DESCRIPTION	TYPE	FINISH
1	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
2	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
3	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
4	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
5	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
6	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
7	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
8	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
9	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN
10	3'-0" x 4'-0" WOOD	ALUMINUM	BRUSH STAIN

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4 + 404.2.6.
NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 401.1(2) OESG U-0.32.
NOTE: WINDOW SILLS MORE THAN 72" ABOVE FINISH GRADE SHALL BE A MINIMUM OF 3/8" ABOVE FINISH SURFACE (COR) BE INSTALLED WITH WINDOW OPENING CONTROL DEVICES IN COMPLIANCE WITH THE 2019 OESG SECTIONS 1015.8.
NOTE: FOR WINDOW PLACEMENT SEE WINDOW PLACEMENT FOR EGRESS AND FALL PROTECTION DETAIL ON SHEET A29.40.

NOTES:
1. ALL DOOR AND WINDOW HEADERS TO BE #2 4x12 UNLESS NOTED OTHERWISE ON PLANS.
2. ALL 6x12 BEAMS SPECIFIED ON PLANS TO BE #1 D.F.
3. ALL DOOR HEADERS (INCLUDING PATIO DOORS) TO BE FRAMED AT 6"-1" A.F.F. OR AS PER MFG. SPECIFICATIONS (SEE ELEVATIONS FOR ANY EXCEPTIONS).

* ACCESSIBLE POCKET DOORS MUST STOP FULLY OPEN WITH THEIR OPERATING HANDLES FULLY EXPOSED.
** TO PROVIDE MINIMUM 32" NET CLEAR WIDTH PER ICC/A117.1 SEC. 1004.5.2.1 WHEN FULLY OPENED.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.C. 2019 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.13, OPERABLE PARTS SHALL COMPLY WITH SEC. 309.4. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET MIN. 7'-0" A.F.F. UNLCO.

CONSTRUCTION TYPE V B SPRINKLED.

- GENERAL NOTES:**
- ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
 - FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 710.2.2 AND OESG 710.2.3.
 - PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
 - ALL BATH FANS TO HAVE MIN. 80 CFM. RANGE HOOD EXHAUST FANS TO HAVE MIN. 150 CFM.
 - ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
 - ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'G.
 - AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 90 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
 - ALL 'TYPE A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

BUILDING ELEVATIONS

CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

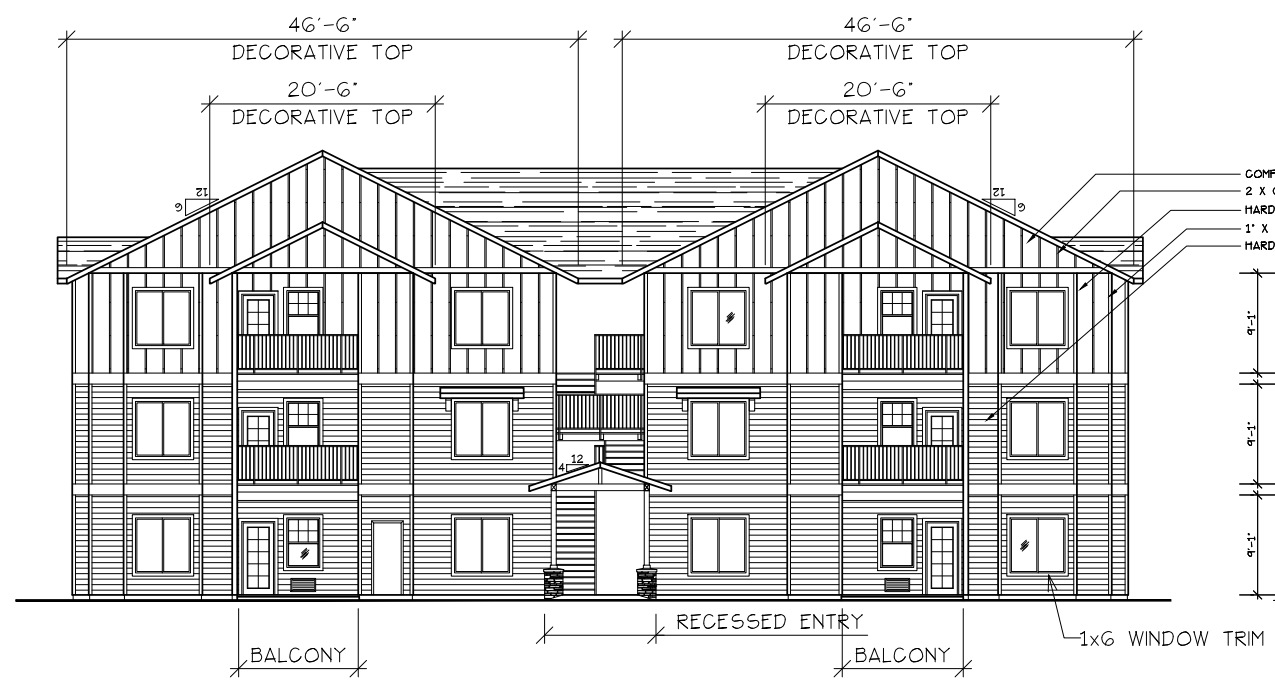
Design: P.L.M. G.I.D. M.D.G.
 Drawn: G.I.D. M.D.G.
 Checked: Jul-21
 Date: Jul-21
 Scale: AS SHOWN

JOB # 7312

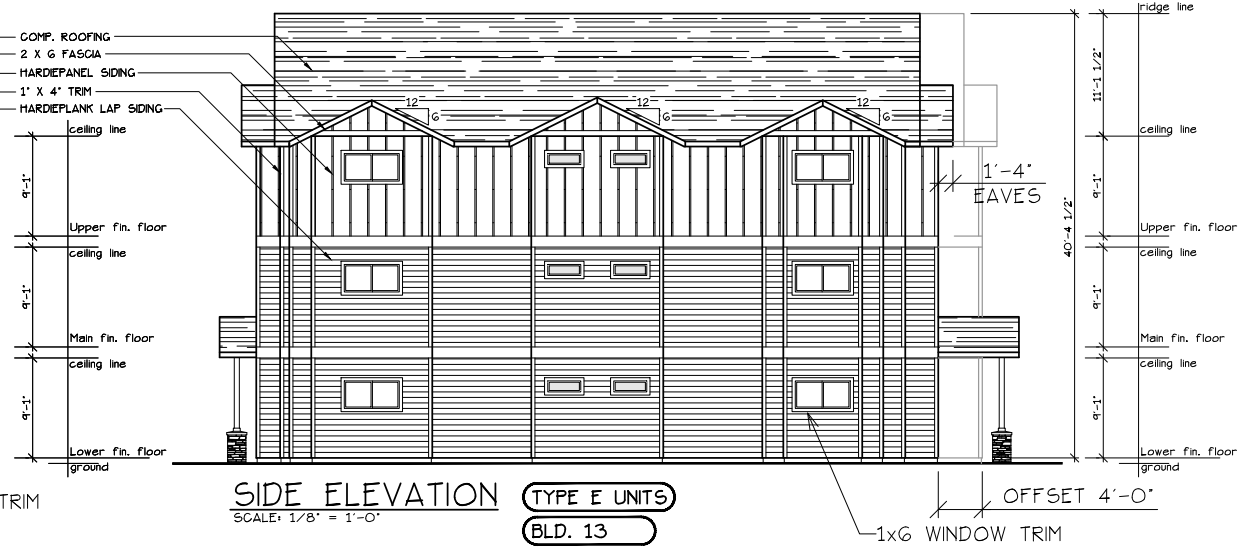


Renew Date: June 30, 2021

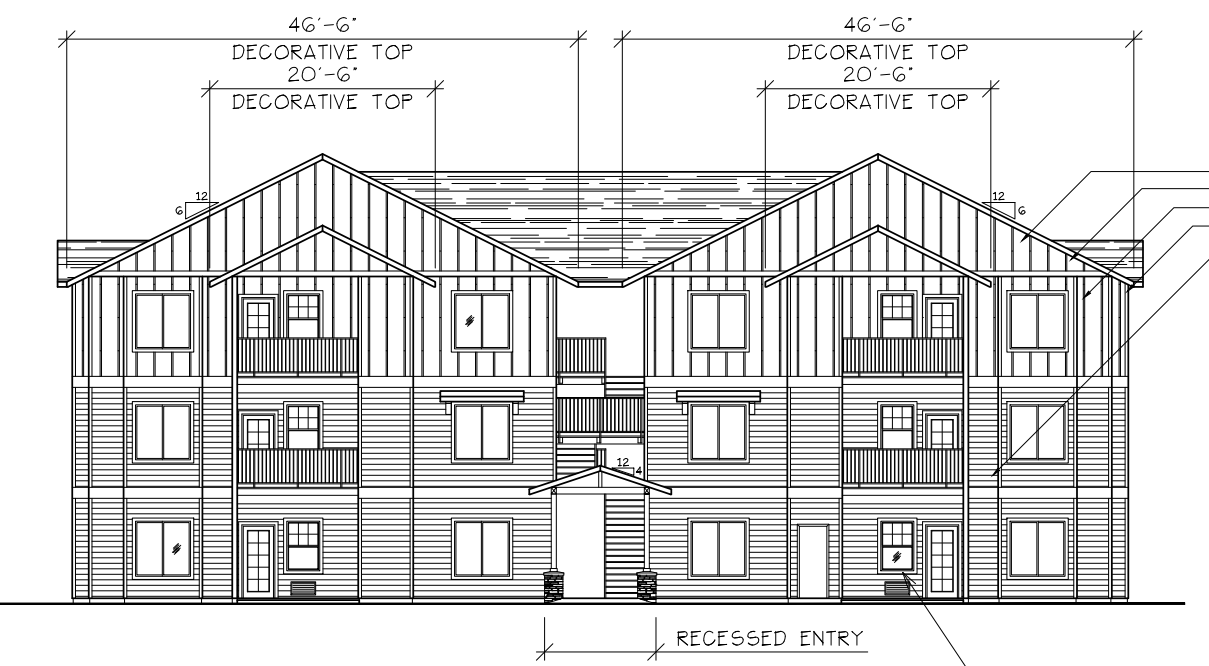
A7.90



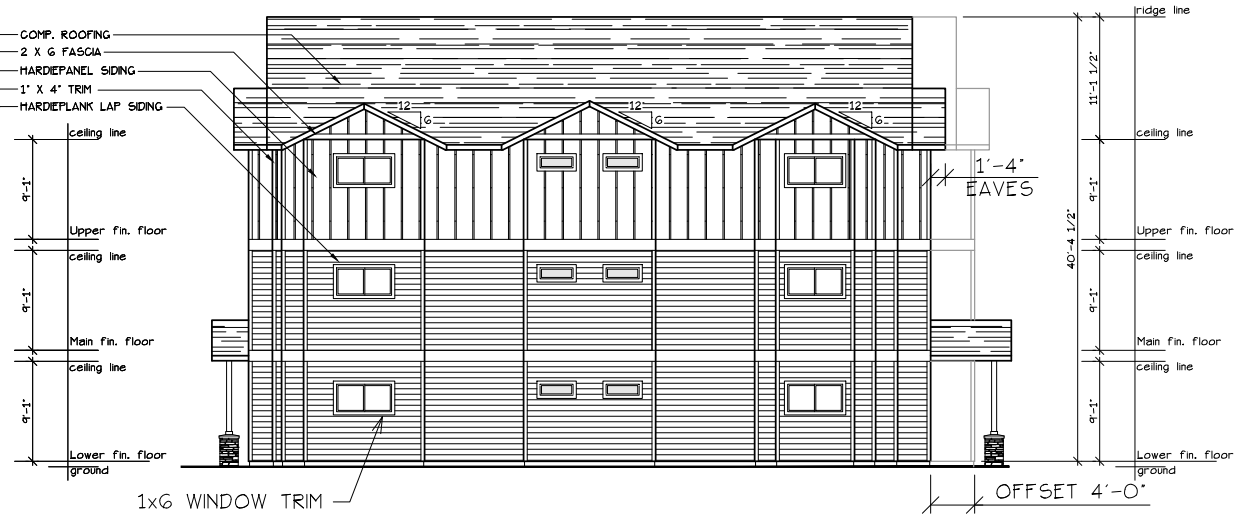
REAR ELEVATION TYPE E UNITS
 SCALE: 1/8" = 1'-0"
 BLD. 13



SIDE ELEVATION TYPE E UNITS
 SCALE: 1/8" = 1'-0"
 BLD. 13



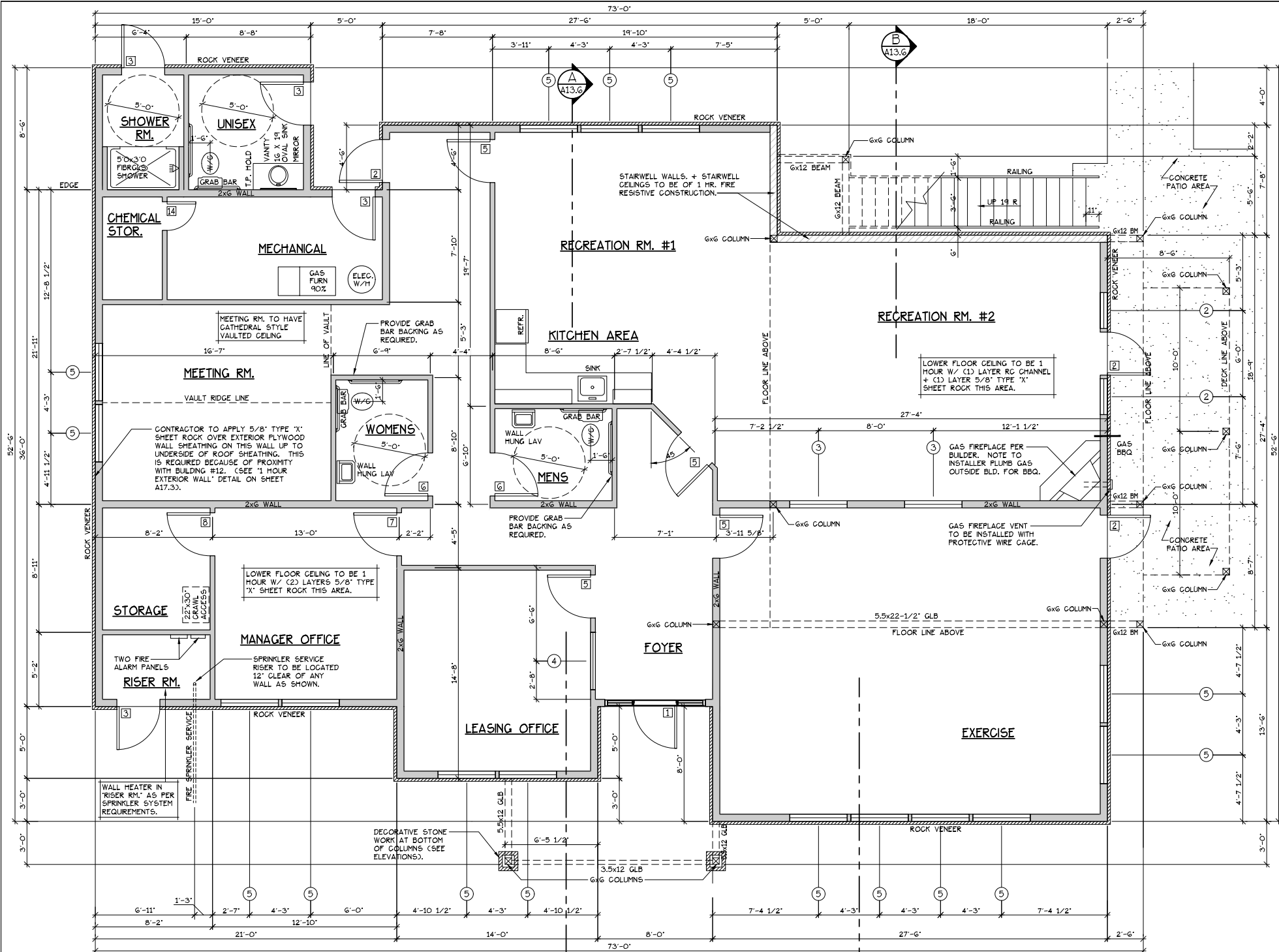
FRONT ELEVATION TYPE E UNITS
 SCALE: 1/8" = 1'-0"
 BLD. 13



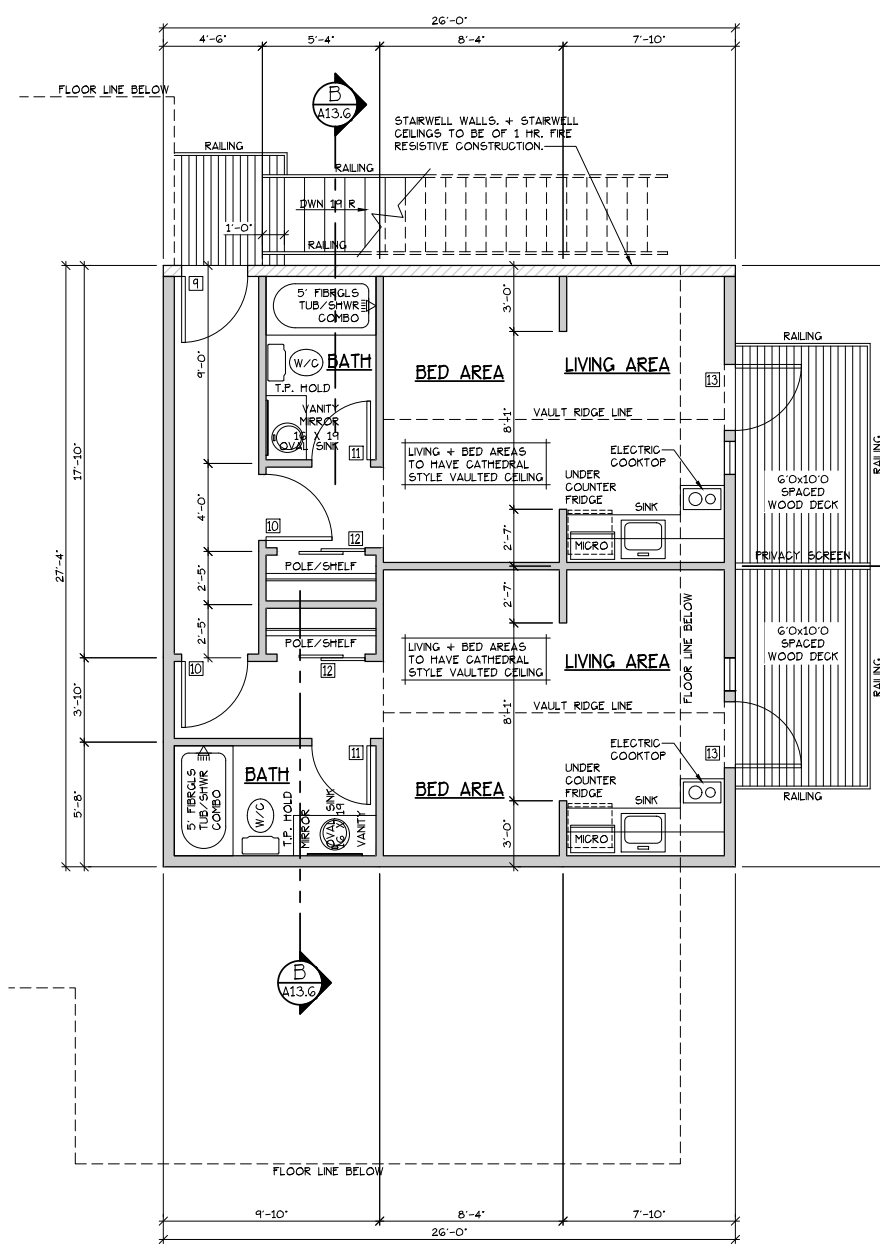
SIDE ELEVATION TYPE E UNITS
 SCALE: 1/8" = 1'-0"
 BLD. 13

BUILDING TYPE 7 (12 TYPE E UNITS)
 *BUILDINGS: 13

- ARCHITECTURAL FEATURES:**
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - OFFSETS (4' OFFSET IN FACADE).
 - DECORATIVE TOP (PITCHED ROOF).



LOWER FLOOR PLAN
SCALE: 1/4" = 1'-0"
(HANDICAP ADAPTABLE/ACCESSIBLE)
3.006 S.F.



UPPER FLOOR PLAN
SCALE: 1/4" = 1'-0"
711 S.F.

DOOR AND FRAME SCHEDULE										
MARK	WD	HGT	THK	DOOR TYPE	MATERIAL	FINISH	FRAMES	FIRE RATING	STYLE	REMARKS
1	3'-0"	7'-0"	1 3/4"	METAL	GLAD	PANT A	A METAL PAINT	20 MIN.	Hinged - Single - Exterior	Full glass entry + 1'-6" transom + 2'-0" side lites w/ key fob entry + panic hardware.
2	3'-0"	7'-0"	1 3/4"	METAL	GLAD	PANT A	A METAL PAINT	20 MIN.	Hinged - Single - Exterior	Full glass entry + 1'-6" transom w/ key fob entry + panic hardware.
3	3'-0"	7'-0"	1 3/4"	METAL	GLAD	PANT B	B METAL PAINT	20 MIN.	Hinged - Single - Exterior	Solid core no transom.
4	3'-0"	7'-0"	1 3/4"	METAL	GLAD	PANT A	A METAL PAINT	20 MIN.	Hinged - Single - Exterior	Solid core entry + 1'-6" transom w/ key fob entry.
5	3'-0"	7'-0"	1 3/4"	H.C.	MDF	PANT C	C WOOD PAINT	20 MIN.	Hinged - Single	Full lite w/ 1'-6" transom.
6	3'-0"	7'-0"	1 3/4"	SOLID CORE	WOOD	PANT C	C WOOD PAINT	20 MIN.	Hinged - Single	Full ada compliance solid core w/ 1'-6" transom (opaque).
7	3'-0"	7'-0"	1 3/4"	H.C.	MDF	PANT C	C WOOD PAINT	20 MIN.	Hinged - Single	Full lite w/ 1'-6" transom.
8	3'-0"	7'-0"	1 3/4"	H.C.	MDF	PANT E	E WOOD PAINT	20 MIN.	Hinged - Single	Hollow core no transom.
9	3'-0"	6'-8 1/2"	1 3/4"	METAL	GLAD	PANT A	A METAL PAINT	20 MIN.	Hinged - Single - Exterior	half glass entry w/ key fob entry.
10	3'-0"	6'-8 1/2"	1 3/4"	H.C.	MDF	PANT E	E WOOD PAINT	20 MIN.	Hinged - Single	
11	2'-8"	6'-8 1/2"	1 3/4"	H.C.	MDF	PANT E	E WOOD PAINT	20 MIN.	Hinged - Single	
12	4'-0"	6'-8 1/2"	1 3/4"	H.C.	MDF	PANT F	F WOOD PAINT	20 MIN.	Hinged - Single	bi-pass closet door.
13	3'-0"	6'-8 1/2"	1 3/4"	METAL	GLAD	PANT G	G METAL PAINT	20 MIN.	Hinged - Single - Exterior	Full glass door + 1'-6" side lites.
14	2'-0"	6'-8 1/2"	1 3/4"	H.C.	MDF	PANT E	E WOOD PAINT	20 MIN.	Hinged - Single	Hollow core no transom.

WINDOW SCHEDULE						
MARK	SIZE	TYPE	MFG.	COLOR	INSUL.	REMARKS
1	2'0" X 3'0"	VINYL SQH.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN
2	2'6" X 6'0"	VINYL STAT.	MILGARD	WHITE	YES	STATIONARY
3	4'0" X 4'0"	VINYL STAT.	MILGARD	WHITE	YES	STATIONARY
4	4'0" X 7'6"	VINYL STAT.	MILGARD	WHITE	YES	STATIONARY
5	4'0" X 7'6"	VINYL SQH.	MILGARD	WHITE	YES	SINGLE HUNG W/ SCREEN
6	5'0" X 3'6"	VINYL SLD.	MILGARD	WHITE	YES	HORIZ. SLIDER W/ SCREEN

NOTE: ALL WINDOW AND PATIO DOOR HEADERS TO BE DF #1 4x12 U.N.O.

NOTE: ALL ACCESSIBLE DOORS SHALL BE PROVIDED WITH LEVER DOOR HARDWARE + OTHER OPERATING DEVICES IN COMPLIANCE WITH ICC/ANSI A117.1 SECTIONS 309.4. + 404.2.6.

NOTE: MAX. U-VALUE FOR ALL WINDOWS AS PER TABLE 502.3 2014 OESG U-0.35.

NOTE: ALL LOWER FLOOR OPERABLE WINDOWS + HARDWARE TO COMPLY WITH O.S.S.C. 2014 CHAPTER 11 SEC. 1107.2 ON TO ICC/ANSI A117.1 THEN SEC. 1002.9. OPERABLE PARTS SHALL COMPLY WITH SEC. 309. SEE 'OPERABLE WINDOWS IN ACCESSIBLE LOCATIONS' DETAIL ON SHEET ADA-5. ALL LOWER FLOOR WINDOW HEADERS TO BE SET AT 7'-0" A.F.F. U.N.O.

CONSTRUCTION TYPE V B SPRINKLED.

SEE 'GENERAL STRUCTURAL NOTES' ON SHEET A1.2 BEFORE BEGINNING ANY CONSTRUCTION.

GENERAL NOTES:

- ALL EXTERIOR WALLS TO BE 2 X 6 STUDS. ALL OTHER WALLS TO BE 2 X 4 STUDS UNLESS OTHERWISE NOTED.
- FIRE BLOCK CONCEALED SPACES (VERTICAL + HORIZONTAL) AS PER OESG 718.2.2 AND OESG 718.2.3.
- PRIOR TO INSTALLATION OF FIBERGLASS TUB/SHOWER + SHOWER UNITS, SHEET ROCK SHALL BE APPLIED TO STUD WALLS AS INDICATED ON PLANS.
- ALL BATH FANS TO HAVE MN. 80 CFM RANGE HOOD EXHAUST FANS TO HAVE MN. 150 CFM.
- ELECTRIC OUTLETS IN 1 HR. WALL MAY NOT BE BACK TO BACK AND MUST BE SEPARATED BY HORIZONTAL DISTANCE OF 2'-0".
- ALL EXTERIOR FLOOD LIGHTING SHALL BE CONNECTED TO HOUSE PANELS LOCATED IN ON-SITE UTILITY ROOMS + STORAGE BLD'S.
- AS PER OESG HIGH-EFFICIENCY LIGHTING SYSTEMS - A MINIMUM OF 50 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE COMPACT OR LINEAR FLUORESCENT, OR A LIGHTING SOURCE THAT HAS A MINIMUM EFFICACY OF 40 LUMENS PER INPUT WATT.
- ALL TYPE 'A' ACCESSIBLE UNITS REQUIRE THE PATIO TO BE AT SAME LEVEL AS DWELLING UNIT.

HANDICAP UNIT NOTES:

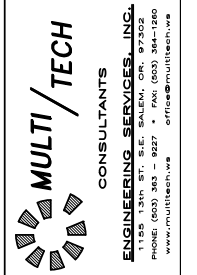
THE UNITS HAVE BEEN DESIGNED TO COMPLY WITH OESG 2014 REVISED TO BE EFFECTIVE APRIL 1, 2014. CHAPTER 11 OF THE OESG 2014 AS REVISED INCORPORATES AS PART OF IT, AMERICAN NATIONAL STANDARD ICC/ANSI A117.1-1003. WITHIN ICC/ANSI A117.1, CHAPTER 10 SETS OUT SPECIFIC CODE REQUIREMENTS FOR DWELLING AND SLEEPING UNITS. CHAPTER 10 SETS OUT THE CODE REQUIREMENTS THAT ALL GROUND FLOOR UNITS MUST MEET.

THE INTENT IS THAT 'ALL' GROUND FLOOR UNITS ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

WITHIN THE PROJECT THERE ARE TYPE 'A' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004.

WITHIN THE PROJECT THERE ARE ALSO TYPE 'B' UNITS WHICH MUST MEET SPECIFIC REQUIREMENTS SET OUT IN ICC/ANSI A117.1, CHAPTER 10, SECTION 1004. ALL ACCESSIBLE FLOOR UNITS WITHIN THIS PROJECT ARE TO BE TYPE 'B' UNITS UNLESS SPECIFICALLY DESIGNATED TYPE 'A' UNITS. WITHIN THESE TYPE 'B' UNITS THE MAIN BATHROOM (OR ONLY BATHROOM) SHALL BE DESIGNATED AS AN OPTION 'B' ADAPTABLE BATHROOM WHICH MUST MEET THE REQUIREMENTS OF ICC/ANSI A117.1 SECTION 1004.11.3.2.

ATTACHED TO THE DRAWING SETS ARE OUR SHEETS ADA-1 THRU 5 AS WELL AS THE REFERENCED DOCUMENTS. THE DRAWINGS SET OUT SPECIFIC MINIMUM ELEMENTS AND DIMENSIONS THAT MUST BE MET TO ASSURE COMPLIANCE WITH THIS CODE.



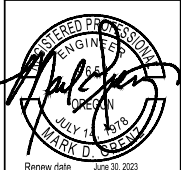
LOWER FLOOR PLAN

CASCADE PLACE APARTMENTS

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

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Drawn: G.J.D.
Checked: M.D.G.
Date: Jul-21
Scale: AS SHOWN

JOB # 7312



Renew Date: June 30, 2023
A8.31

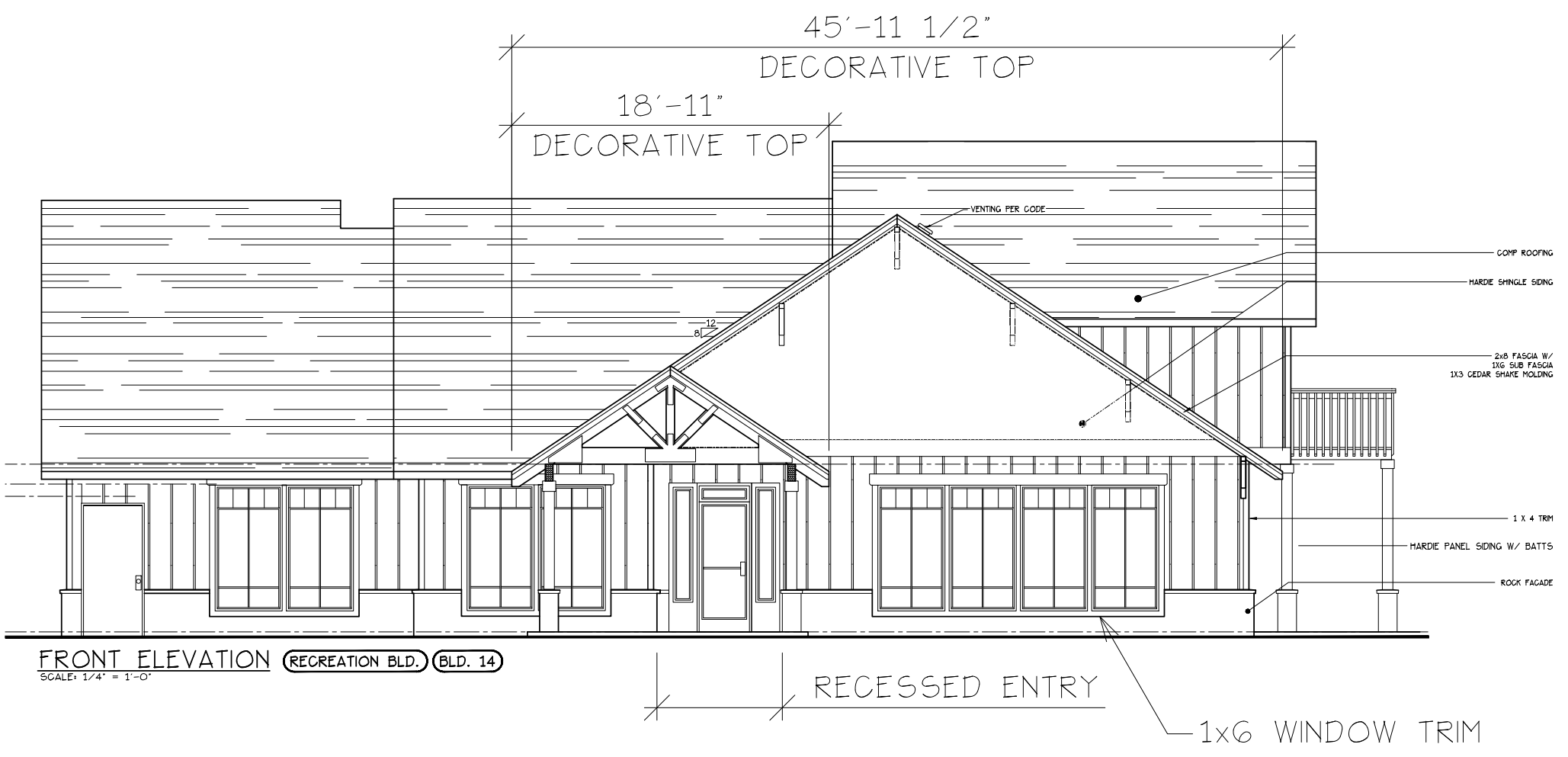
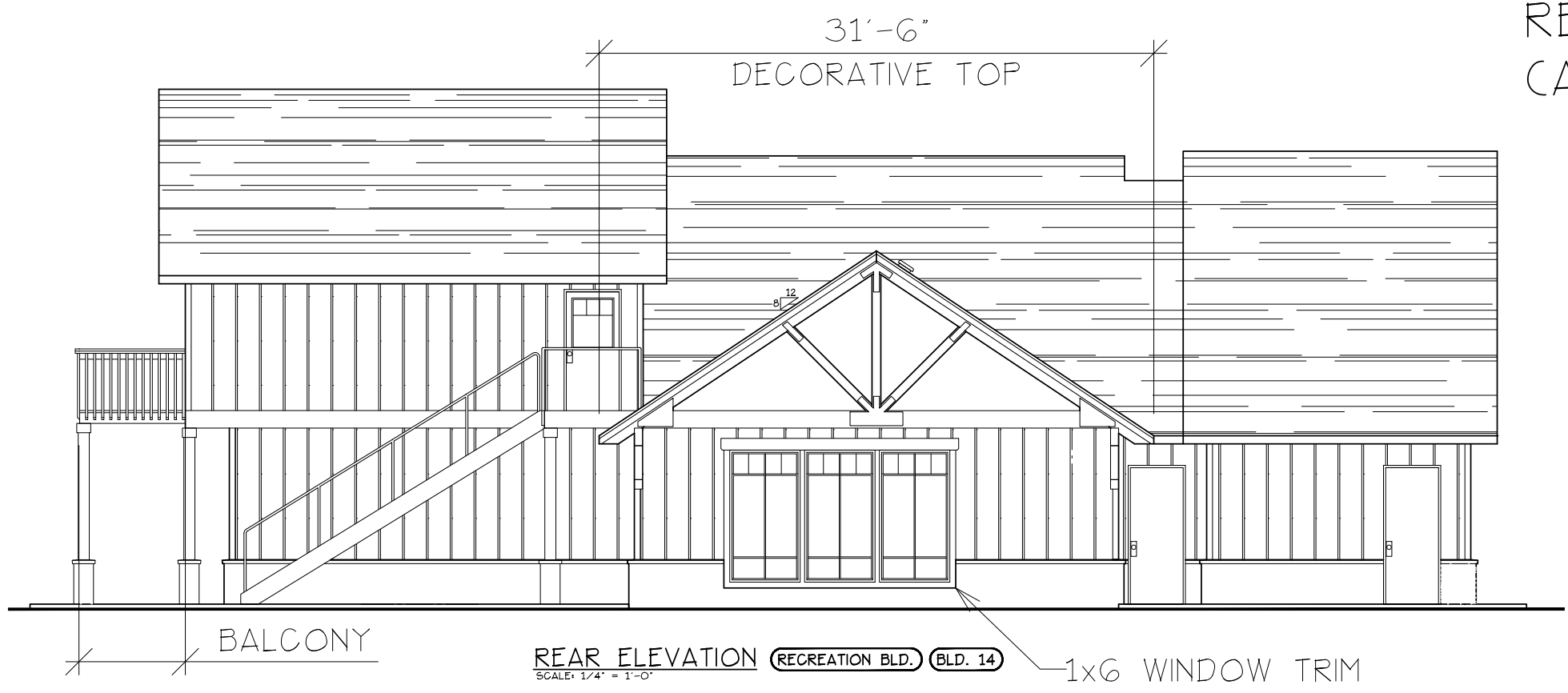
RECREATION BUILDING
 (APPROX. 3,006 SQ. FT.)
 *BUILDING: 14

MULTI/TECH
 CONSULTANTS
ENGINEERING SERVICES, INC.
 1105 15TH ST. S.E. SALMON, OR 97102
 PHONE: (503) 343 - 9227 FAX: (503) 344-1240
 www.multitechinc.com office@multitechinc.com

**BUILDING
 ELEVATIONS**

**CASCADE PLACE
 APARTMENTS**

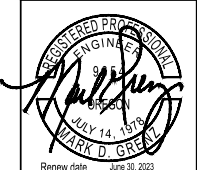
- ARCHITECTURAL FEATURES:
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - DECORATIVE TOP (PITCHED ROOF).



NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
 DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

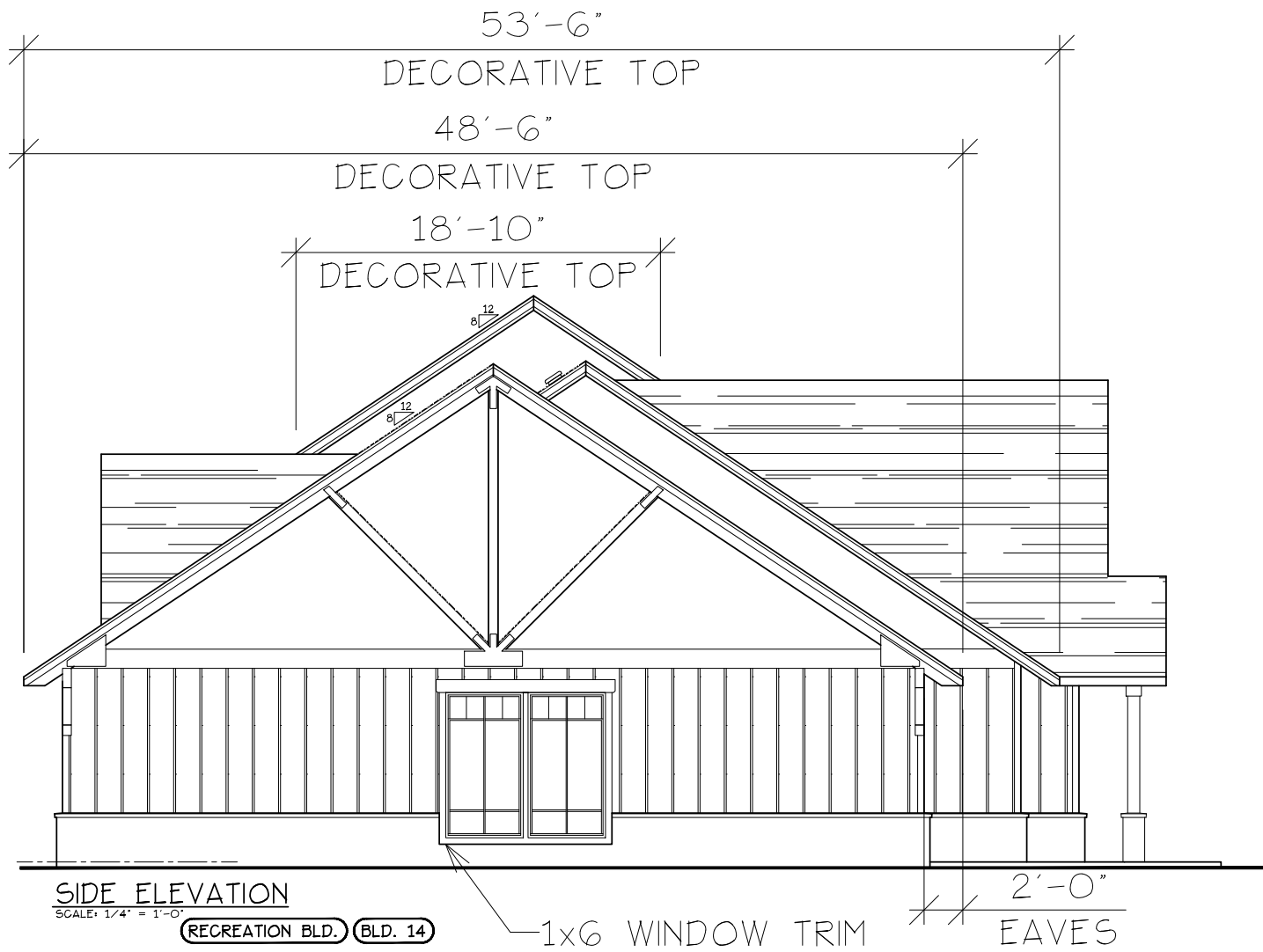
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 CHECKED: M.D.G.
 DATE: Jul-21
 SCALE: AS SHOWN

JOB # 7312



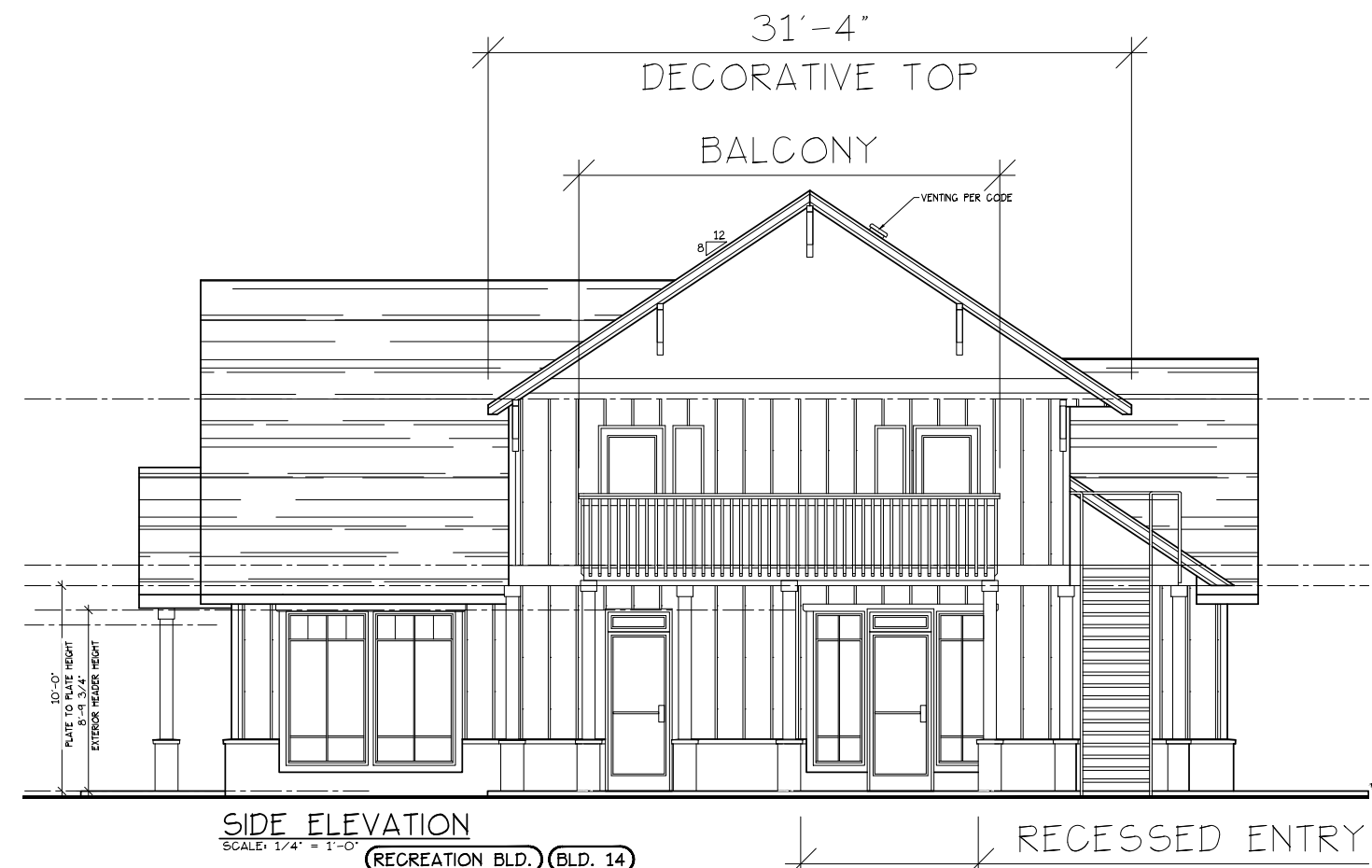
Renew Date: July 14, 2025

A8.90



RECREATION BUILDING
(APPROX. 3,006 SQ. FT.)
*BUILDING: 14

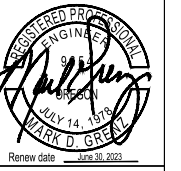
- ARCHITECTURAL FEATURES:
- RECESSED ENTRANCES.
 - WINDOW TRIM (1x6 - 4" MINIMUM).
 - EAVES (24" OVERHANG).
 - BALCONY (DECKS).
 - DECORATIVE TOP (PITCHED ROOF).



NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.
DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

DESIGNER: P.L.M.
DRAWN: G.I.D.
CHECKED: M.D.G.
DATE: Jul-21
SCALE: AS SHOWN

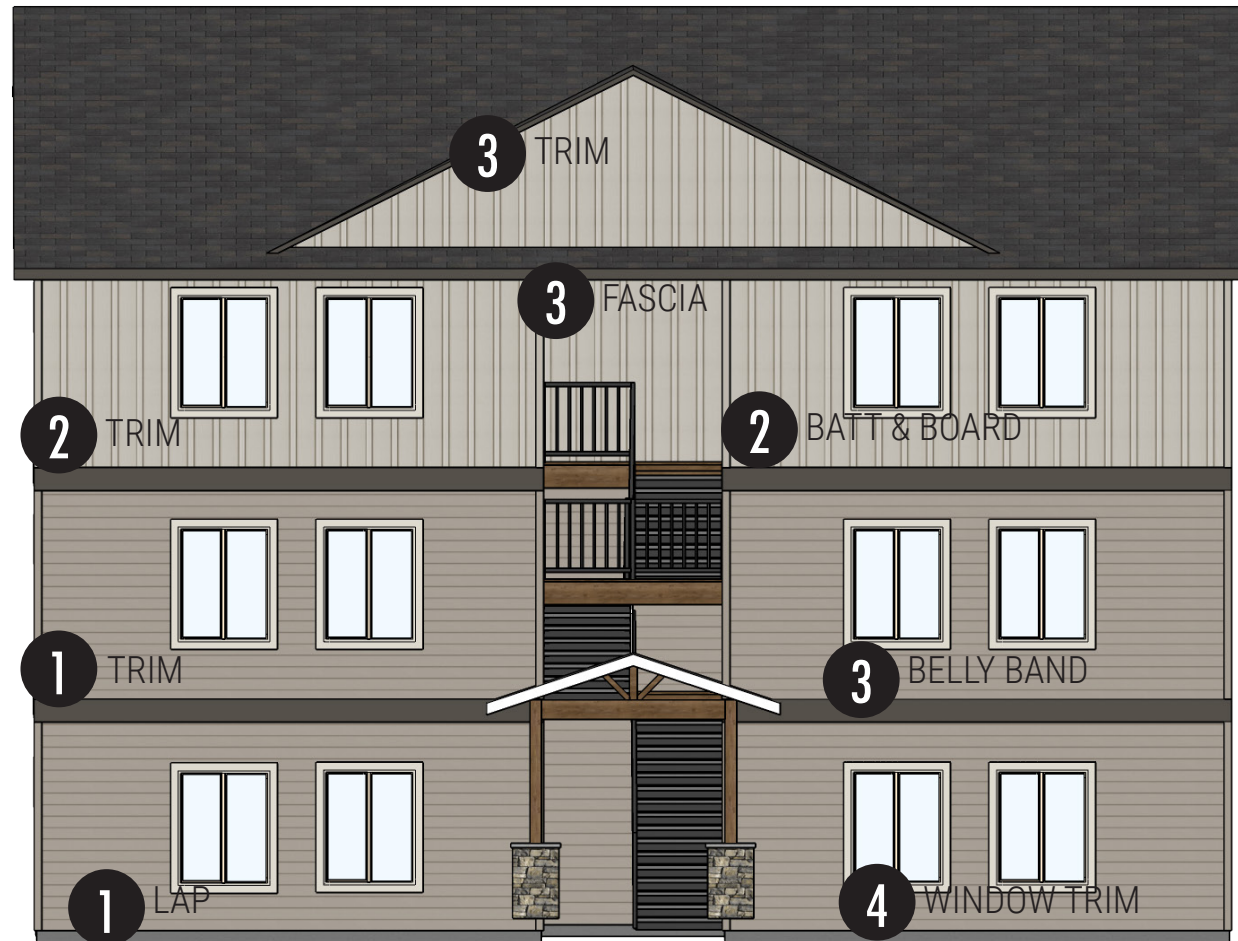
JOB # 7312



BUILDING 7, 10, 13, 20, 23, 28

SCHEME# 1

- 1** PEWTER TANKARD
BODY-LAP
- 2** MINDFUL GRAY
ACCENT - BATT AND BOARD
- 3** URBANE BRONZE
FASCIA + BELLY BAND
- 4** PALE OAK
WINDOW + DOOR TRIM
- D** URBANE BRONZE
ALL DOORS



BUILDING 4, 9, 14, 19, 24

SCHEME# 2

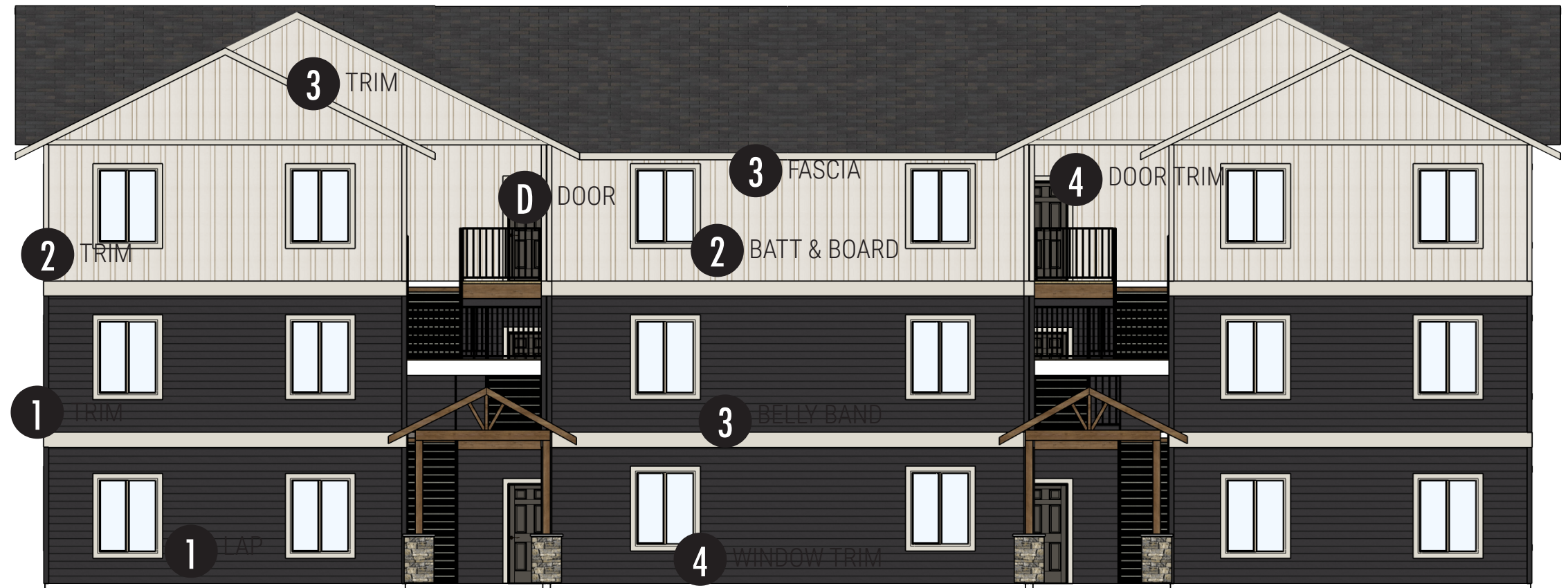
- 1** PALE OAK
BODY-LAP
- 2** NO ACCENT
- 3** BLACK MAGIC
FASCIA + BELLY BAND
- 4** BLACK MAGIC
WINDOW + DOOR TRIM
- D** URBANE BRONZE
ALL DOORS



BUILDING 6, 12, 16, 22, 26

SCHEME# 3

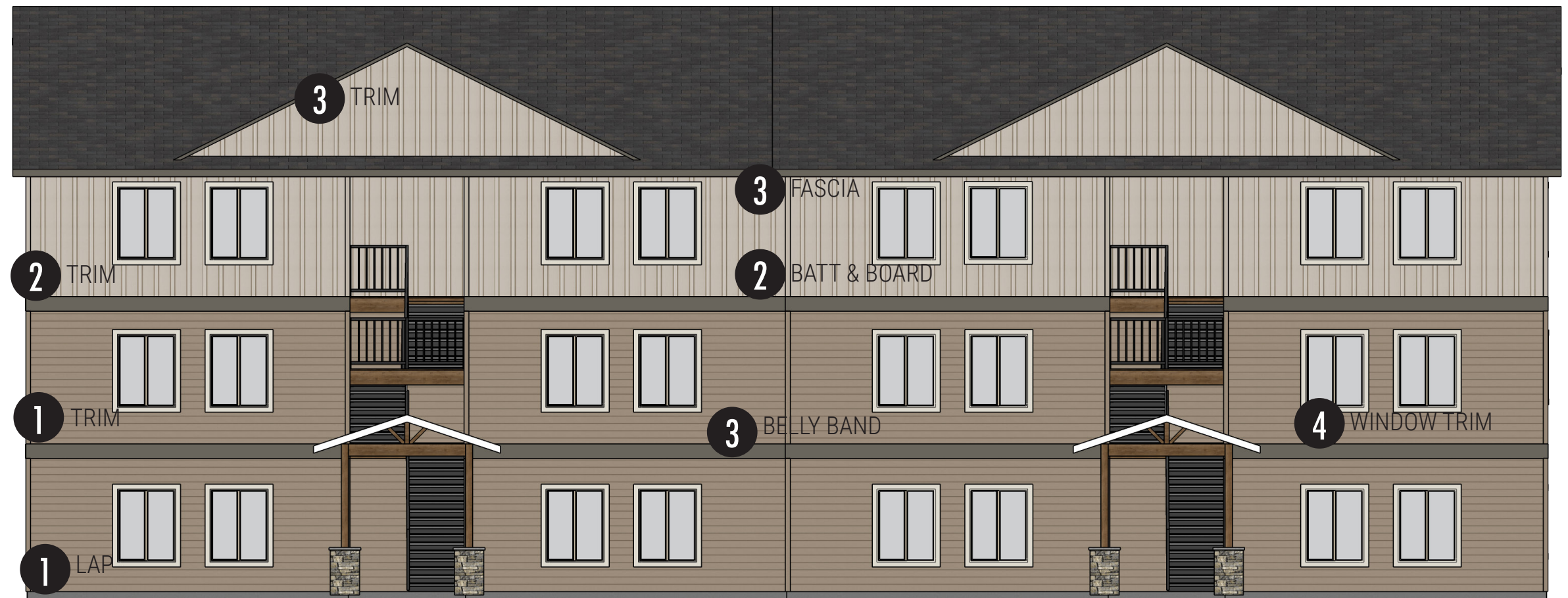
- 1** BLACK MAGIC
BODY-LAP
- 2** CITY LOFT
ACCENT - BATT AND BOARD
- 3** PALE OAK
FASCIA + BELLY BAND
- 4** PALE OAK
WINDOW + DOOR TRIM
- D** URBANE BRONZE
ALL DOORS



BUILDING 3, 5, 11, 17, 21, 25

SCHEME# 4

- 1 CURIO GRAY
BODY-LAP
- 2 AMAZING GRAY
ACCENT - BATT AND BOARD
- 3 URBANE BRONZE
FASCIA + BELLY BAND
- 4 PALE OAK
WINDOW + DOOR TRIM
- D URBANE BRONZE
ALL DOORS



BUILDING 2, 8, 15, 18, 27

SCHEME# 5

- 1** URBANE BRONZE
BODY-LAP
- 2** DOVETAIL
ACCENT - BATT AND BOARD
COLONNADE GRAY
- 3** FASCIA + BELLY BAND
PALE OAK
- 4** WINDOW + DOOR TRIM
URBANE BRONZE
- D** ALL DOORS

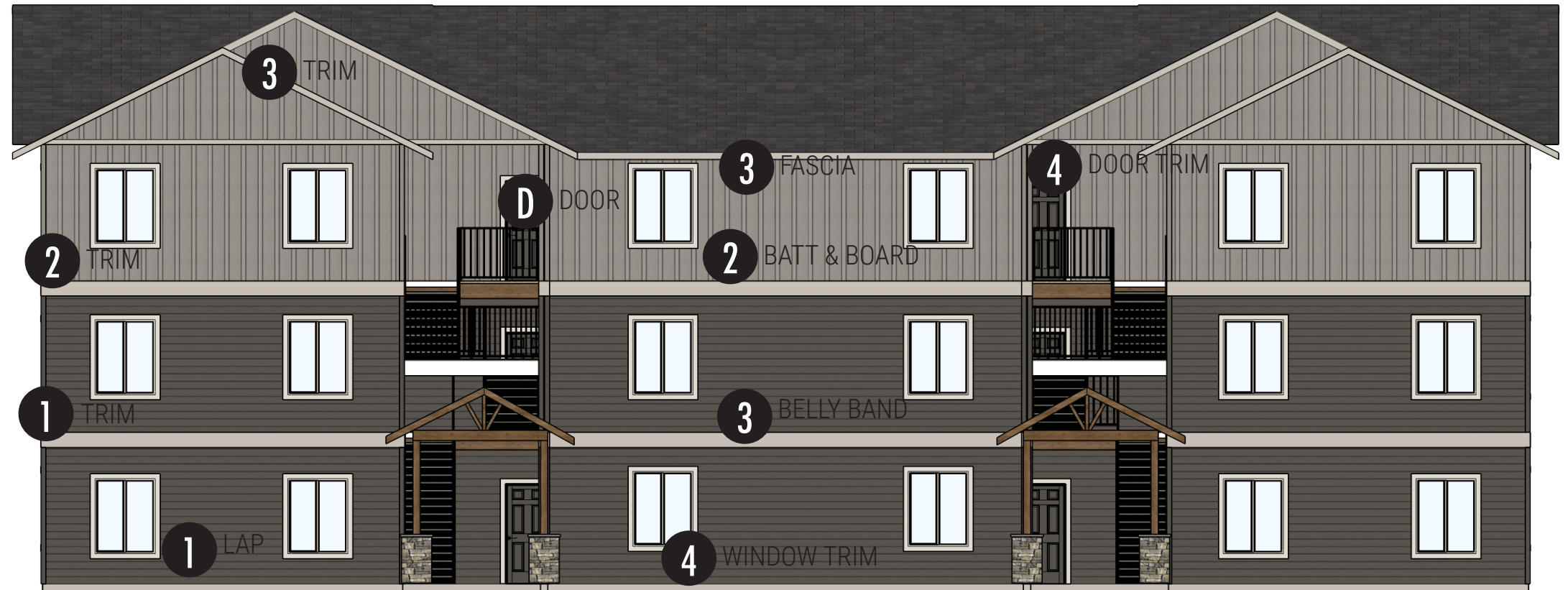


Exhibit D: Transportation Impact Study

Transportation Impact Analysis

Cascade Place Multi-Family

Molalla, Oregon

August 2021

Transportation Impact Analysis

Cascade Place Multi-Family

Molalla, Oregon

Prepared For:

I&E Construction

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Clackamas, OR 97015

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Project No. 26752

August 2021



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- Appendix A Turning Movement Counts
- Appendix B Existing Year 2021 Conditions Traffic Analysis Worksheets
- Appendix C ODOT Crash Data
- Appendix D Year 2022 Background Conditions Traffic Analysis Worksheets
- Appendix E Year 2022 Total Conditions Traffic Analysis Worksheets
- Appendix F Signal Warrant Analysis Worksheets

Section 1
Executive Summary

EXECUTIVE SUMMARY

I&E Construction proposes to develop up to 151 multi-family units, known as Cascade Place, on an approximately 6.8-acre lot south of the Cascade Center commercial development on OR 211 in Molalla, Oregon. The multi-family units will replace the previously-approved 557 storage units within the Cascade Center commercial development. The site will be accessed via a southward extension of Leroy Avenue across OR 211, which is currently under construction as part of the Cascade Center commercial development. The anticipated build-out year is 2022.

The results of this study indicate that the proposed Cascade Place Multi-Family development can be constructed while maintaining acceptable traffic operations and safety at the study intersections, assuming provision of the recommended mitigation measures.

FINDINGS

Year 2021 Existing Conditions

- A 2.5-percent annual growth rate was applied to the raw turning movement volumes collected at the study intersections in fall 2018 to estimate the existing year 2021 turning movement volumes.
- All of the study intersections currently meet ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the OR 211/Molalla Avenue intersection—the v/c ratios on the eastbound and westbound OR 211 approaches currently exceed the ODOT mobility target of 0.90 during the weekday PM peak hour.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.

Year 2022 Background Traffic Conditions

- A 2.5-percent annual growth rate was applied to the existing traffic volumes to account for regional growth in the area.
- The City of Molalla identified the following in-process developments for inclusion in the year 2022 background traffic volumes:
 - Cascade Center commercial development
 - Colima Apartments
 - Center Market
- The *City of Molalla Transportation System Plan* identifies the future need to signalize the OR 211/Leroy Avenue intersection. The traffic signal was identified to provide motor vehicle capacity at the intersection to serve anticipated traffic growth and also serves as a north-

south pedestrian crossing opportunity linking residents south of OR 211 with Molalla River Middle School to the north. Signalization is not currently funded.

- The Cascade Center commercial development will improve OR 211 to a three-lane section along the site frontage, including exclusive left turn lanes in either direction of OR 211 at Leroy Avenue. These improvements were incorporated into the year 2022 background traffic conditions analysis as being constructed prior to build-out of the multi-family units.
- The Cascade Center commercial development will provide a Rectangular Rapid Flashing Beacon (RRFB) for the crosswalk on the west leg of the improved OR 211/Leroy Avenue intersection.
- The Cascade Center commercial development will provide several improvements to the OR 211/Molalla Avenue intersection, including signalization. These improvements were incorporated into the year 2022 background traffic conditions analysis as being constructed prior to build-out of the multi-family units.
- Each of the study intersections is forecast to continue meeting ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the northbound left turn at OR 211/Leroy Avenue, which is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday PM peak hour, and northbound approach delays are projected to reach Level of Service "F".

Proposed Development Plan

- The proposed 151 multi-family units are expected to generate approximately 822 weekday net new trips, of which 51 (13 in, 38 out) will occur during the AM peak hour and 66 (40 in, 26 out) will occur during the PM peak hour.
- The housing site was previously approved for development into 557 storage units as part of the prior Cascade Center commercial development. After reducing the apartment trip generation by the number of trips associated with the approved storage units, the proposed 151 multi-family units are expected to generate approximately 722 weekday net new trips impacting the transportation system, of which 43 (9 in, 34 out) will occur during the AM peak hour and 55 (34 in, 21 out) will occur during the PM peak hour.

Year 2022 Total Traffic Conditions

- Each of the study intersections is forecast to continue meeting ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the northbound left turn at OR 211/Leroy Avenue, which is projected to experience a v/c ratio above the ODOT mobility standard of 0.95 during the weekday AM and PM peak hours, and northbound approach delays are projected to reach Level of Service "F".

Traffic Signal and Turn Lane Considerations

- Per the MUTCD volume-based signal warrants and the estimated 24-hour volume profile of the OR 211/Leroy Avenue intersection, the traffic volume-based signal warrants are not projected to be met at the intersection in conjunction with site development. The number of northbound PM peak hour trips at the intersection is not projected to meet ODOT's threshold for signalization after site development.

95th-Percentile Queueing Analysis

- The proposed storage lengths at the study intersections are expected to accommodate each of the 95th-percentile queues in the AM and PM peak hours under 2022 total traffic conditions.

RECOMMENDATIONS

The following are recommended in conjunction with site redevelopment:

- Given the stop-controlled northbound and southbound Leroy Avenue approaches at OR 211 are forecast to operate at Level of Service "F" prior to and after build-out of the proposed Cascade Place multi-family development, we recommend the applicant work with the City to determine what proportionate share contribution (if any) is appropriate for future signalization improvements at OR 211/Leroy Avenue.
- All landscaping, signage, and utilities near the site access points should be placed and maintained to provide adequate sight distance.

Additional details of the study methodology, findings, and recommendations are provided within this report.

Section 2 Introduction

INTRODUCTION

PROJECT DESCRIPTION

I&E Construction proposes to develop up to 151 multi-family units on an approximately 6.8-acre lot south of the Cascade Center commercial development on OR 211. Figure 1 illustrates the site vicinity. The site will be served via a southward extension of Leroy Avenue across OR 211, which is currently being constructed by the Cascade Center commercial development. The multi-family units, known as Cascade Place, will replace the previously-approved 557 storage units within the Cascade Center commercial development. The anticipated build-out year is 2022. Figure 2 illustrates the proposed site plan.

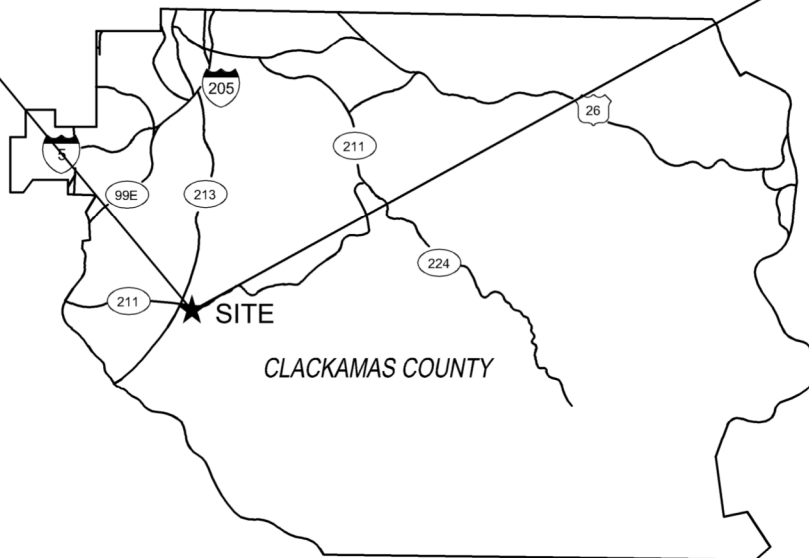
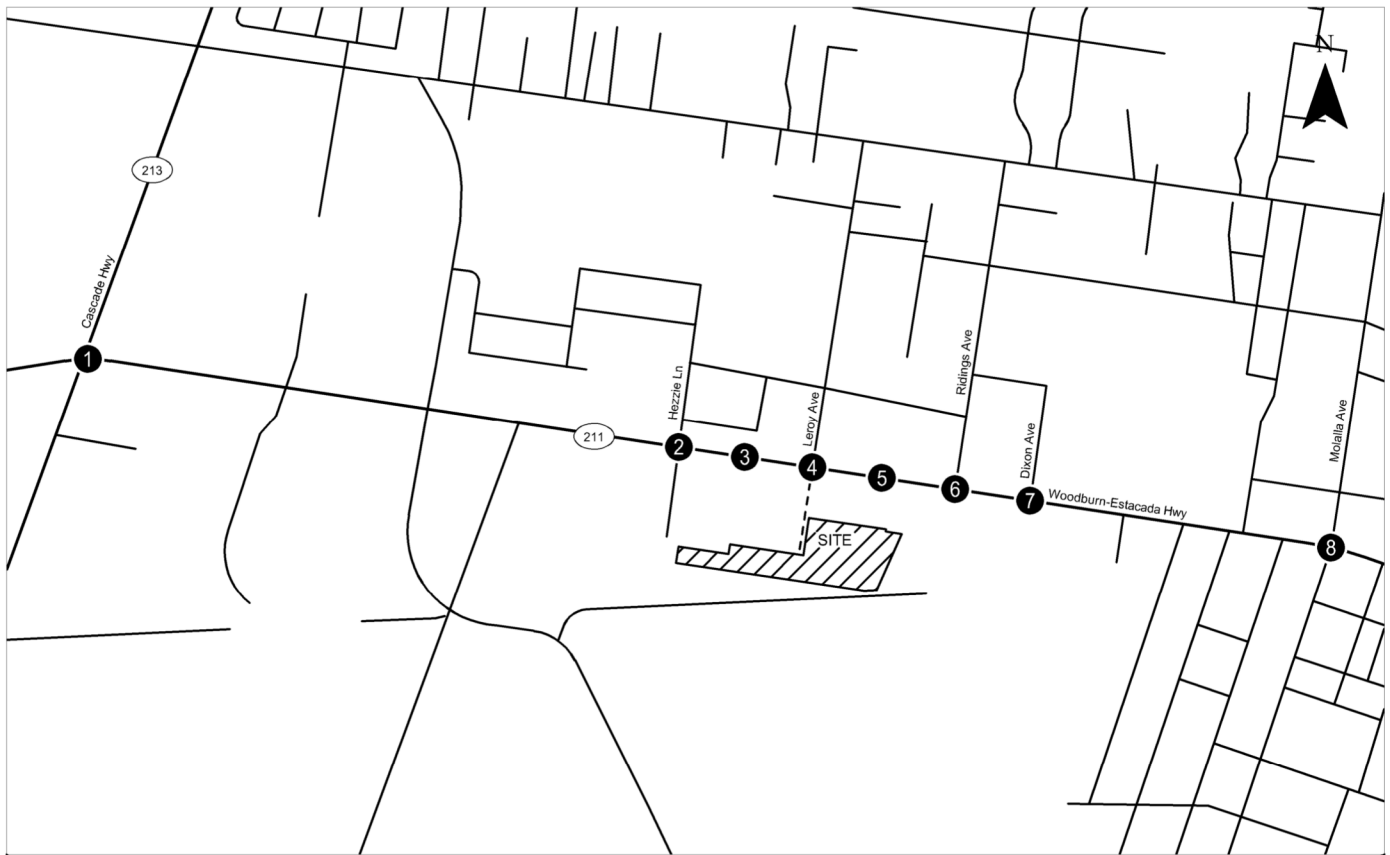
SCOPE OF THE REPORT

This analysis determines the transportation-related impacts associated with the proposed Cascade Place multi-family development and was prepared in accordance with the City of Molalla and Oregon Department of Transportation (ODOT) requirements for traffic impact studies. The study intersections and scope of this project were selected in consultation with City and ODOT staff. Operational analyses were performed at these intersections:

1. OR 211 (Woodburn-Estacada Highway/Main Street)/OR 213 (Cascade Highway)
2. OR 211 (Woodburn-Estacada Highway/Main Street)/Hezzie Lane
3. OR 211 (Woodburn-Estacada Highway/Main Street)/West Cascade Center Site Access
4. OR 211 (Woodburn-Estacada Highway/Main Street)/Leroy Avenue
5. OR 211 (Woodburn-Estacada Highway/Main Street)/East Cascade Center Site Access
6. OR 211 (Woodburn-Estacada Highway/Main Street)/Ridings Ave
7. OR 211 (Woodburn-Estacada Highway/Main Street)/Dixon Avenue/Lowe Rd
8. OR 211 (Woodburn-Estacada Highway/Main Street)/Molalla Avenue

This report evaluates these transportation issues:

- Existing year 2021 land-use and transportation-system conditions within the site vicinity during the weekday AM and PM peak hours;
- Developments and transportation improvements planned in the study area;
 - Forecast year 2022 background traffic conditions (without the proposed development) during the weekday AM and PM peak hours;
- Trip generation and distribution estimates for the proposed Cascade Place development;
- Forecast year 2022 (including the proposed development) total traffic conditions during the weekday AM and PM peak hours with build-out of the site;
- Traffic signal and turn lane considerations; and
- On-site traffic operations and circulation.

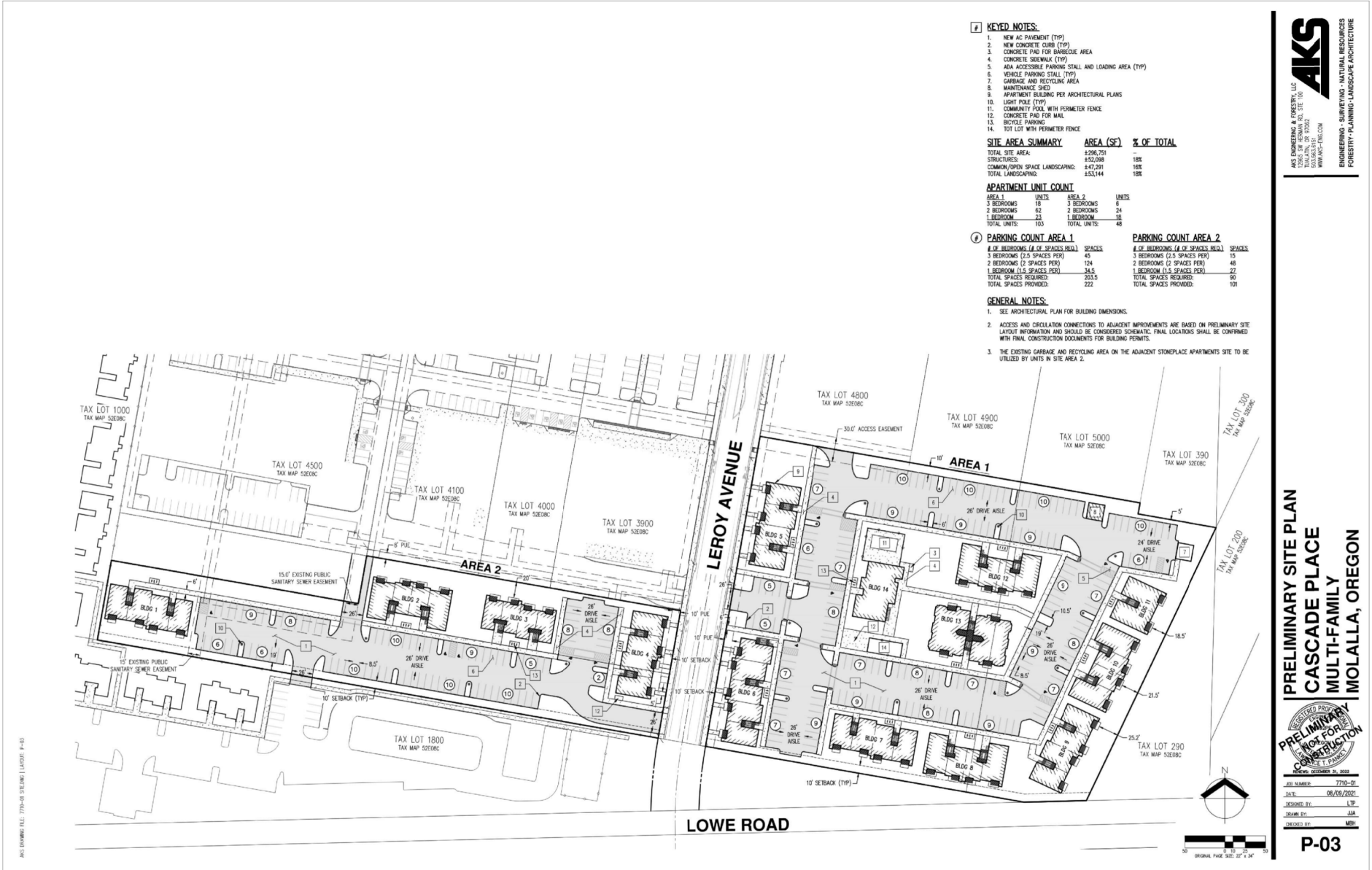


Site Vicinity Map
Molalla, Oregon

Figure
1

H:\26\26752 - Cascade Center MultiFamily\Figs\26752_figs.dwg Aug 09, 2021 - 1:04pm - zbugg Layout Tab: 01 Site: Vicinity

H:\26\26752 - Cascade Center Multi-Family\Figs\26752_figs.dwg Aug 09, 2021 - 3:17pm - zbugg Layout Tab: 02 Site Plan



PRELIMINARY SITE PLAN
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON

RESERVED FOR CONSTRUCTION
 NOT FOR CONSTRUCTION

ISSUED: OCTOBER 20, 2020

JOB NUMBER: 7710-01
 DATE: 08/09/2021
 DESIGNED BY: LTP
 DRAWN BY: JAA
 CHECKED BY: MBI

P-03

Site plan provided by AKS on 8/9/2021

Proposed Site Plan
 Molalla, Oregon

Figure
 2

Section 3
Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current operational and geometric characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Kittelson & Associates, Inc. (KAI) staff visited and inventoried the proposed development site and surrounding study area in July 2021. At that time, KAI collected information regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed Cascade Place site is within the City of Molalla limits, is currently vacant, and is zoned for commercial use (C-2), which currently permits multi-family use. Adjacent land uses are predominantly residential and include the Stoneplace Apartments to the west and south. Northwest Self Storage borders the site to the east. Molalla River Middle School is located approximately one block north of OR 211 on the west side of Leroy Avenue.

TRANSPORTATION FACILITIES

Table 1 lists the existing transportation facilities and roadways in the study area.

Table 1. Existing Transportation Facilities

Roadway	Functional Classification ¹	Lanes	Posted Speed	Sidewalks	Bicycle Lanes	On-Street Parking
OR 211	Arterial (W of Molalla Forest Rd) Major Collector (E of Molalla Forest Rd)	2	45 mph (W of OR 213) 35 mph (OR 213 to Thelander Ln) 25 mph (E of Thelander Ln)	Partial ²	Partial ³	No
OR 213	Arterial	2-3	45 mph (N of OR 211) 40 mph (S of OR 211)	East Side	Yes	No
Hezzie Lane	Neighborhood Street	2	Not Posted	Both Sides	No	No
Leroy Avenue	Major Collector	2	Not Posted	Both Sides	No	Yes
Ridings Avenue	Local Street	2	25 mph	No	No	Yes
Dixon Avenue	Local Street	2	Not Posted	No	No	Yes
Molalla Avenue	Arterial	2	25 mph	Both Sides	No	Yes

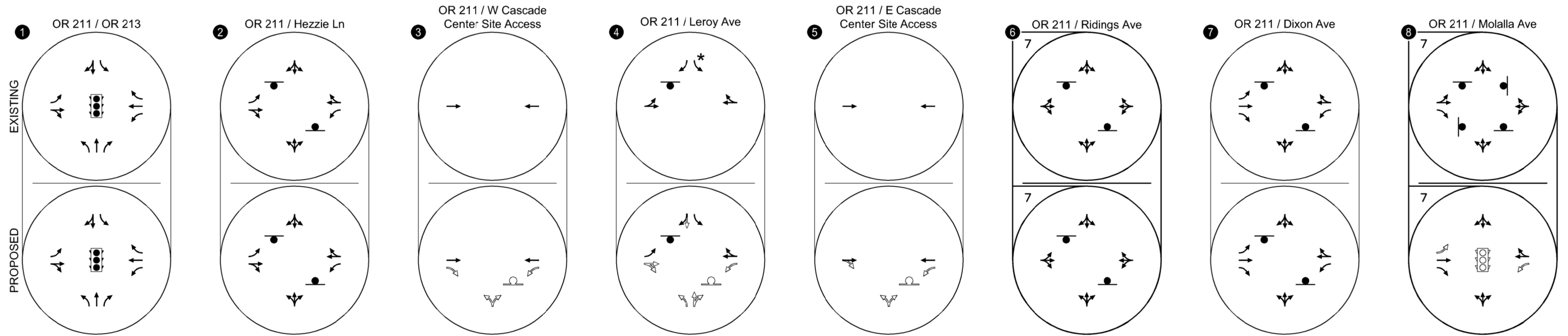
¹Per City of Molalla Transportation System Plan (Reference 1)

²Sidewalks are provided on the north side from OR 213 to Commercial Parkway and east of Hezzie Lane. Sidewalks are provided on the south side along the Stoneplace Apartments frontage and east of Ridings Avenue. Sidewalks are currently under construction along the Cascade Center site frontage of OR 211 (both sides).

³Bike lanes are provided west of Commercial Parkway, and paved shoulders are provided in some other areas of the corridor.

Roadway Facilities

Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections, as well as the lane configurations and traffic control that will be in place upon completion of the Cascade Center frontage improvements along OR 211 that are currently under construction. All access to the



*Sufficient roadway width is currently available for a separate left turn lane

- STOP SIGN
- TRAFFIC SIGNAL
- EXISTING
- FUTURE (TO BE BUILT BY CASCADE CENTER COMMERCIAL DEVELOPMENT)

Existing and Future Lane Configurations and Traffic Control Devices Molalla, Oregon

Figure 3

multi-family units will be provided via a southward extension of Leroy Avenue across the intersection with OR 211 (Woodburn-Estacada Highway/Main Street. Leroy Avenue may be extended southward to Lowe Road as part of a future development by others.

Pedestrian and Bicycle Facilities

Sidewalks are provided on the north side of OR 211 from OR 213 to Commercial Parkway and east of Hezzie Lane. Sidewalks are provided on the south side along the Stoneplace Apartments frontage and east of Ridings Avenue. Sidewalks will be added/improved on both sides of OR 211 as part of the Cascade Center commercial development frontage improvements. The Cascade Center commercial development will provide a Rectangular Rapid Flashing Beacon (RRFB) at the crosswalk on the west leg of the improved OR 211/Leroy Avenue intersection. Bike lanes are provided on OR 211 west of Commercial Parkway, and paved shoulders are provided in some other areas of the corridor.

Transit Facilities

Local bus service is provided by South Clackamas Transportation District, which operates the Molalla City Route and the Molalla to Clackamas Community College route, both of which stop at OR 211/Leroy Avenue (Reference 2). The stops are located on the west side of the OR 211/Leroy Avenue intersection (westbound) and just upstream of the future east Cascade Center site access (eastbound). Molalla City service is provided Monday through Friday from 7:30 AM to 5:35 PM and Saturday from 9:35 AM to 3:45 PM, and Molalla to Clackamas Community College service is provided Monday through Friday from 5:06 AM to 8:25 PM and Saturday from 7:09 AM to 4:55 PM. Headways are approximately 60 minutes on the Molalla City route and 30 minutes on the Molalla to Clackamas Community College route.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Turning movement count data were collected at the study intersections (except Ridings Avenue) in October 2018 when school was in session. Counts were performed on a typical mid-week day from 7:00 to 9:00 AM and from 4:00 to 6:00 PM. The system-wide peak hours were identified as 7:00 to 8:00 AM and 4:15 to 5:15 PM. Due to the ongoing effects of the COVID-19 pandemic on traffic volumes, no new turning movement count data were collected for these locations. Instead, the October 2018 turning movement volumes were grown by 2.5 percent annual growth to estimate year 2021 traffic volumes.

At the request of ODOT, the OR 211/Ridings Avenue intersection was added to the study intersections formerly included in the Cascade Center commercial development TIA. As no pre-COVID-19 traffic count data is available at this location, new turning movement count data were collected in July 2021 and then balanced with the COVID- and seasonally-adjusted traffic volumes at OR 211/Leroy Avenue. *Appendix "A" contains the traffic count worksheets used in this study.*

Seasonal Adjustment

The ODOT Analysis Procedures Manual (APM), Chapter 5 describes how to develop existing year volumes (Reference 3). The nearest ODOT Automated Traffic Recorder (ATR) to the site is 03-014, which is located on OR 211 approximately 12 miles east of the site. This ATR is likely too far away from the development site to provide a meaningful seasonal adjustment, and traffic volumes there are likely more recreational and less influenced by commuter patterns.

The ODOT ATR Characteristic Table was used to identify an ATR with a similar volume, geometry, and seasonal trend to the development site. ATR 24-001 was selected due to its 2018 AADT (12,500) being similar to the 2018 AADT on OR 211 near the site (13,700), as well as having a similar geometry (two lanes) and seasonal trend (commuter pattern). Table 2 displays the percent of AADT experienced during the peak month (typically July through September) and the count month (October) for ATR 24-001. The years shaded in dark grey represent the highest and lowest values and were removed from the average percent of AADT calculation per the APM.

Table 2. ODOT ATR 24-001 (Characteristic) Percent of AADT by Year

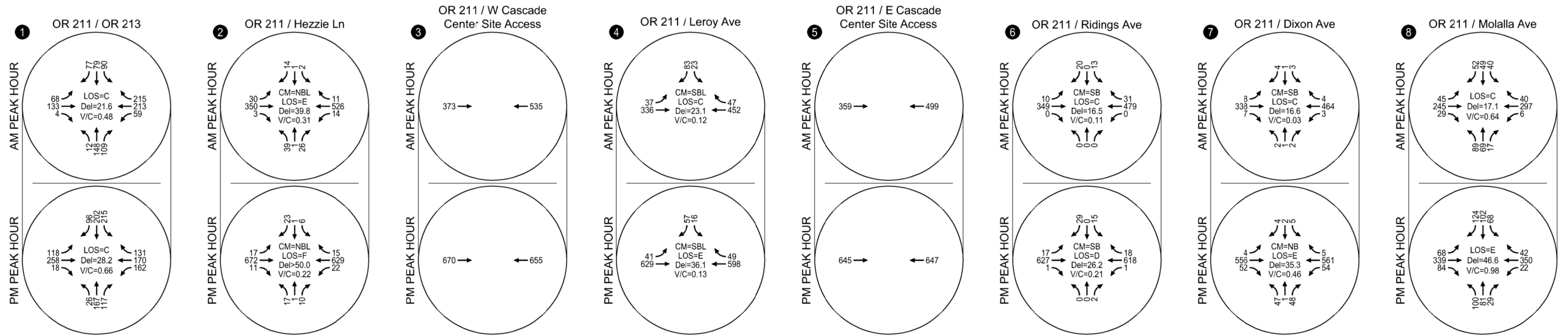
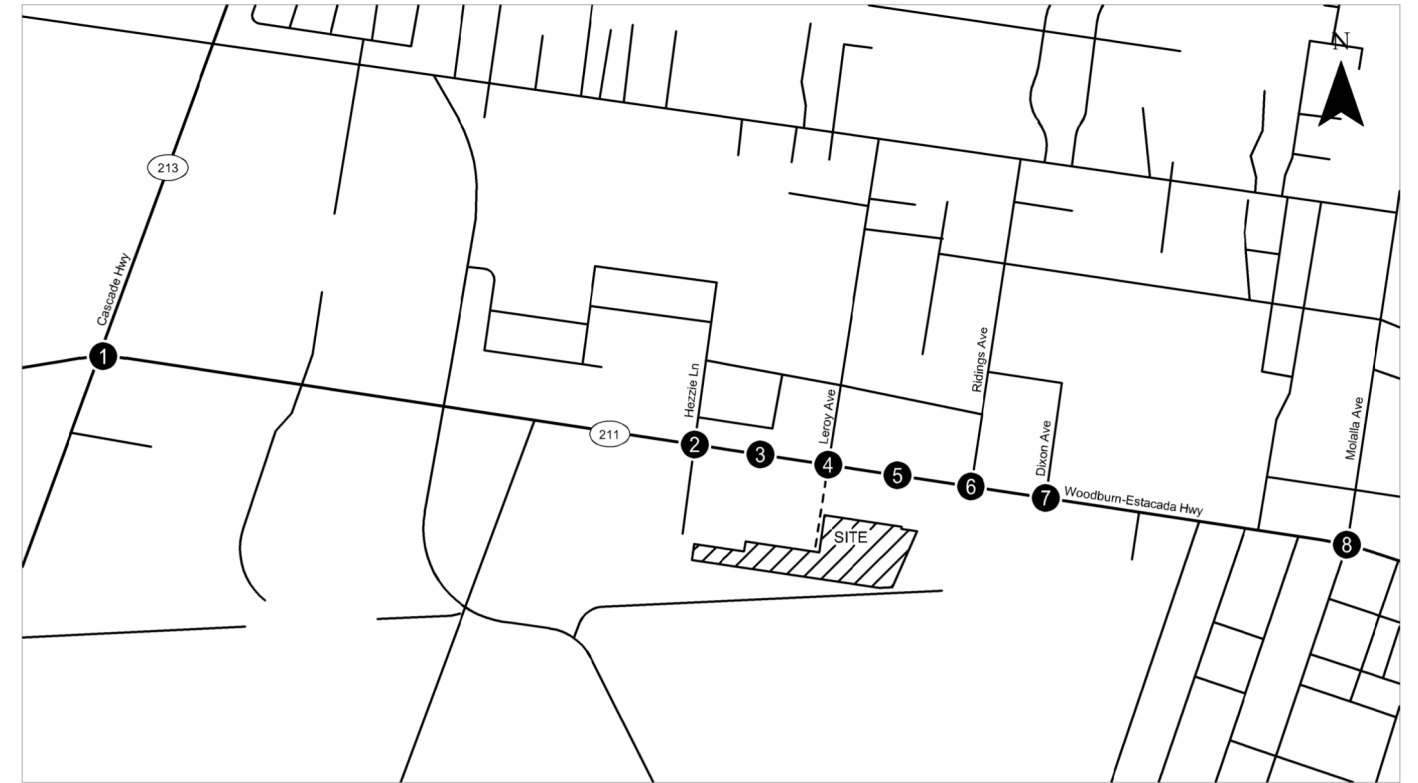
Year	2019	2018	2017	2016	2015
Peak Month	112	107	113	109	110
Count Month (October)	110	107	107	103	105

The seasonal adjustment was then calculated as $(112 + 109 + 110) / (107 + 107 + 105) = 1.038$ and applied to mainline traffic volumes along OR 211 and OR 213. Figure 4 provides a summary of the seasonally-adjusted turning movement counts at the study intersections.

Current Intersection Operations

All traffic operations analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual, 6th Edition* (Reference 4). Each of the study intersections is under the maintenance and jurisdiction of ODOT. The Oregon Highway Plan (Reference 5), Policy 1F establishes mobility targets for state highways based on volume-to-capacity ratio. Within the study area, OR 211 is a Regional Highway with a posted speed limit of 35 mph or less, which corresponds to a mobility target of 0.90. To meet ODOT mobility targets, signalized intersections must not exceed an overall v/c ratio of 0.90. At unsignalized intersections, approaches on OR 211 must not exceed a v/c ratio of 0.90, and approaches on public side streets must not exceed a v/c ratio of 0.95.

Figure 4 summarizes the operations analysis for the study intersections under the weekday AM and PM peak hour existing traffic conditions. Each of the study intersections currently meets ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the OR 211/Molalla Avenue intersection—the v/c ratios on the eastbound and westbound OR 211 approaches currently exceed the ODOT mobility target of 0.90 during the weekday PM peak hour. *Appendix “B” includes the level-of-service worksheets under year 2021 existing traffic conditions.*



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CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/
 CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
 CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2021 Existing Traffic Conditions
 Weekday AM and PM Peak Hours
 Molalla, Oregon

Figure
 4

Traffic Safety

ODOT-reported crash data was reviewed for the most recent five-year period, from January 1, 2015 through December 31, 2019. Table 3 summarizes the crash data at the study intersections. In addition to the crash types, intersection crash rates were calculated and compared to statewide crash rate performance thresholds following the ODOT *Analysis Procedures Manual* (Reference 3). For this analysis, the observed crash rate was calculated and compared with the 90th percentile crash rates for urban intersections by traffic control and 3 versus 4-legged configurations (as appropriate). None of the observed crash rates exceed the respective critical crash rates.

Table 3. Summary of Reported Crash Data (January 1, 2015 through December 31, 2019)

Intersection	Crash Severity			Crash Type					Total Crashes	Crash Rate ²	Statewide 90 th -Percentile Crash Rate by Config/Traffic Control	Critical Crash Rate ²
	Fatal	Injury	PDO ¹	Angle	Rear End	Turning	Pedestrian	Fixed Object				
OR 211/OR 213	0	6	11	3	4	10	0	0	17	0.598	0.860	0.708
OR 211/Hezzie Ln	0	1	3	0	0	3	1	0	4	0.165	0.408	0.367
OR 211/Leroy Ave	0	6	0	0	4	2	0	0	6	0.252	0.293	0.274
OR 211/Ridings Ave	0	4	1	0	2	3	0	0	5	0.206	0.408	0.273
OR 211/Dixon Ave	0	1	1	0	0	2	0	0	2	0.087	0.408	0.372
OR 211/Molalla Ave	0	4	8	4	3	3	1	1	12	0.502	*	*

¹Property Damage Only

²Per million entering vehicles

*No data provided for all-way stop-controlled intersections; the intersection will be signalized as part of the Cascade Center commercial development.

ODOT maintains a ranking of intersections with potential safety issues known as the Safety Priority Index System (SPIS). Based upon a 2019 analysis, none of the study intersections ranked within the top five percent of the highest-scoring intersections in Region 1 (Reference 6).

No other crash trends were identified at the study intersections.

Appendix "C" contains the reported crash data from ODOT.

Section 4
Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate in the year the proposed development is expected to be fully built, year 2022. The impact of traffic generated by the proposed Cascade Place multi-family development during the typical weekday AM and PM peak hours was examined as follows:

- Background conditions were developed by applying a 2.5-percent annual growth rate to the year 2021 traffic volumes to account for regional growth in the site vicinity.
- Site-generated trips were estimated for build-out of the site.
- Site trip-distribution patterns were derived considering the existing traffic patterns and the major trip origins and destinations in the study area.
- Site-generated trips were assigned to the study intersections and site accesses.
- Year 2022 (build-out year of the Cascade Place multi-family development) total traffic conditions were analyzed at each of the study intersections and site-access points during the weekday AM and PM peak hours.
- On-site circulation issues and site-access operations were evaluated.
- Traffic signal warrant and turn lane needs were evaluated where appropriate.

YEAR 2022 BACKGROUND TRAFFIC CONDITIONS

The year 2022 background traffic analysis identifies how the study area's transportation system will operate without the proposed Cascade Place multi-family development. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from the proposed multi-family units.

Background Traffic Growth

The year 2022 background traffic volumes were developed by applying a 2.5-percent annual growth rate to the year 2021 existing traffic volumes shown in Figure 4. This growth rate was identified from population and employment data in the Molalla TSP. Figure 6 displays the resulting 2022 background traffic volumes.

In-Process Developments

The following approved in-process developments were identified by City of Molalla staff for inclusion in the year 2022 background traffic conditions analysis:

- Cascade Center commercial development
- Colima Apartments

- Center Market

Additionally, the following transportation improvements will be constructed by the Cascade Center commercial development prior to year 2022:

- widen OR 211 to a three-lane section along the site frontage, including exclusive left turn lanes in either direction of OR 211 at Leroy Avenue;
- modify the OR 211/Molalla Avenue intersection, including signalization and provision of exclusive left turn lanes on the eastbound and westbound OR 211 approaches; and
- provide a RRFB installation for the crosswalk on the west leg of the improved OR 211/Leroy Avenue intersection.

These improvements were incorporated into the year 2022 background traffic conditions analysis.

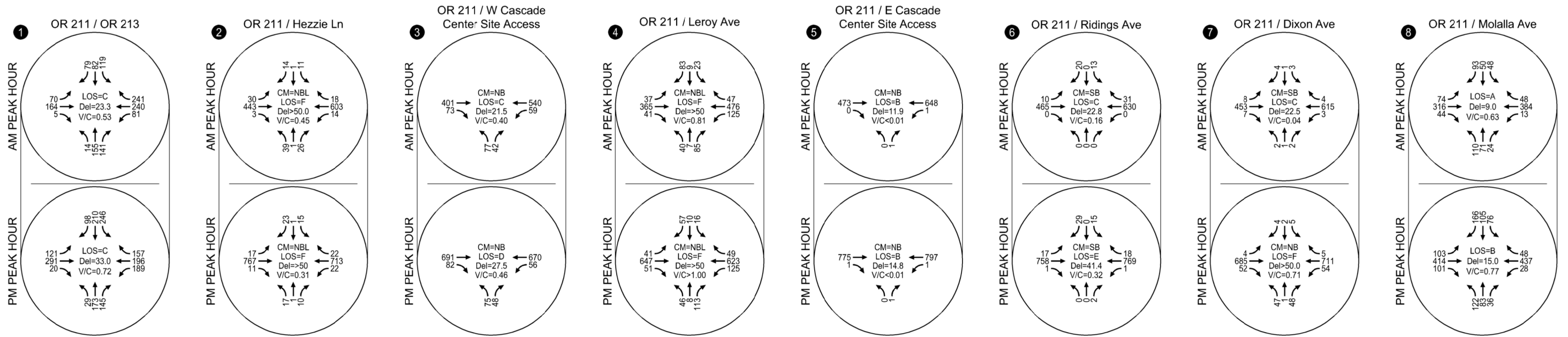
Operations Analysis

The weekday AM and PM peak-hour turning-movement volumes shown in Figure 5 were used to conduct an operational analysis at each study intersection to determine the year 2022 background traffic levels of service. Each of the study intersections are expected to continue meeting ODOT mobility targets, with the following exception:

- The northbound left turn at OR 211/Leroy Avenue is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday PM peak hour (the left-turn movement is projected to operate over-capacity), and projected northbound delays are expected to reach Level of Service "F".¹

Appendix "D" contains the year 2022 background traffic level-of-service worksheets.

¹ Per ODOT's request, we assumed two-stage gap acceptance for left turns from the unsignalized site accesses east and west of Leroy Avenue. However, we did not assume two-stage gap acceptance at Leroy Avenue due to the exclusive left turn lanes being striped in both directions of OR 211, as well as the considerable left turn volume from OR 211.



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CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/
 CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
 CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2022 Background Traffic Conditions
 Weekday AM and PM Peak Hours
 Molalla, Oregon

Figure
 5

PROPOSED DEVELOPMENT PLAN

I&E Construction proposes to develop up to 151 multi-family units on the study site, to be accessed via a southward extension of Leroy Avenue across OR 211, which is currently being constructed by the Cascade Center commercial development. The anticipated build-out year is 2022. The multi-family units will replace the previously-approved 557 storage units on the site, reflected in the August 2019 Cascade Center Commercial Development TIA and June 2020 Addendum.

Trip Generation

The projected weekday daily, AM, and PM peak-hour vehicle trip ends for the proposed development were based on fitted equation trip rates in the *Trip Generation Manual, 10th Edition* (Reference 7). Table 4 summarizes the anticipated number of trips that will be generated by the proposed Cascade Place multi-family units. As the 557 storage units approved as part of the Cascade Center commercial development will be replaced by the proposed 151 multi-family units, the trips associated with the storage units have been deducted from the overall trip generation (because the storage unit trips were included in the 2022 background traffic volumes).

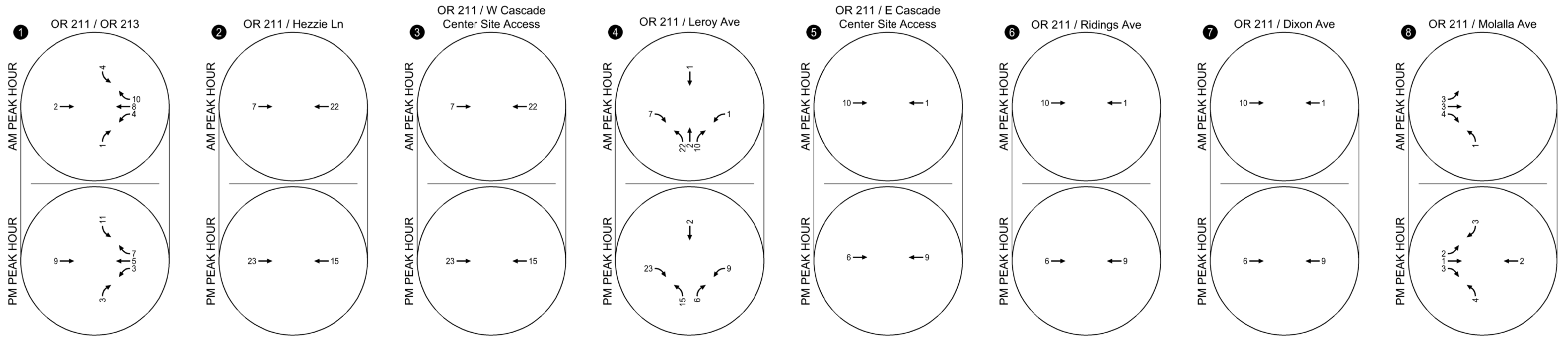
As shown, the proposed development is expected to generate approximately 722 weekday net new trips, of which 43 (9 in, 34 out) will occur during the AM peak hour and 55 (34 in, 21 out) will occur during the PM peak hour.

Table 4. Trip Generation

Land Use	ITE Code	Size	Weekday Daily	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Proposed Multi-Family Units									
Multi-Family Housing (Mid-Rise)	221	151	822	51	13	38	66	40	26
Planned Storage Units - To Be Removed									
Mini-Warehouse	151	557	100	8	4	4	11	6	5
Proposed Net New Trips									
			722	43	9	34	55	34	21

Site Trip Distribution/Trip Assignment

The site-generated trips were distributed onto the study area roadway system according to the existing traffic patterns, as well as general population centers within the area. The estimated site-generated trips were assigned to the network by distributing the trips shown in Table 5 according to the trip distribution pattern shown in Figure 6. Figure 6 illustrates the site-generated trips that are expected to use the roadway system during the weekday AM and PM peak hours.



Net New Site-Generated Trips
Weekday AM and PM Peak Hours
Molalla, Oregon

Figure
6

YEAR 2022 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study area's transportation system will operate with the traffic generated by the proposed Cascade Place multi-family development. The year 2022 background traffic volumes for the weekday AM and PM peak hours (shown in Figure 5) were added to the site-generated trips (shown in Figure 6) to arrive at the year 2022 total traffic volumes that are shown in Figure 7.

Intersection Operations

The weekday AM and PM peak hour turning-movement volumes shown in Figure 7 were used to conduct an operational analysis at each study intersection to determine the year 2022 total traffic levels of service. The results of the total traffic analysis shown in Figure 7 indicate that all of the study intersections are expected to continue meeting ODOT mobility targets, with the following exception:

- The northbound left turn at OR 211/Leroy Avenue is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday AM and PM peak hours, and projected northbound delays are expected to reach Level of Service "F".² The northbound left-turn demand is projected to exceed capacity even if a 60-minute analysis period (peak hour factor of 1.0) is assumed.

Appendix "E" contains the year 2022 total traffic level-of-service worksheets.

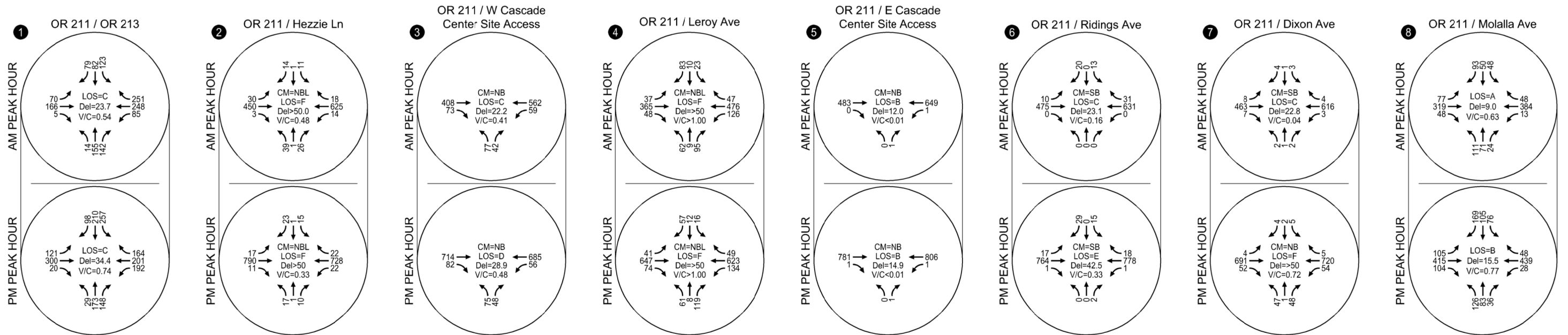
TRAFFIC SIGNAL AND TURN LANE CONSIDERATIONS

The Molalla TSP identifies an anticipated need for future signalization of the OR 211/Leroy Avenue intersection. This section of the report provides an assessment of potential intersection signalization and turn lane considerations associated with the proposed Cascade Place development.

MUTCD Signal Warrants

The *Manual on Uniform Traffic Control Devices* (MUTCD, Reference 8) identifies nine warrants for traffic signal installation. The first two volume-based warrants (#1-Eight Hour and #2-Four Hour) were evaluated based on the future traffic volumes at OR 211/Leroy Avenue. Weekday daily 24-hour volume profiles were estimated based on a 16-hour traffic volume count at the OR 211/Leroy Avenue intersection collected in October 2018.

² Per ODOT's request, we assumed two-stage gap acceptance for left turns from the unsignalized site accesses east and west of Leroy Avenue. However, we did not assume two-stage gap acceptance at Leroy Avenue due to the exclusive left turn lanes being striped in both directions of OR 211, as well as the considerable left turn volume from OR 211.



H:\26126752 - Cascade Center Multi-Family\Figs\26752_figs.dwg Aug 09, 2021 - 12:28pm - zbugg Layout Tab: 07 Total

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/
 CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
 CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2022 Total Traffic Conditions
 Weekday AM and PM Peak Hours
 Molalla, Oregon

Figure
 7

The 16-hour counts were seasonally-adjusted and grown to year 2022 background traffic conditions assuming 2.5 percent annual growth. Daily trip profiles for shopping center (for the Cascade Center commercial development and other retail in-process volumes) and multi-family (for Cascade Place and multi-family in-process volumes) were estimated from the *Trip Generation Manual, 10th Edition* (Reference 7) and added to the counts to estimate the year 2022 background and total traffic volumes. Per the *ODOT Analysis Procedures Manual* (Reference 3), right turns from the northbound and southbound approaches were discounted by 85 percent of the capacity of the shared through-right turn lane. Table 5 displays the results of the traffic signal warrant analysis. As shown, the OR 211/Leroy Avenue intersection is not forecast to meet the volume-based signal warrants with site build-out.

Table 5. MUTCD Signal Warrant Analysis Results

Scenario	Warrant	
	Warrant #1: Eight Hour	Warrant #2: Four Hour
2021 Existing	No	No
2022 Background	No	No
2022 Total	No	No

At the request of City of Molalla, we estimated the remaining capacity on the northbound Leroy Avenue approach at OR 211 after additional background and site-generated trips were assigned to the intersection. The City previously identified a threshold of 95 weekday PM peak hour trips on northbound Leroy Avenue (excluding right turns) as the point where signalization would be needed. Table 6 compares this threshold with the northbound volume on Leroy Avenue forecast for the year 2022 background and total traffic conditions.

Table 6. Summary of City Traffic Signalization Threshold at OR 211/Leroy Avenue

	Northbound PM Peak Hour Volume (vehicles per hour)
Threshold to Meet Signal Warrants	95
Year 2022 Background Conditions (Before Multi-Family Units)	54
Year 2022 Total Conditions (after Multi-Family Units)	69
Trips Remaining Prior to Warrant Thresholds Being Met	26

As shown, the OR 211/Leroy Avenue intersection is forecast to remain below the 95-trip threshold after the proposed Cascade Place multi-family development is constructed and occupied.

Given the stop-controlled northbound and southbound Leroy Avenue approaches at OR 211 are forecast to operate at Level of Service “F” prior to and after build-out of the proposed Cascade Place multi-family development, we recommend the applicant work with the City to determine what proportionate share contribution (if any) is appropriate for future signalization improvements at OR 211/Leroy Avenue. *Appendix “F” includes the signal warrant analysis worksheets.*

ODOT Turn Lane Criteria

The ODOT *Analysis Procedures Manual* identifies volume-based turn lane criteria at unsignalized intersections (Reference 3). The ODOT right turn lane criteria are forecast to be satisfied on eastbound OR 211 at Leroy Avenue under year 2022 background conditions (after build-out of the Cascade Center commercial development) if the intersection remains unsignalized; however, constructing a right turn lane would increase the north-south crosswalk distance and would not be needed for intersection capacity if the intersection becomes signalized. As such, we do not recommend construction of an eastbound right turn lane at the OR 211/Leroy Avenue intersection at this time.

ON-SITE CIRCULATION/SITE-ACCESS OPERATIONS

The Cascade Place multi-family development will not modify the Cascade Center site accesses on OR 211 and will not provide any new site accesses on OR 211. We refer the City and ODOT to the civil engineering design plans for the Cascade Center commercial development frontage improvements on OR 211 for stopping and intersection sight distance triangles at these accesses. Landscaping, signage, and utilities near the site accesses, internal intersections, and frontage should be placed and maintained to allow adequate site distance per applicable City and ODOT standards.

Crosswalk Demand at OR 211/Leroy Avenue

Pedestrian demand (including children accessing the school to the north of OR 211) is expected to increase at the mid-block crosswalk on the west leg of OR 211/Leroy Avenue after development of the Cascade Place multi-family units. Based on the October 2018 pedestrian demand at the mid-block crosswalk of OR 211 at Hezzie Lane and the relative size of the Cascade Place multi-family units (151 units) to the Stoneplace Apartments complex (96 units) near OR 211/Hezzie Lane, we estimate the demand at OR 211/Leroy Avenue will increase by approximately 10 pedestrians/hour during the weekday AM peak hour and 6 pedestrians/hour during the weekday PM peak hour. These estimates do not include any demand shifted from the mid-block crosswalk at OR 211/Hezzie Lane to OR 211/Leroy Avenue. North-south pedestrian crossings of OR 211 at Leroy Avenue will be facilitated by the RRFB pedestrian crossing treatment and new crosswalk to be constructed on the west leg of the improved OR 211/Leroy Avenue intersection by the Cascade Center commercial development.

95th-percentile Queuing Analysis

95th-percentile queues at the study intersections were analyzed in Synchro for the weekday AM and PM peak hours for the existing year 2021, 2022 background, and 2022 total conditions. Table 6 displays the results. As shown, all but one of the existing and proposed turn lane storage lengths are expected to accommodate the 95th-percentile queues under 2022 total traffic conditions. The southbound left-turn 95th-percentile queue at OR 211/OR 213 is expected to exceed the striped storage length by 2022 background conditions, but the queue can still be accommodated by the upstream two-way left-turn lane. No additional mitigation measures are recommended to address 95th-percentile queues at the study intersections.

Table 7. Summary of 95th-percentile Queues

Intersection	Movement	Storage (ft)	AM Peak Hour 95 th -percentile Queue (ft)			PM Peak Hour 95 th -percentile Queue (ft)			Adequate Storage Provided?
			2021 Existing	2022 Background	2022 Total	2021 Existing	2022 Background	2022 Total	
1: OR 213/ OR 211	EB L	290	50	75	75	100	150	150	Yes
	EB T/R	>500	50	75	100	225	275	300	Yes
	WB L	330	50	75	75	150	200	200	Yes
	WB T	>400	100	125	150	125	175	175	Yes
	WB R	240	100	125	150	100	125	150	Yes
	NB L	250	25	25	25	50	50	50	Yes
	NB T	>400	75	100	100	125	175	175	Yes
	NB R	270	75	100	100	100	150	150	Yes
	SB L	310*	75	100	100	175	225	250	Yes
SB T/R	>400	75	100	100	200	225	250	Yes	
2: OR 211/ Hezzie Ln	EB L	210	25	25	25	25	25	25	Yes
	WB L	180	<25	25	25	25	25	25	Yes
	NB L	50	50	50	75	25	50	50	Yes
	NB T/R	>50	25	25	25	25	25	25	Yes
	SB L/T/R	>100	25	25	25	25	50	50	Yes
3: OR 211/ W Site Access	EB R	100		<25	<25		<25	<25	Yes
	WB L	75		25	25		25	25	Yes
	NB L/R	150		50	50		75	75	Yes
4: OR 211/ Leroy Ave	EB L	100	25	25	25	25	25	25	Yes
	WB L	100		25	25		25	25	Yes
	NB L	220		100	175		150	200	Yes
	NB T/R	220		25	50		75	75	Yes
	SB L**	100**	25	50	50	25	50	50	Yes
SB T/R	>500	25	50	50	25	50	50	Yes	
5: OR 211/ E Site Access	WB L	70		<25	<25		<25	<25	Yes
	NB L/R	25		<25	<25		<25	<25	Yes
6: OR 211/ Ridings Ave	EB L/T/R	>400	<25	<25	<25	25	25	<25	Yes
	WB L/T/R	>400	<25	<25	<25	<25	<25	<25	Yes
	NB L/T/R	>400	<25	<25	<25	<25	<25	<25	Yes
	SB L/T/R	>400	25	25	25	25	50	50	Yes
6: OR 211/ Dixon Ave	EB L	100	<25	<25	<25	<25	<25	<25	Yes
	EB R	130	<25	<25	<25	<25	<25	<25	Yes
	WB L	170	<25	<25	<25	25	25	25	Yes
	NB L/T/R	125	<25	25	25	75	100	125	Yes
	SB L/T/R	>75	25	25	25	25	25	25	Yes
7: OR 211/ Molalla Ave	EB L	120		25	25		75	75	Yes
	EB T	>350	100	50	50	325	175	175	Yes
	EB R	180	25	25	25	25	50	50	Yes
	WB L	200		25	25		25	25	Yes
	WB T/R	>300	125	100	100	300	225	225	Yes
	NB L/T/R	>250	50	75	75	100	150	150	Yes
	SB L/T/R	>250	50	75	75	150	200	225	Yes

*Additional storage available in two-way left-turn lane (over 425 feet)

**Sufficient roadway width is currently available for a separate left turn lane. The left turn queues for existing and background conditions are shown to provide a baseline for assessment of queues after site build-out.

Section 5 Conclusions and Recommendations

CONCLUSIONS AND RECOMMENDATIONS

The results of the traffic impact analysis indicate that the proposed Cascade Place multi-family development can be constructed while maintaining acceptable study intersection operations as long as the appropriate mitigations are in place. The findings of this analysis and our recommendations are discussed below.

FINDINGS

Year 2021 Existing Conditions

- A 2.5-percent annual growth rate was applied to the raw turning movement volumes collected at the study intersections in fall 2018 to estimate the existing year 2021 turning movement volumes.
- All of the study intersections currently meet ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the OR 211/Molalla Avenue intersection—the v/c ratios on the eastbound and westbound OR 211 approaches currently exceed the ODOT mobility target of 0.90 during the weekday PM peak hour.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.

Year 2022 Background Traffic Conditions

- A 2.5-percent annual growth rate was applied to the existing traffic volumes to account for regional growth in the area.
- The City of Molalla identified the following in-process developments for inclusion in the year 2022 background traffic volumes:
 - Cascade Center commercial development
 - Colima apartments
 - Center Market
- The *City of Molalla Transportation System Plan* identifies the future need to signalize the OR 211/Leroy Avenue intersection. The traffic signal was identified to provide motor vehicle capacity at the intersection to serve anticipated traffic growth and also serves as a north-south pedestrian crossing opportunity linking residents south of OR 211 with Molalla River Middle School to the north. Signalization is not currently funded.
- The Cascade Center commercial development will improve OR 211 to a three-lane section along the site frontage, including exclusive left turn lanes in either direction of OR 211 at Leroy Avenue. These improvements were incorporated into the year 2022 background traffic conditions analysis as being constructed prior to build-out of the multi-family units.

- The Cascade Center commercial development will provide a Rectangular Rapid Flashing Beacon (RRFB) for the crosswalk on the west leg of the improved OR 211/Leroy Avenue intersection.
- The Cascade Center commercial development will provide several improvements to the OR 211/Molalla Avenue intersection, including signalization. These improvements were incorporated into the year 2022 background traffic conditions analysis as being constructed prior to build-out of the multi-family units.
- Each of the study intersections is forecast to continue meeting ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the northbound left turn at OR 211/Leroy Avenue, which is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday PM peak hour, and northbound approach delays are projected to reach Level of Service "F".

Proposed Development Plan

- The proposed 151 multi-family units are expected to generate approximately 822 weekday net new trips, of which 51 (13 in, 38 out) will occur during the AM peak hour and 66 (40 in, 26 out) will occur during the PM peak hour.
- The housing site was previously approved for development into 557 storage units as part of the prior Cascade Center commercial development. After reducing the apartment trip generation by the number of trips associated with the approved storage units, the proposed 151 multi-family units are expected to generate approximately 722 weekday net new trips impacting the transportation system, of which 43 (9 in, 34 out) will occur during the AM peak hour and 55 (34 in, 21 out) will occur during the PM peak hour.

Year 2022 Total Traffic Conditions

- Each of the study intersections is forecast to continue meeting ODOT mobility targets during the weekday AM and PM peak hours, with the exception of the northbound left turn at OR 211/Leroy Avenue, which is projected to experience a v/c ratio above the ODOT target of 0.95 during the weekday AM and PM peak hours, and northbound approach delays are projected to reach Level of Service "F".

Traffic Signal and Turn Lane Considerations

- Per the MUTCD volume-based signal warrants and the estimated 24-hour volume profile of the OR 211/Leroy Avenue intersection, the traffic volume-based signal warrants are not projected to be met at the intersection in conjunction with site development. The number of northbound PM peak hour trips at the intersection is not projected to meet the City's threshold for signalization after site development.

95th-Percentile Queueing Analysis

- The proposed storage lengths at the study intersections are expected to accommodate each of the 95th-percentile queues in the AM and PM peak hours under 2022 total traffic conditions.

RECOMMENDATIONS

The following are recommended in conjunction with site redevelopment:

- Given the stop-controlled northbound and southbound Leroy Avenue approaches at OR 211 are forecast to operate at Level of Service “F” prior to and after build-out of the proposed Cascade Place multi-family development, we recommend the applicant work with the City to determine what proportionate share contribution (if any) is appropriate for future signalization improvements at OR 211/Leroy Avenue.
- All landscaping, signage, and utilities near the site access points should be placed and maintained to provide adequate sight distance.

Section 6
References

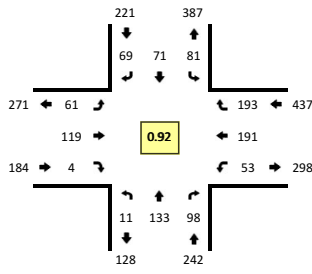
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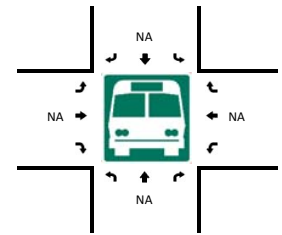
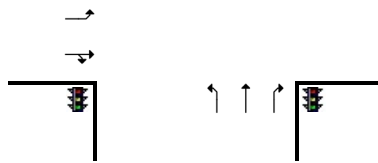
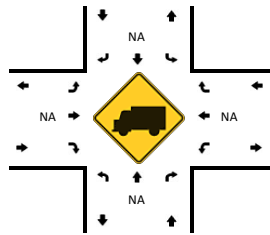
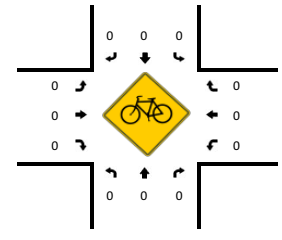
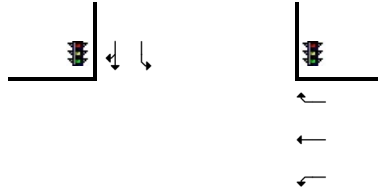
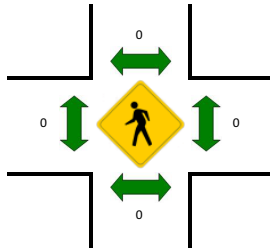
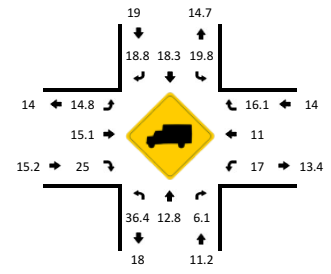
Appendix A
Turning Movement Counts

LOCATION: OR-213 -- OR-211
 CITY/STATE: Molalla, OR

QC JOB #: 14815601
 DATE: Tue, Oct 9 2018



Peak-Hour: 7:00 AM -- 8:00 AM
 Peak 15-Min: 7:20 AM -- 7:35 AM

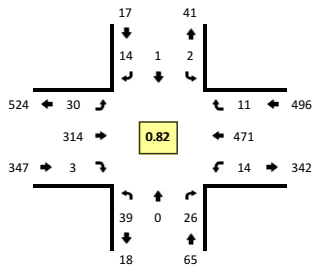


5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	11	11	0	4	1	6	0	4	11	0	0	4	13	14	0	79	
7:05 AM	1	5	4	0	6	10	10	0	8	10	0	0	3	17	17	0	91	
7:10 AM	0	8	9	0	3	6	5	0	6	13	1	0	5	13	25	0	94	
7:15 AM	2	17	5	0	6	9	8	0	3	9	1	0	1	14	21	0	96	
7:20 AM	0	10	9	0	4	4	7	0	4	9	0	0	8	26	21	0	102	
7:25 AM	4	15	5	0	4	4	7	0	10	8	0	0	6	16	18	0	97	
7:30 AM	0	14	6	0	10	6	5	0	4	7	0	0	5	25	15	0	97	
7:35 AM	3	9	12	0	9	8	6	0	4	9	0	0	4	18	16	0	98	
7:40 AM	0	6	14	0	9	6	3	0	5	8	0	0	5	13	15	0	84	
7:45 AM	1	9	11	0	11	7	2	0	2	5	1	0	3	12	15	0	79	
7:50 AM	0	15	7	0	5	4	3	0	7	14	0	0	2	9	10	0	76	
7:55 AM	0	14	5	0	10	6	7	0	4	16	1	0	7	15	6	0	91	1084
8:00 AM	3	7	0	0	9	4	3	0	6	7	1	0	5	11	10	0	66	1071
8:05 AM	1	14	6	0	11	5	11	0	1	6	1	0	3	16	17	0	92	1072
8:10 AM	0	14	4	0	1	2	4	0	8	9	1	0	3	10	7	0	63	1041
8:15 AM	1	10	5	0	7	12	9	0	8	10	3	0	4	7	14	0	90	1035
8:20 AM	1	17	5	0	13	6	1	0	7	10	0	0	4	19	9	0	92	1025
8:25 AM	2	14	5	0	8	9	4	0	5	11	1	0	5	10	13	0	87	1015
8:30 AM	1	9	5	0	13	9	7	0	6	5	1	0	9	16	14	0	95	1013
8:35 AM	1	12	3	0	7	10	7	0	4	17	0	0	3	13	8	0	85	1000
8:40 AM	1	9	3	0	7	5	4	0	0	6	0	0	4	23	9	0	71	987
8:45 AM	1	12	5	0	10	7	11	0	7	11	0	0	0	22	9	0	95	1003
8:50 AM	2	13	7	0	10	3	12	0	4	14	1	0	7	16	7	0	96	1023
8:55 AM	1	9	6	0	12	7	5	0	7	14	2	0	2	11	10	0	86	1018
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	16	156	80	0	72	56	76	0	72	96	0	0	76	268	216	0	1184	
Heavy Trucks	4	12	4		16	4	20		4	16	0		16	36	40		172	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

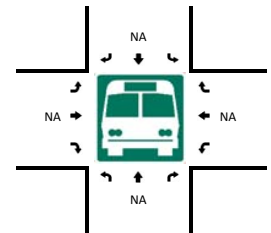
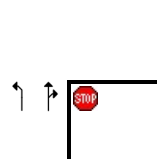
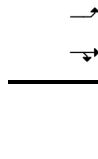
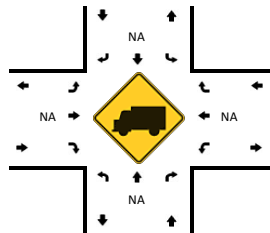
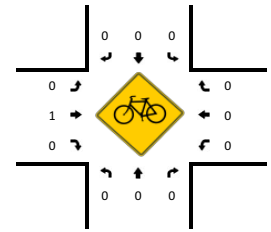
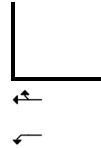
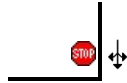
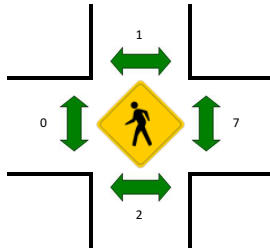
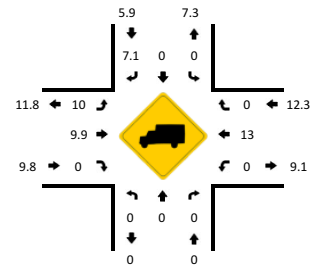
Comments:

LOCATION: N Hezzie Ln -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 14815603
DATE: Tue, Oct 9 2018



Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

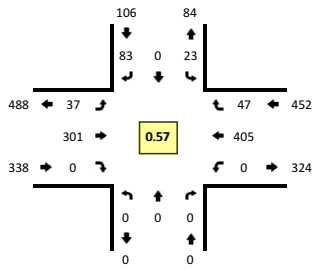


5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	0	0	0	0	0	3	0	1	31	0	0	1	34	0	0	75	
7:05 AM	5	0	3	0	0	0	1	0	2	30	0	0	0	38	0	0	79	
7:10 AM	2	0	2	0	0	0	3	0	2	27	0	0	1	33	0	0	70	
7:15 AM	7	0	6	0	1	0	0	0	7	28	0	0	3	42	1	0	95	
7:20 AM	0	0	2	0	0	1	4	0	2	17	0	0	2	60	1	0	89	
7:25 AM	7	0	3	0	0	0	0	0	1	30	0	0	1	55	2	0	99	
7:30 AM	1	0	3	0	0	0	2	0	5	16	0	0	2	44	1	0	74	
7:35 AM	3	0	0	0	0	0	0	0	2	35	0	0	0	31	1	0	72	
7:40 AM	2	0	2	0	1	0	0	0	2	21	0	0	1	39	0	0	68	
7:45 AM	4	0	0	0	0	0	1	0	4	27	1	0	2	35	1	0	75	
7:50 AM	2	0	3	0	0	0	0	0	1	22	0	0	0	32	1	0	61	
7:55 AM	1	0	2	0	0	0	0	0	1	30	2	0	1	28	3	0	68	925
8:00 AM	1	0	0	0	0	0	0	0	4	22	0	0	1	38	0	0	66	916
8:05 AM	1	0	1	0	0	0	2	0	1	19	0	0	1	28	0	0	53	890
8:10 AM	1	0	3	0	1	0	0	0	1	20	0	0	0	31	0	0	57	877
8:15 AM	3	0	1	0	0	0	0	0	1	18	0	0	3	21	1	0	48	830
8:20 AM	1	0	1	0	0	0	0	0	3	20	0	1	1	33	0	0	60	801
8:25 AM	1	0	1	0	0	0	3	0	2	38	0	0	0	41	1	0	87	789
8:30 AM	2	0	0	0	0	0	3	0	3	18	0	0	0	27	0	1	54	769
8:35 AM	0	0	0	0	1	0	3	0	1	28	0	0	1	28	2	0	64	761
8:40 AM	2	0	1	0	1	1	2	0	1	23	0	0	0	40	1	0	72	765
8:45 AM	0	0	0	0	2	0	1	0	1	22	1	0	1	31	0	0	59	749
8:50 AM	4	0	0	0	1	0	1	0	2	27	0	0	2	25	4	0	66	754
8:55 AM	0	0	1	0	1	0	1	0	1	33	1	0	0	36	1	0	75	761
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	56	0	44	0	4	4	16	0	40	300	0	0	24	628	16	0	1132	
Heavy Trucks	0	0	0		0	0	0		4	24	0		0	100	0		128	
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

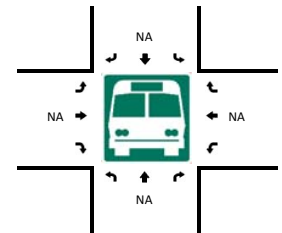
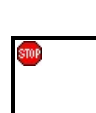
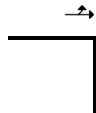
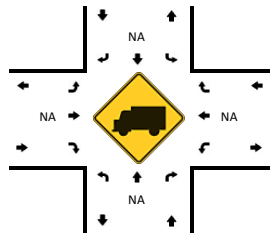
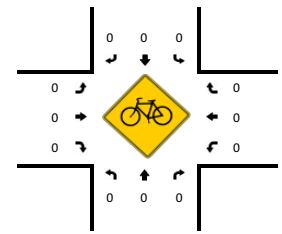
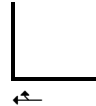
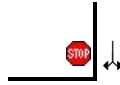
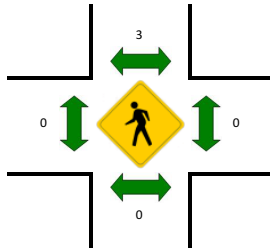
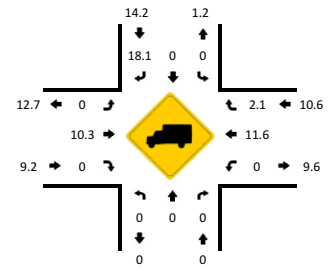
Comments:

LOCATION: Leroy Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 14815609
DATE: Tue, Oct 9 2018



Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM



5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	0	26	2	0	44	
6:10 AM	0	0	0	0	0	0	2	0	2	14	0	0	0	27	0	0	45	
6:15 AM	0	0	0	0	0	0	2	0	0	24	0	0	0	29	0	0	55	
6:20 AM	0	0	0	0	1	0	1	0	0	8	0	0	0	28	3	0	41	
6:25 AM	0	0	0	0	1	0	2	0	2	16	0	0	0	32	0	0	53	
6:30 AM	0	0	0	0	0	0	2	0	0	17	0	0	0	40	0	0	59	
6:35 AM	0	0	0	0	0	0	3	0	0	17	0	0	0	36	1	0	57	
6:40 AM	0	0	0	0	0	0	2	0	3	22	0	0	0	33	0	0	60	
6:45 AM	0	0	0	0	1	0	2	0	1	31	0	0	0	32	2	0	69	
6:50 AM	0	0	0	0	0	0	3	0	2	27	0	0	0	41	4	0	77	
6:55 AM	0	0	0	0	2	0	5	0	1	25	0	0	0	28	3	0	64	682
7:00 AM	0	0	0	0	0	0	4	0	2	29	0	0	0	26	4	0	65	689
7:05 AM	0	0	0	0	2	0	4	0	4	25	0	0	0	36	11	0	82	727
7:10 AM	0	0	0	0	1	0	6	0	6	27	0	0	0	28	5	0	73	755
7:15 AM	0	0	0	0	2	0	11	0	2	25	0	0	0	31	8	0	79	779
7:20 AM	0	0	0	0	2	0	15	0	6	23	0	0	0	46	9	0	101	839
7:25 AM	0	0	0	0	6	0	12	0	4	22	0	0	0	43	7	0	94	880
7:30 AM	0	0	0	0	2	0	14	0	5	19	0	0	0	37	1	0	78	899
7:35 AM	0	0	0	0	2	0	3	0	2	25	0	0	0	30	0	0	62	904
7:40 AM	0	0	0	0	0	0	6	0	4	21	0	0	0	36	0	0	67	911
7:45 AM	0	0	0	0	1	0	4	0	1	28	0	0	0	32	2	0	68	910
7:50 AM	0	0	0	0	2	0	1	0	1	27	0	0	0	30	0	0	61	894
7:55 AM	0	0	0	0	3	0	3	0	0	30	0	0	0	30	0	0	66	896
8:00 AM	0	0	0	0	1	0	0	0	3	16	0	0	0	32	0	0	52	883
8:05 AM	0	0	0	0	0	0	3	0	0	27	0	0	0	29	1	0	60	861
8:10 AM	0	0	0	0	0	0	3	0	0	22	0	0	0	31	2	0	58	846
8:15 AM	0	0	0	0	1	0	1	0	0	12	0	0	0	25	0	0	39	806
8:20 AM	0	0	0	0	0	0	4	0	3	30	0	0	0	27	3	0	67	772
8:25 AM	0	0	0	0	1	0	2	0	1	26	0	0	0	34	1	0	65	743
8:30 AM	0	0	0	0	1	0	5	0	3	20	0	0	0	26	0	0	55	720
8:35 AM	0	0	0	0	0	0	2	0	0	33	0	0	0	26	0	0	61	719
8:40 AM	0	0	0	0	0	0	1	0	3	18	0	0	0	41	4	0	67	719
8:45 AM	0	0	0	0	3	0	2	0	1	22	0	0	0	30	4	0	62	713
8:50 AM	0	0	0	0	0	0	8	0	0	31	0	0	0	26	3	0	68	720
8:55 AM	0	0	0	0	1	0	10	0	2	27	0	0	0	23	0	0	63	717

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:00 AM	0	0	0	0	1	0	4	0	2	29	0	0	0	31	4	0	71	736
9:05 AM	0	0	0	0	0	0	3	0	3	29	0	0	0	23	2	0	60	736
9:10 AM	0	0	0	0	0	0	1	0	0	31	0	0	0	38	1	0	71	749
9:15 AM	0	0	0	0	1	0	2	0	2	19	0	0	0	28	1	0	53	763
9:20 AM	0	0	0	0	0	0	3	0	1	22	0	0	0	31	5	0	62	758
9:25 AM	0	0	0	0	4	0	4	0	2	23	0	0	0	32	0	0	65	758
9:30 AM	0	0	0	0	0	0	3	0	2	18	0	0	0	31	1	0	55	758
9:35 AM	0	0	0	0	0	0	3	0	0	19	0	0	0	31	2	0	55	752
9:40 AM	0	0	0	0	1	0	4	0	2	21	0	0	0	27	0	0	55	740
9:45 AM	0	0	0	0	2	0	4	0	0	27	0	0	0	29	2	0	64	742
9:50 AM	0	0	0	0	0	0	1	0	0	25	0	0	0	32	3	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	45	1	0	75	747
10:00 AM	0	0	0	0	0	0	3	0	1	29	0	0	0	37	1	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	1	24	0	0	0	29	1	0	55	742
10:10 AM	0	0	0	0	1	0	1	0	0	33	0	0	0	32	2	0	69	740
10:15 AM	0	0	0	0	1	0	1	0	1	25	0	0	0	40	1	0	69	756
10:20 AM	0	0	0	0	1	0	3	0	1	27	0	0	0	28	3	0	63	757
10:25 AM	0	0	0	0	1	0	4	0	2	31	0	0	0	30	3	0	71	763
10:30 AM	0	0	0	0	0	0	2	0	0	31	0	0	0	35	0	0	68	776
10:35 AM	0	0	0	0	1	0	2	0	0	22	0	0	0	45	2	0	72	793
10:40 AM	0	0	0	0	0	0	2	0	1	23	0	0	0	27	2	0	55	793
10:45 AM	0	0	0	0	1	0	1	0	2	22	0	0	0	42	6	0	74	803
10:50 AM	0	0	0	0	0	0	2	0	0	34	0	0	0	52	2	0	90	832
10:55 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	49	2	0	84	841
11:00 AM	0	0	0	0	1	0	0	0	2	25	0	0	0	45	1	0	74	844
11:05 AM	0	0	0	0	2	0	3	0	1	25	0	0	0	44	1	0	76	865
11:10 AM	0	0	0	0	1	0	2	0	3	43	0	0	0	37	5	0	91	887
11:15 AM	0	0	0	0	4	0	2	0	0	35	0	0	0	47	2	0	90	908
11:20 AM	0	0	0	0	1	0	4	0	1	35	0	0	0	36	1	0	78	923
11:25 AM	0	0	0	0	0	0	3	0	2	31	0	0	0	31	1	0	68	920
11:30 AM	0	0	0	0	1	0	3	0	0	35	0	0	0	34	1	0	74	926
11:35 AM	0	0	0	0	1	0	1	0	3	34	0	0	0	46	0	0	85	939
11:40 AM	0	0	0	0	2	0	1	0	4	31	0	0	0	38	4	0	80	964
11:45 AM	0	0	0	0	1	0	5	0	0	29	0	0	0	44	4	0	83	973
11:50 AM	0	0	0	0	4	0	0	0	1	31	0	0	0	44	1	0	81	964
11:55 AM	0	0	0	0	1	0	0	0	2	33	0	0	0	35	5	0	76	956
12:00 PM	0	0	0	0	1	0	4	0	1	40	0	0	0	47	3	0	96	978
12:05 PM	0	0	0	0	1	0	3	0	3	35	0	0	0	40	2	0	84	986
12:10 PM	0	0	0	0	1	0	7	0	0	38	0	0	0	33	2	0	81	976
12:15 PM	0	0	0	0	1	0	2	0	3	34	0	0	0	40	0	0	80	966
12:20 PM	0	0	0	0	2	0	2	0	2	38	0	0	0	23	0	0	67	955
12:25 PM	0	0	0	0	3	0	3	0	1	38	0	0	0	36	2	0	83	970
12:30 PM	0	0	0	0	3	0	2	0	3	33	0	0	0	35	0	0	76	972
12:35 PM	0	0	0	0	1	0	0	0	1	47	0	0	0	34	1	0	84	971
12:40 PM	0	0	0	0	1	0	1	0	1	24	0	0	0	36	0	0	63	954
12:45 PM	0	0	0	0	1	0	2	0	5	33	0	0	0	37	5	0	83	954
12:50 PM	0	0	0	0	0	0	3	0	1	38	0	0	0	35	1	0	78	951
12:55 PM	0	0	0	0	3	0	1	0	1	31	0	0	0	46	1	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	1	35	0	0	0	28	0	0	64	926
1:05 PM	0	0	0	0	1	0	0	0	3	32	0	0	0	41	5	0	82	924
1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
1:15 PM	0	0	0	0	1	0	2	0	1	44	0	0	0	30	1	0	79	919
1:20 PM	0	0	0	0	1	0	3	0	1	42	0	0	0	38	4	0	89	941
1:25 PM	0	0	0	0	1	0	2	0	0	35	0	0	0	41	3	0	82	940
1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
1:35 PM	0	0	0	0	2	0	3	0	3	34	0	0	0	42	1	0	85	957
1:40 PM	0	0	0	0	1	0	2	0	3	38	0	0	0	44	3	0	91	985
1:45 PM	0	0	0	0	1	0	3	0	0	27	0	0	0	33	1	0	65	967
1:50 PM	0	0	0	0	4	0	2	0	3	34	0	0	0	39	2	0	84	973
1:55 PM	0	0	0	0	1	0	2	0	4	26	0	0	0	31	3	0	67	957
2:00 PM	0	0	0	0	3	0	2	0	1	32	0	0	0	43	3	0	84	977
2:05 PM	0	0	0	0	0	0	3	0	2	33	0	0	0	32	3	0	73	968
2:10 PM	0	0	0	0	0	0	3	0	4	40	0	0	0	37	3	0	87	978
2:15 PM	0	0	0	0	3	0	1	0	2	32	0	0	0	38	7	0	83	982
2:20 PM	0	0	0	0	2	0	9	0	2	37	0	0	0	30	3	0	83	976
2:25 PM	0	0	0	0	4	0	10	0	0	39	0	0	0	29	3	0	85	979
2:30 PM	0	0	0	0	3	0	4	0	1	40	0	0	0	31	2	0	81	968
2:35 PM	0	0	0	0	3	0	1	0	1	37	0	0	0	46	3	0	91	974
2:40 PM	0	0	0	0	1	0	1	0	1	43	0	0	0	34	1	0	81	964
2:45 PM	0	0	0	0	2	0	5	0	1	36	0	0	0	40	3	0	87	986
2:50 PM	0	0	0	0	1	0	5	0	3	37	0	0	0	39	2	0	87	989
2:55 PM	0	0	0	0	0	0	6	0	1	39	0	0	0	60	2	0	108	1030
3:00 PM	0	0	0	0	2	0	1	0	3	39	0	0	0	39	4	0	88	1034
3:05 PM	0	0	0	0	2	0	3	0	1	33	0	0	0	46	1	0	86	1047

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	0	0	3	0	10	0	3	44	0	0	0	49	0	0	109	1069
3:15 PM	0	0	0	0	1	0	6	0	3	43	0	0	0	48	3	0	104	1090
3:20 PM	0	0	0	0	1	0	3	0	0	41	0	0	0	56	1	0	102	1109
3:25 PM	0	0	0	0	0	0	2	0	2	49	0	0	0	30	2	0	85	1109
3:30 PM	0	0	0	0	2	0	9	0	7	46	0	0	0	43	1	0	108	1136
3:35 PM	0	0	0	0	1	0	6	0	3	41	0	0	0	43	1	0	95	1140
3:40 PM	0	0	0	0	2	0	7	0	2	58	0	0	0	37	2	0	108	1167
3:45 PM	0	0	0	0	0	0	2	0	0	38	0	0	0	41	1	0	82	1162
3:50 PM	0	0	0	0	1	0	4	0	2	48	0	0	0	37	1	0	93	1168
3:55 PM	0	0	0	0	0	0	5	0	3	51	0	0	0	38	6	0	103	1163
4:00 PM	0	0	0	0	1	0	7	0	3	50	0	0	0	31	1	0	93	1168
4:05 PM	0	0	0	0	0	0	1	0	4	49	0	0	0	41	1	0	96	1178
4:10 PM	0	0	0	0	1	0	6	0	2	46	0	0	0	39	3	0	97	1166
4:15 PM	0	0	0	0	1	0	5	0	2	49	0	0	0	39	2	0	98	1160
4:20 PM	0	0	0	0	2	0	4	0	2	45	0	0	0	41	3	0	97	1155
4:25 PM	0	0	0	0	0	0	2	0	3	45	0	0	0	38	4	0	92	1162
4:30 PM	0	0	0	0	4	0	3	0	1	49	0	0	0	46	2	0	105	1159
4:35 PM	0	0	0	0	1	0	4	0	4	44	0	0	0	46	2	0	101	1165
4:40 PM	0	0	0	0	0	0	2	0	5	53	0	0	0	45	3	0	108	1165
4:45 PM	0	0	0	0	2	0	5	0	6	37	0	0	0	46	5	0	101	1184
4:50 PM	0	0	0	0	1	0	9	0	4	53	0	0	0	44	6	0	117	1208
4:55 PM	0	0	0	0	0	0	5	0	4	42	0	0	0	42	8	0	101	1206
5:00 PM	0	0	0	0	2	0	5	0	1	59	0	0	0	46	6	0	119	1232
5:05 PM	0	0	0	0	1	0	5	0	3	49	0	0	0	42	5	0	105	1241
5:10 PM	0	0	0	0	2	0	8	0	6	39	0	0	0	61	3	0	119	1263
5:15 PM	0	0	0	0	1	0	4	0	2	49	0	0	0	33	3	0	92	1257
5:20 PM	0	0	0	0	1	0	3	0	4	45	0	0	0	39	4	0	96	1256
5:25 PM	0	0	0	0	1	0	2	0	4	49	0	0	0	44	6	0	106	1270
5:30 PM	0	0	0	0	0	0	8	0	6	43	0	0	0	39	4	0	100	1265
5:35 PM	0	0	0	0	2	0	8	0	4	49	0	0	0	37	3	0	103	1267
5:40 PM	0	0	0	0	0	0	7	0	5	45	0	0	0	31	6	0	94	1253
5:45 PM	0	0	0	0	1	0	10	0	3	48	0	0	0	43	1	0	106	1258
5:50 PM	0	0	0	0	4	0	5	0	3	45	0	0	0	40	7	0	104	1245
5:55 PM	0	0	0	0	2	0	2	0	2	41	0	0	0	29	5	0	81	1225
6:00 PM	0	0	0	0	0	0	4	0	8	45	0	0	0	47	2	0	106	1212
6:05 PM	0	0	0	0	2	0	3	0	4	47	0	0	0	31	1	0	88	1195
6:10 PM	0	0	0	0	2	0	6	0	5	43	0	0	0	36	0	0	92	1168
6:15 PM	0	0	0	0	3	0	4	0	3	46	0	0	0	40	3	0	99	1175
6:20 PM	0	0	0	0	4	0	3	0	1	35	0	0	0	32	1	0	76	1155
6:25 PM	0	0	0	0	1	0	1	0	3	34	0	0	0	31	0	0	70	1119
6:30 PM	0	0	0	0	2	0	6	0	7	31	0	0	0	37	4	0	87	1106
6:35 PM	0	0	0	0	7	0	15	0	4	38	0	0	0	24	0	0	88	1091
6:40 PM	0	0	0	0	2	0	4	0	7	42	0	0	0	26	3	0	84	1081
6:45 PM	0	0	0	0	0	0	3	0	1	41	0	0	0	31	5	0	81	1056
6:50 PM	0	0	0	0	4	0	7	0	5	39	0	0	0	32	4	0	91	1043
6:55 PM	0	0	0	0	0	0	7	0	3	37	0	0	0	28	4	0	79	1041
7:00 PM	0	0	0	0	2	0	1	0	4	27	0	0	0	23	3	0	60	995
7:05 PM	0	0	0	0	9	0	12	0	3	23	0	0	0	18	3	0	68	975
7:10 PM	0	0	0	0	2	0	4	0	3	32	0	0	0	26	2	0	69	952
7:15 PM	0	0	0	0	3	0	1	0	1	28	0	0	0	30	2	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	1	33	0	0	0	22	1	0	57	899
7:25 PM	0	0	0	0	0	0	2	0	2	23	0	0	0	18	2	0	47	876
7:30 PM	0	0	0	0	1	0	2	0	0	22	0	0	0	31	1	0	57	846
7:35 PM	0	0	0	0	0	0	2	0	0	14	0	0	0	27	5	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	3	26	0	0	0	18	2	0	49	771
7:45 PM	0	0	0	0	2	0	1	0	2	18	0	0	0	18	1	0	42	732
7:50 PM	0	0	0	0	1	0	1	0	3	20	0	0	0	17	0	0	42	683
7:55 PM	0	0	0	0	2	0	1	0	2	7	0	0	0	14	0	0	26	630
8:00 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	10	0	0	31	601
8:05 PM	0	0	0	0	1	0	2	0	1	17	0	0	0	16	2	0	39	572
8:10 PM	0	0	0	0	0	0	2	0	2	22	0	0	0	26	1	0	53	556
8:15 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	16	1	0	37	528
8:20 PM	0	0	0	0	0	0	1	0	1	14	0	0	0	18	2	0	36	507
8:25 PM	0	0	0	0	0	0	2	0	3	19	0	0	0	11	0	0	35	495
8:30 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	22	0	0	36	474
8:35 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	18	0	0	39	465
8:40 PM	0	0	0	0	1	0	1	0	4	15	0	0	0	11	1	0	33	449
8:45 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	23	1	0	42	449
8:50 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	14	2	0	36	443
8:55 PM	0	0	0	0	1	0	2	0	2	14	0	0	0	21	2	0	42	459
9:00 PM	0	0	0	0	1	0	1	0	1	8	0	0	0	17	1	0	29	457
9:05 PM	0	0	0	0	0	0	2	0	0	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	4	17	0	0	0	14	0	0	36	409

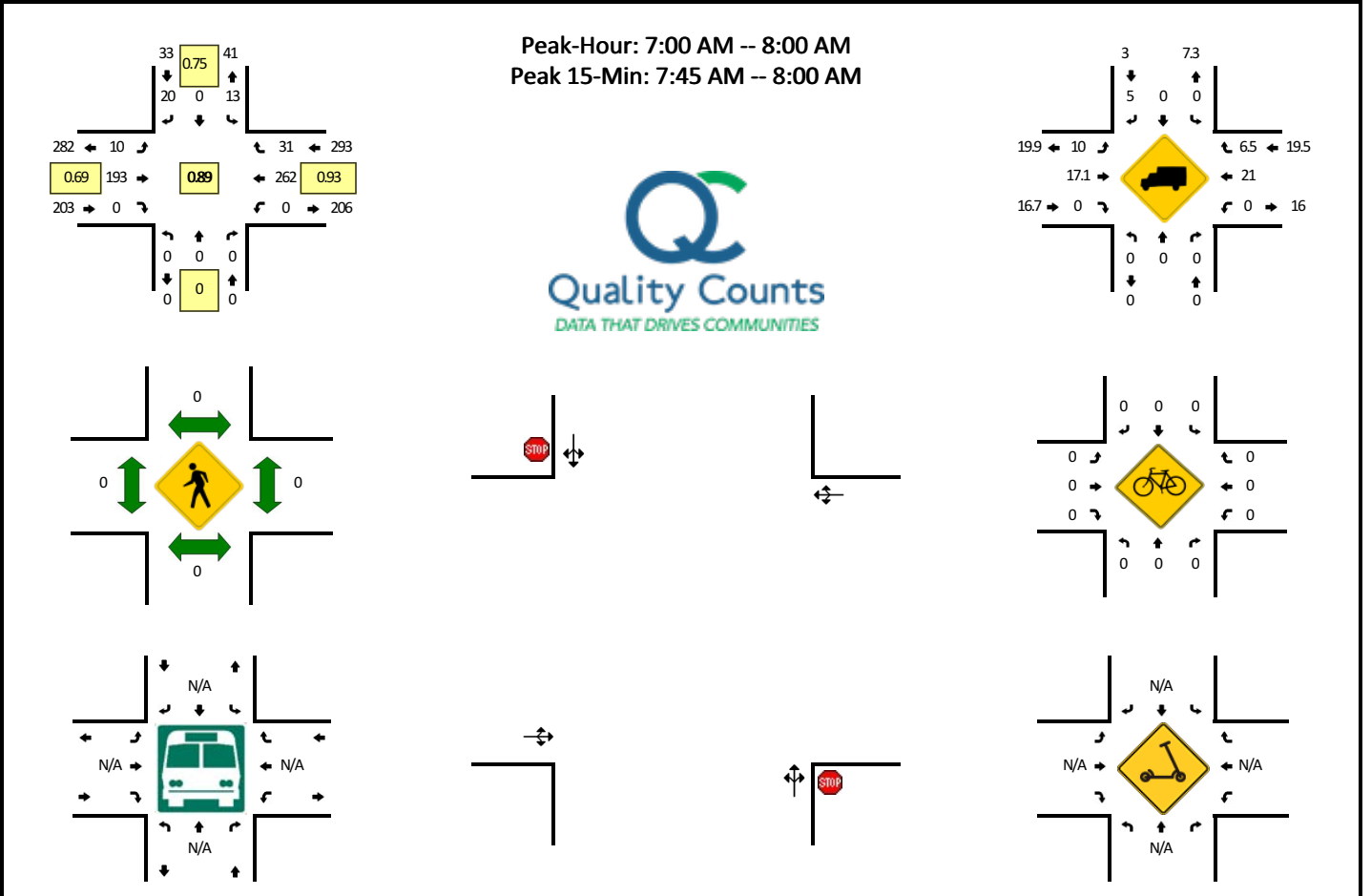
5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:20 PM	0	0	0	0	0	0	1	0	3	19	0	0	0	8	0	0	31	404
9:25 PM	0	0	0	0	0	0	1	0	0	18	0	0	0	6	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	2	12	0	0	0	5	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	1	8	0	0	0	9	1	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	11	0	0	27	351
9:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	8	0	0	17	326
9:50 PM	0	0	0	0	0	0	1	0	0	7	0	0	0	5	0	0	13	303
9:55 PM	0	0	0	0	0	0	2	0	1	9	0	0	0	4	1	0	17	278
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	40	0	152	0	48	280	0	0	0	480	96	0	1096	
Heavy Trucks	0	0	0		0	0	36		0	24	0		0	64	0		124	
Pedestrians			0				0				0				0		0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		
<i>Comments:</i>																		

Report generated on 1/11/2019 9:16 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Ridings Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 15525601
DATE: Thu, Jul 29 2021



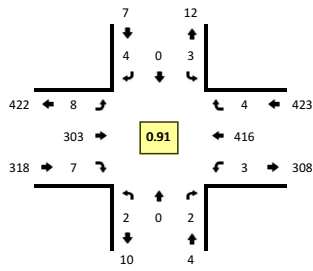
15-Min Count Period Beginning At	Ridings Ave (Northbound)				Ridings Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	4	0	3	0	4	34	0	0	0	60	12	0	117	
7:15 AM	0	0	0	0	2	0	9	0	5	47	0	0	0	76	3	0	142	
7:30 AM	0	0	0	0	1	0	5	0	0	39	0	0	0	67	9	0	121	
7:45 AM	0	0	0	0	6	0	3	0	1	73	0	0	0	59	7	0	149	529
8:00 AM	0	0	1	0	2	1	6	0	1	37	1	0	0	49	10	0	108	520
8:15 AM	0	1	1	0	2	0	2	0	0	42	1	0	1	62	13	0	125	503
8:30 AM	0	0	0	0	4	0	5	0	1	39	0	0	1	48	10	0	108	490
8:45 AM	0	0	0	0	4	0	4	0	1	44	1	0	0	53	10	0	117	458

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	24	0	12	0	4	292	0	0	0	236	28	0	596
Heavy Trucks	0	0	0	0	0	0	0	0	0	68	0	0	0	48	0	0	116
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

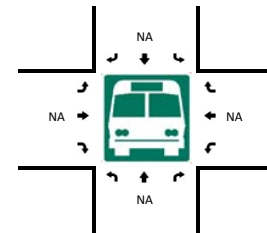
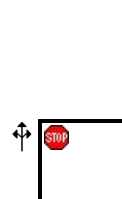
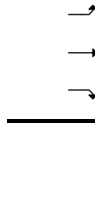
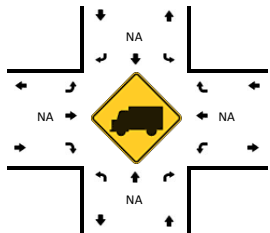
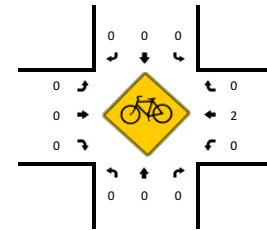
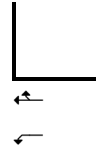
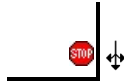
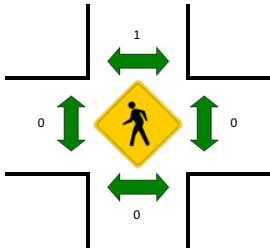
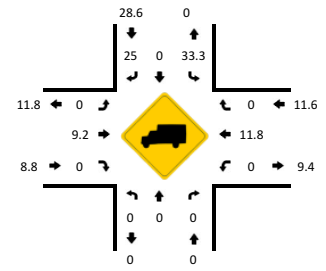
Comments:

LOCATION: Dixon Ave -- OR-211
 CITY/STATE: Molalla, OR

QC JOB #: 14815605
 DATE: Tue, Oct 9 2018



Peak-Hour: 7:00 AM -- 8:00 AM
 Peak 15-Min: 7:15 AM -- 7:30 AM

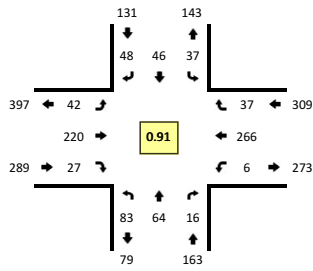


5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	32	1	0	58	
7:05 AM	0	0	0	0	0	0	0	0	1	30	0	0	0	45	0	0	76	
7:10 AM	0	0	0	0	0	0	1	0	1	26	0	0	0	31	0	0	59	
7:15 AM	0	0	0	0	0	0	0	0	3	22	1	0	0	33	0	0	59	
7:20 AM	0	0	0	0	1	0	0	0	0	23	2	0	0	49	1	0	76	
7:25 AM	1	0	0	0	0	0	1	0	0	22	1	0	0	46	0	0	71	
7:30 AM	0	0	0	0	0	0	0	0	0	22	0	0	3	30	0	0	55	
7:35 AM	0	0	0	0	0	0	0	0	1	28	1	0	0	32	0	0	62	
7:40 AM	0	0	0	0	1	0	1	0	0	24	1	0	0	24	0	0	51	
7:45 AM	1	0	0	0	0	0	0	0	1	28	0	0	0	36	0	0	66	
7:50 AM	0	0	1	0	0	0	0	0	0	24	1	0	0	30	2	0	58	
7:55 AM	0	0	1	0	1	0	1	0	1	29	0	0	0	28	0	0	61	752
8:00 AM	0	0	0	0	0	0	1	0	0	18	0	0	0	37	1	0	57	751
8:05 AM	1	0	0	0	0	0	1	0	0	20	0	0	0	29	0	0	51	726
8:10 AM	0	0	0	0	1	0	1	0	0	25	0	0	1	27	1	0	56	723
8:15 AM	2	0	0	0	1	0	0	0	0	12	1	0	1	25	1	0	43	707
8:20 AM	2	0	0	0	0	0	0	0	0	29	2	0	0	27	0	0	60	691
8:25 AM	2	0	0	0	1	0	1	0	0	20	4	0	0	27	1	0	56	676
8:30 AM	0	0	1	0	1	0	1	0	0	25	0	0	1	21	1	0	51	672
8:35 AM	0	1	0	0	1	0	1	0	0	26	2	0	1	30	0	0	62	672
8:40 AM	1	0	1	0	1	0	2	0	0	18	0	0	1	33	0	0	57	678
8:45 AM	0	0	1	0	0	0	0	0	0	23	2	0	0	37	1	0	64	676
8:50 AM	0	0	0	0	1	0	0	0	0	23	4	0	2	28	0	0	58	676
8:55 AM	0	0	0	0	1	0	0	0	0	28	2	0	1	25	0	0	57	672
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	0	0	0	4	0	4	0	12	268	16	0	0	512	4	0	824	
Heavy Trucks	0	0	0	0	0	0	0	0	0	20	0	0	0	60	0	0	80	
Pedestrians			0				0				0			0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1	
Railroad																		
Stopped Buses																		

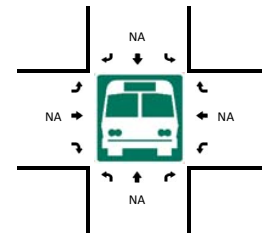
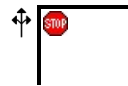
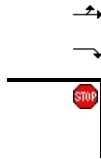
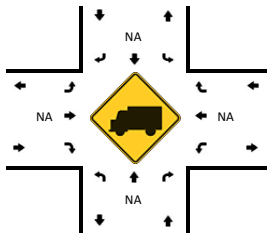
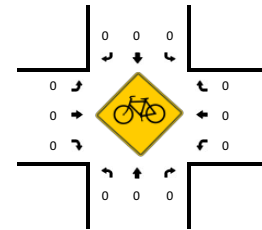
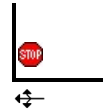
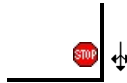
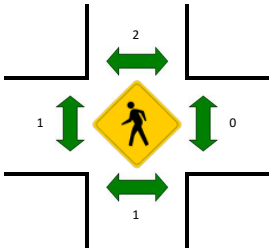
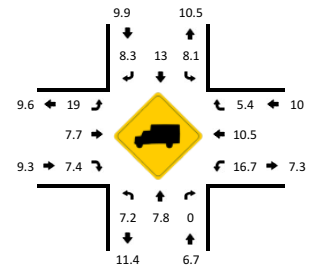
Comments:

LOCATION: Molalla Ave -- OR-211
 CITY/STATE: Molalla, OR

QC JOB #: 14815607
 DATE: Tue, Oct 9 2018



Peak-Hour: 7:00 AM -- 8:00 AM
 Peak 15-Min: 7:00 AM -- 7:15 AM

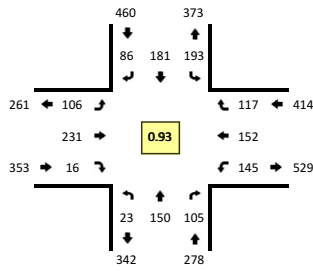


5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	8	2	0	2	2	5	0	5	19	0	0	1	21	0	0	76	
7:05 AM	6	9	3	0	3	2	5	0	4	21	1	0	0	28	9	0	91	
7:10 AM	6	9	4	0	2	3	3	0	9	18	1	0	0	18	4	0	77	
7:15 AM	9	9	1	0	0	6	4	0	5	14	2	0	0	21	5	0	76	
7:20 AM	12	6	0	0	1	4	4	0	1	17	2	0	2	29	2	0	80	
7:25 AM	6	4	0	0	2	4	8	0	1	15	2	0	2	24	0	0	68	
7:30 AM	4	3	2	0	0	5	4	0	2	17	3	0	0	17	2	0	59	
7:35 AM	7	2	0	0	0	5	2	0	2	22	5	0	0	22	4	0	71	
7:40 AM	8	3	2	0	7	2	5	0	3	20	3	0	0	19	3	0	75	
7:45 AM	5	2	1	0	11	6	4	0	4	18	3	0	0	26	2	0	82	
7:50 AM	5	3	1	0	5	2	3	0	2	21	1	0	1	18	3	0	65	
7:55 AM	4	6	0	0	4	5	1	0	4	18	4	0	0	23	3	0	72	892
8:00 AM	10	4	1	0	5	1	4	0	3	19	0	0	0	23	6	0	76	892
8:05 AM	3	3	2	0	0	9	5	0	2	12	1	0	2	19	4	0	62	863
8:10 AM	7	1	4	0	3	2	1	0	1	20	5	0	1	17	8	0	70	856
8:15 AM	3	6	1	0	4	4	9	0	3	9	2	0	1	23	3	0	68	848
8:20 AM	4	6	1	0	1	3	3	0	4	23	0	0	0	13	4	0	62	830
8:25 AM	7	8	2	0	3	2	2	0	2	13	6	0	1	16	2	0	64	826
8:30 AM	5	5	0	0	2	4	1	0	4	15	3	0	0	13	4	0	56	823
8:35 AM	7	2	0	0	4	3	5	0	1	16	1	0	2	26	6	0	73	825
8:40 AM	8	8	1	0	1	3	2	0	2	16	3	0	1	22	3	0	70	820
8:45 AM	3	5	3	0	3	7	9	0	5	8	4	0	0	16	6	0	69	807
8:50 AM	8	4	3	0	7	4	2	0	2	14	3	0	0	13	5	0	65	807
8:55 AM	6	3	2	0	5	1	5	0	3	20	5	0	3	16	5	0	74	809
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	92	104	36	0	28	28	52	0	72	232	8	0	4	268	52	0	976	
Heavy Trucks	4	4	0		0	0	12		16	36	0		4	28	4		108	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

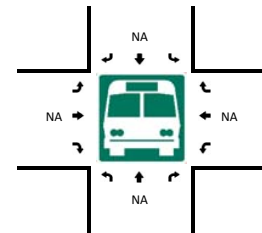
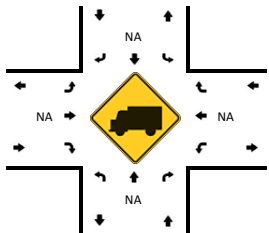
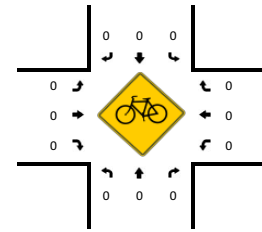
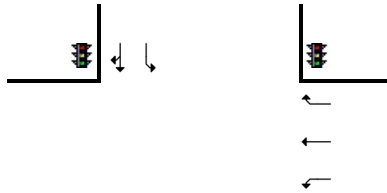
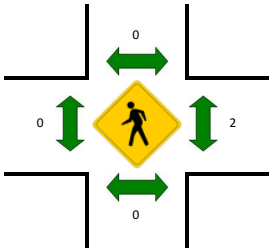
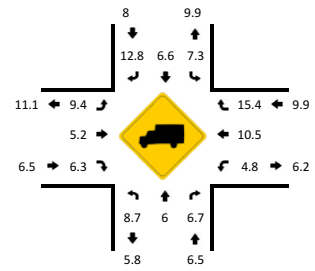
Comments:

LOCATION: OR-213 -- OR-211
 CITY/STATE: Molalla, OR

QC JOB #: 14815602
 DATE: Tue, Oct 9 2018



Peak-Hour: 4:15 PM -- 5:15 PM
 Peak 15-Min: 4:50 PM -- 5:05 PM

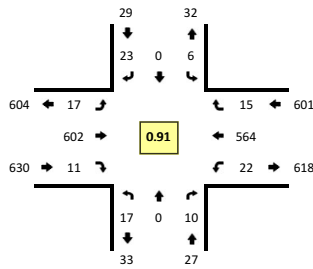


5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	11	5	0	25	14	14	0	8	22	2	0	8	14	8	0	132	
4:05 PM	1	11	13	0	10	21	10	0	12	16	0	0	6	15	13	0	128	
4:10 PM	0	12	12	0	9	10	6	0	9	18	0	0	14	15	12	0	117	
4:15 PM	2	12	7	0	13	14	5	0	8	20	2	0	9	9	5	0	106	
4:20 PM	2	13	8	0	11	15	7	0	9	20	0	0	13	11	8	0	117	
4:25 PM	1	12	12	0	9	10	6	0	9	28	1	0	10	14	9	0	121	
4:30 PM	4	14	5	0	25	20	7	0	13	12	1	0	13	2	11	0	127	
4:35 PM	3	11	9	0	21	14	7	0	11	31	4	0	10	14	14	0	149	
4:40 PM	1	12	9	0	17	14	5	0	6	14	3	0	18	10	9	0	118	
4:45 PM	0	13	15	0	20	19	10	0	9	16	0	0	15	6	11	0	134	
4:50 PM	1	10	8	0	18	17	9	0	11	17	3	0	10	14	15	0	133	1509
4:55 PM	2	22	6	0	21	13	7	0	4	14	0	0	15	14	9	0	127	1523
5:00 PM	6	15	11	0	17	14	9	0	9	22	2	0	5	27	9	0	146	1501
5:05 PM	1	10	11	0	11	11	9	0	8	16	0	0	14	12	3	0	106	1505
5:10 PM	0	6	4	0	10	20	5	0	9	21	0	0	13	19	14	0	121	1509
5:15 PM	2	10	3	0	21	15	6	0	8	19	2	0	7	9	8	0	110	1510
5:20 PM	2	13	7	0	15	17	10	0	5	21	0	0	10	10	8	0	118	1497
5:25 PM	2	13	6	0	11	16	7	0	11	10	4	0	13	5	10	0	108	1489
5:30 PM	3	12	8	0	17	16	6	0	7	25	1	0	8	8	8	0	119	1447
5:35 PM	1	8	11	0	16	11	7	0	1	13	3	0	9	13	14	0	107	1453
5:40 PM	0	15	7	0	12	22	3	0	12	23	2	0	11	8	9	0	124	1423
5:45 PM	1	9	10	0	15	13	4	0	5	6	3	0	20	16	2	0	104	1395
5:50 PM	1	13	7	0	21	14	4	0	6	13	0	0	7	12	7	0	105	1363
5:55 PM	2	10	8	0	13	11	4	0	6	13	0	0	9	9	10	0	95	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	36	188	100	0	224	176	100	0	96	212	20	0	120	220	132	0	1624	
Heavy Trucks	4	16	4		16	4	12		8	20	0		0	20	8		112	
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

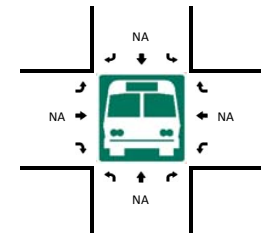
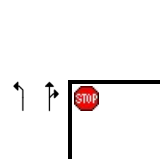
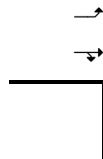
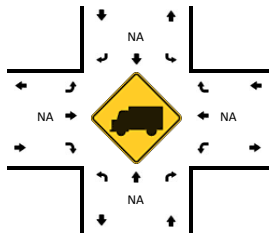
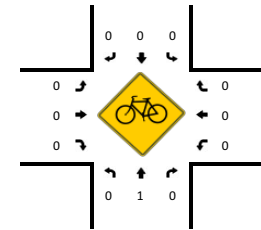
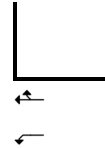
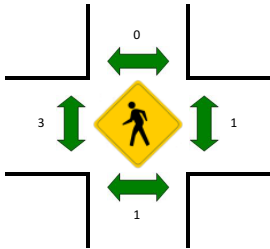
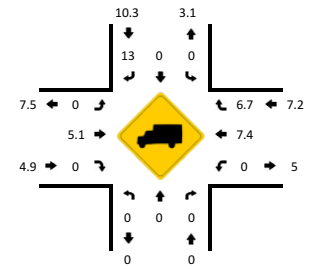
Comments:

LOCATION: N Hezzie Ln -- OR-211
 CITY/STATE: Molalla, OR

QC JOB #: 14815604
 DATE: Tue, Oct 9 2018



Peak-Hour: 4:15 PM -- 5:15 PM
 Peak 15-Min: 5:00 PM -- 5:15 PM

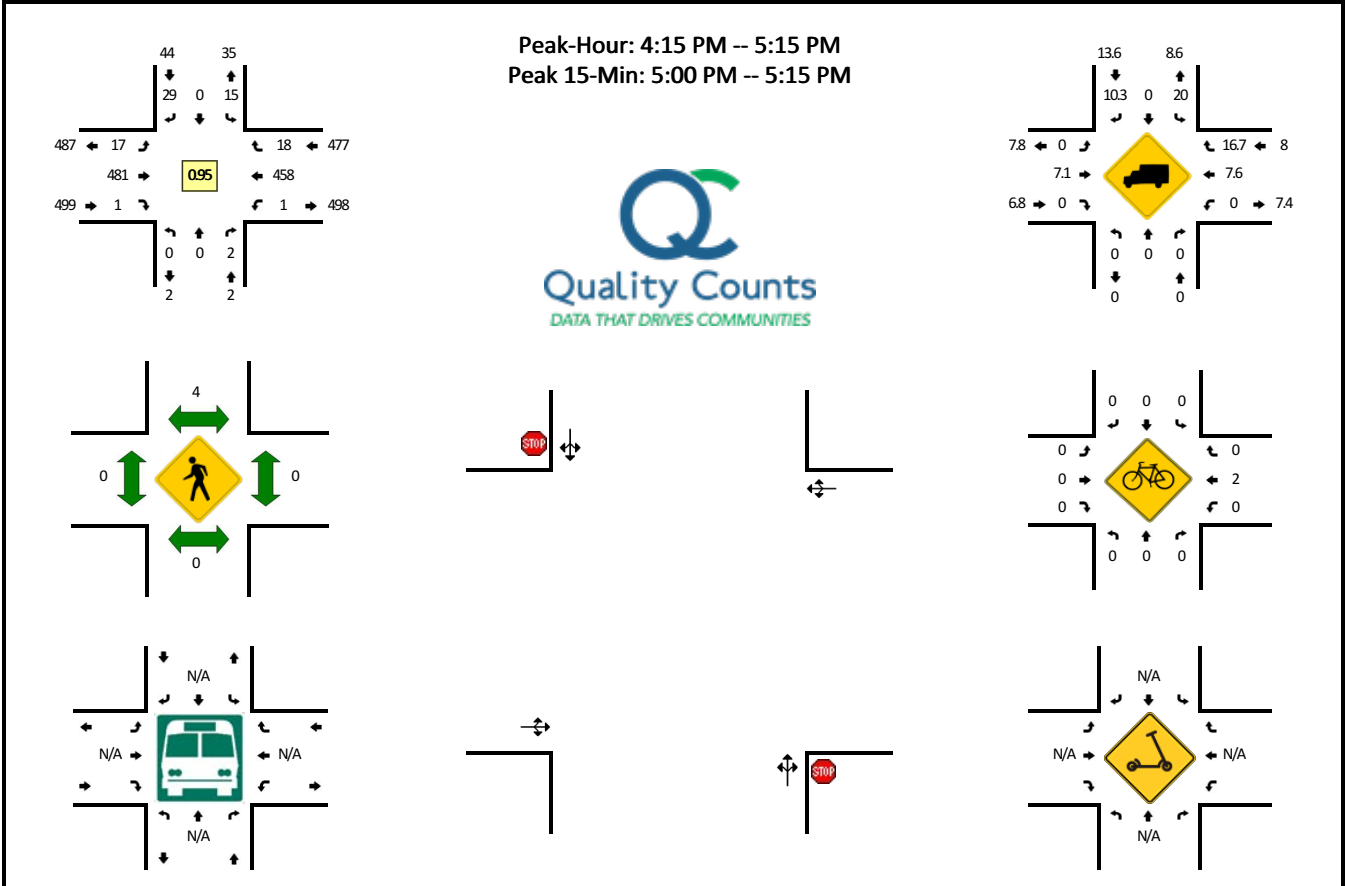


5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	2	0	0	0	3	0	2	55	2	0	2	41	1	0	109	
4:05 PM	0	0	0	0	0	0	1	0	2	50	1	0	1	45	0	0	100	
4:10 PM	1	0	2	0	1	0	0	0	0	43	0	0	0	41	0	0	88	
4:15 PM	0	0	0	0	0	0	0	0	0	57	0	0	1	44	0	0	102	
4:20 PM	0	0	0	0	1	0	1	0	0	45	1	0	1	46	0	0	95	
4:25 PM	1	0	0	0	0	0	1	0	0	48	1	0	1	41	0	0	93	
4:30 PM	3	0	0	0	0	0	2	0	1	49	2	0	1	46	1	0	105	
4:35 PM	2	0	1	0	1	0	1	0	3	56	0	0	2	45	0	0	111	
4:40 PM	1	0	1	0	1	0	2	0	2	52	2	0	4	44	2	0	111	
4:45 PM	2	0	3	0	1	0	4	0	1	45	0	0	2	46	1	0	105	
4:50 PM	0	0	1	0	1	0	2	0	4	52	0	0	3	52	0	0	115	
4:55 PM	1	0	1	0	0	0	3	0	1	43	1	0	3	43	1	0	97	1231
5:00 PM	3	0	1	0	0	0	2	0	1	57	2	0	1	51	2	0	120	1242
5:05 PM	1	0	0	0	0	0	1	0	1	52	1	0	2	42	6	0	106	1248
5:10 PM	3	0	2	0	1	0	4	0	3	46	1	0	1	64	2	0	127	1287
5:15 PM	3	0	0	0	2	0	3	0	2	45	2	0	4	30	2	0	93	1278
5:20 PM	0	0	0	0	0	0	3	0	1	44	1	0	0	42	1	0	92	1275
5:25 PM	1	0	2	0	1	0	2	0	0	49	2	0	3	45	0	0	105	1287
5:30 PM	0	0	3	0	2	0	2	0	0	59	0	0	1	44	2	0	113	1295
5:35 PM	1	0	1	0	0	0	0	0	2	38	1	0	2	38	0	0	83	1267
5:40 PM	2	0	2	0	0	0	2	0	1	52	2	0	4	40	2	0	107	1263
5:45 PM	2	0	1	0	0	0	0	0	2	47	0	0	0	46	2	0	100	1258
5:50 PM	2	0	1	0	0	0	3	0	1	52	1	0	2	43	2	0	107	1250
5:55 PM	0	0	1	0	0	0	0	0	1	42	0	0	2	31	0	0	77	1230
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	0	12	0	4	0	28	0	20	620	16	0	16	628	40	0	1412	
Heavy Trucks	0	0	0		0	0	4		0	40	0		0	12	4		60	
Pedestrians			0				0			0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Ridings Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 15525602
DATE: Thu, Jul 29 2021

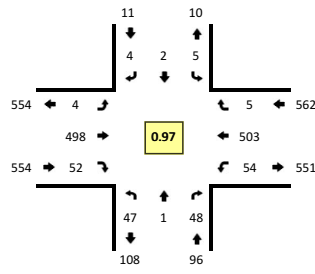


5-Min Count Period Beginning At	Ridings Ave (Northbound)				Ridings Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	2	37	0	0	0	36	0	0	75	
4:05 PM	0	0	0	0	2	0	0	0	1	34	0	0	0	28	0	0	65	
4:10 PM	0	1	0	0	1	1	3	0	1	49	1	0	0	42	0	0	99	
4:15 PM	0	0	0	0	0	0	6	0	1	29	0	0	0	38	0	0	74	
4:20 PM	0	0	0	0	1	0	1	0	2	48	0	0	0	43	3	0	98	
4:25 PM	0	0	0	0	0	0	3	0	2	46	0	0	0	36	1	0	88	
4:30 PM	0	0	0	0	1	0	3	0	2	33	1	0	0	41	1	0	82	
4:35 PM	0	0	1	0	4	0	0	0	2	48	0	0	0	32	0	0	87	
4:40 PM	0	0	1	0	3	0	2	0	2	37	0	0	1	40	4	0	90	
4:45 PM	0	0	0	0	1	0	2	0	1	41	0	0	0	28	2	0	75	
4:50 PM	0	0	0	0	1	0	2	0	0	41	0	0	0	40	2	0	86	
4:55 PM	0	0	0	0	1	0	0	0	1	38	0	0	0	30	2	0	72	991
5:00 PM	0	0	0	0	1	0	6	0	2	43	0	0	0	41	1	0	94	1010
5:05 PM	0	0	0	0	0	0	2	0	2	33	0	0	0	44	2	0	83	1028
5:10 PM	0	0	0	0	2	0	2	0	0	44	0	0	0	45	0	0	93	1022
5:15 PM	0	0	0	0	2	0	2	0	1	38	0	0	0	48	0	0	91	1039
5:20 PM	0	1	0	0	5	0	2	0	2	33	0	0	0	40	2	0	85	1026
5:25 PM	0	0	0	0	0	0	4	0	1	50	1	0	0	37	3	0	96	1034
5:30 PM	0	0	1	0	2	0	4	0	1	38	0	0	0	40	2	0	88	1040
5:35 PM	0	0	2	0	0	0	6	0	3	33	1	0	0	39	0	0	84	1037
5:40 PM	0	0	0	0	0	0	3	0	1	48	0	0	0	45	1	0	98	1045
5:45 PM	0	0	0	0	1	0	5	0	2	39	0	0	0	45	1	0	93	1063
5:50 PM	0	0	0	0	2	0	1	0	1	30	0	0	1	35	0	0	70	1047
5:55 PM	0	0	0	0	0	0	2	0	3	36	0	0	0	25	3	0	69	1044
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	12	0	40	0	16	480	0	0	0	520	12	0	1080	
Heavy Trucks	0	0	0	0	4	0	4	0	0	40	0	0	0	52	0	0	100	
Buses																		
Pedestrians	0	0				4				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

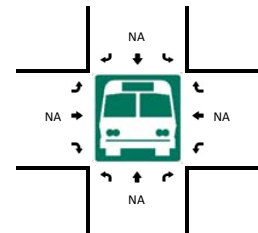
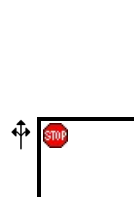
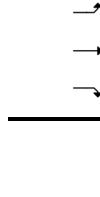
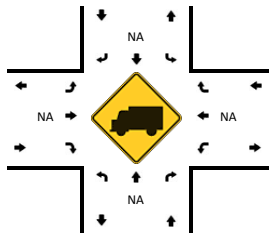
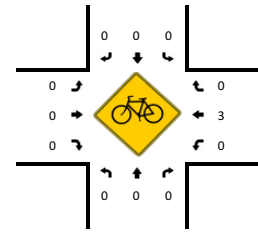
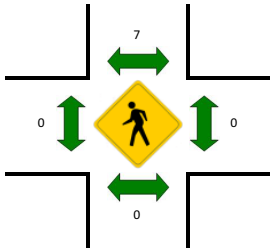
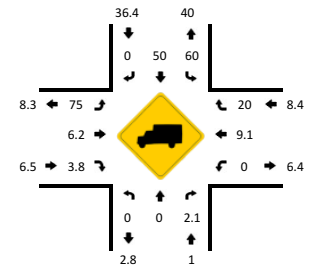
Comments:

LOCATION: Dixon Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 14815606
DATE: Tue, Oct 9 2018



Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM



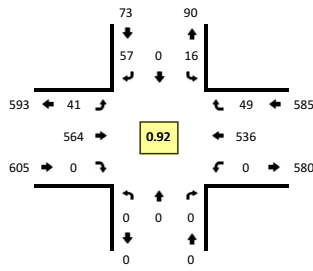
5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	3	0	0	0	0	0	0	38	7	0	2	32	0	0	86	
4:05 PM	3	0	4	0	1	0	1	0	0	50	7	0	1	38	0	0	105	
4:10 PM	3	0	7	0	0	0	1	0	0	41	8	0	4	33	1	0	98	
4:15 PM	7	0	5	0	0	0	1	0	1	43	4	0	5	31	0	0	97	
4:20 PM	6	0	6	0	1	0	1	0	0	41	3	0	4	38	0	0	100	
4:25 PM	1	1	3	0	1	0	0	0	1	40	3	0	5	39	1	0	95	
4:30 PM	3	0	5	0	0	0	0	0	0	49	6	0	4	44	1	0	112	
4:35 PM	2	0	2	0	1	0	0	0	0	34	6	0	5	43	0	0	93	
4:40 PM	2	0	7	0	0	0	0	0	0	43	6	0	4	48	1	0	111	
4:45 PM	3	0	5	0	1	1	0	0	1	36	2	0	8	41	0	0	98	
4:50 PM	6	0	4	0	0	0	0	0	0	44	6	0	4	41	2	0	107	
4:55 PM	1	0	4	0	1	0	2	0	0	40	2	0	2	43	0	0	95	1197
5:00 PM	4	0	2	0	0	0	0	0	0	53	3	0	2	47	0	0	111	1222
5:05 PM	4	0	3	0	0	0	0	0	0	41	6	0	6	48	0	0	108	1225
5:10 PM	8	0	2	0	0	1	0	0	1	34	5	0	5	40	0	0	96	1223
5:15 PM	6	0	6	0	0	0	2	0	0	45	5	0	1	29	0	0	94	1220
5:20 PM	3	0	4	0	0	0	0	0	0	34	8	0	3	40	1	0	93	1213
5:25 PM	1	0	2	0	2	0	0	0	1	46	4	0	2	46	1	0	105	1223
5:30 PM	1	1	4	0	1	0	0	0	0	31	5	0	0	41	0	0	84	1195
5:35 PM	5	0	4	0	0	0	0	0	1	46	10	0	7	31	0	0	104	1206
5:40 PM	4	0	2	0	0	0	0	0	0	36	5	0	4	37	0	0	88	1183
5:45 PM	3	0	3	0	1	0	0	0	1	39	3	0	4	41	0	0	95	1180
5:50 PM	7	0	3	0	0	0	0	0	0	38	3	0	4	41	0	0	96	1169
5:55 PM	2	0	3	0	1	0	0	0	0	39	8	0	4	30	0	0	87	1161

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	0	56	0	4	0	0	0	0	504	72	0	52	540	8	0	1264
Heavy Trucks	0	0	0		0	0	0		0	20	4		0	76	0		100
Pedestrians			0			12				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

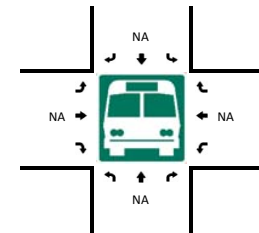
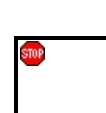
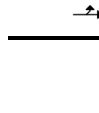
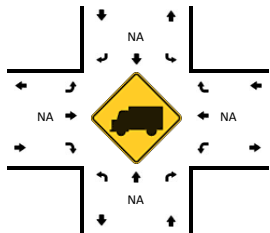
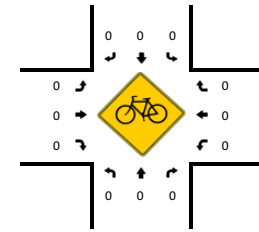
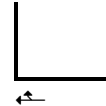
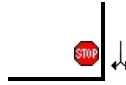
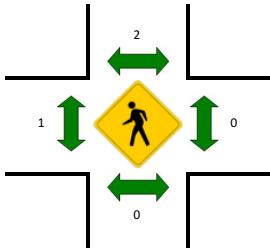
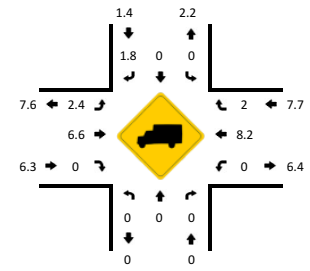
Comments:

LOCATION: Leroy Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 14815609
DATE: Tue, Oct 9 2018



Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	0	26	2	0	44	
6:10 AM	0	0	0	0	0	0	2	0	2	14	0	0	0	27	0	0	45	
6:15 AM	0	0	0	0	0	0	2	0	0	24	0	0	0	29	0	0	55	
6:20 AM	0	0	0	0	1	0	1	0	0	8	0	0	0	28	3	0	41	
6:25 AM	0	0	0	0	1	0	2	0	2	16	0	0	0	32	0	0	53	
6:30 AM	0	0	0	0	0	0	2	0	0	17	0	0	0	40	0	0	59	
6:35 AM	0	0	0	0	0	0	3	0	0	17	0	0	0	36	1	0	57	
6:40 AM	0	0	0	0	0	0	2	0	3	22	0	0	0	33	0	0	60	
6:45 AM	0	0	0	0	1	0	2	0	1	31	0	0	0	32	2	0	69	
6:50 AM	0	0	0	0	0	0	3	0	2	27	0	0	0	41	4	0	77	
6:55 AM	0	0	0	0	2	0	5	0	1	25	0	0	0	28	3	0	64	682
7:00 AM	0	0	0	0	0	0	4	0	2	29	0	0	0	26	4	0	65	689
7:05 AM	0	0	0	0	2	0	4	0	4	25	0	0	0	36	11	0	82	727
7:10 AM	0	0	0	0	1	0	6	0	6	27	0	0	0	28	5	0	73	755
7:15 AM	0	0	0	0	2	0	11	0	2	25	0	0	0	31	8	0	79	779
7:20 AM	0	0	0	0	2	0	15	0	6	23	0	0	0	46	9	0	101	839
7:25 AM	0	0	0	0	6	0	12	0	4	22	0	0	0	43	7	0	94	880
7:30 AM	0	0	0	0	2	0	14	0	5	19	0	0	0	37	1	0	78	899
7:35 AM	0	0	0	0	2	0	3	0	2	25	0	0	0	30	0	0	62	904
7:40 AM	0	0	0	0	0	0	6	0	4	21	0	0	0	36	0	0	67	911
7:45 AM	0	0	0	0	1	0	4	0	1	28	0	0	0	32	2	0	68	910
7:50 AM	0	0	0	0	2	0	1	0	1	27	0	0	0	30	0	0	61	894
7:55 AM	0	0	0	0	3	0	3	0	0	30	0	0	0	30	0	0	66	896
8:00 AM	0	0	0	0	1	0	0	0	3	16	0	0	0	32	0	0	52	883
8:05 AM	0	0	0	0	0	0	3	0	0	27	0	0	0	29	1	0	60	861
8:10 AM	0	0	0	0	0	0	3	0	0	22	0	0	0	31	2	0	58	846
8:15 AM	0	0	0	0	1	0	1	0	0	12	0	0	0	25	0	0	39	806
8:20 AM	0	0	0	0	0	0	4	0	3	30	0	0	0	27	3	0	67	772
8:25 AM	0	0	0	0	1	0	2	0	1	26	0	0	0	34	1	0	65	743
8:30 AM	0	0	0	0	1	0	5	0	3	20	0	0	0	26	0	0	55	720
8:35 AM	0	0	0	0	0	0	2	0	0	33	0	0	0	26	0	0	61	719
8:40 AM	0	0	0	0	0	0	1	0	3	18	0	0	0	41	4	0	67	719
8:45 AM	0	0	0	0	3	0	2	0	1	22	0	0	0	30	4	0	62	713
8:50 AM	0	0	0	0	0	0	8	0	0	31	0	0	0	26	3	0	68	720
8:55 AM	0	0	0	0	1	0	10	0	2	27	0	0	0	23	0	0	63	717

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:00 AM	0	0	0	0	1	0	4	0	2	29	0	0	0	31	4	0	71	736
9:05 AM	0	0	0	0	0	0	3	0	3	29	0	0	0	23	2	0	60	736
9:10 AM	0	0	0	0	0	0	1	0	0	31	0	0	0	38	1	0	71	749
9:15 AM	0	0	0	0	1	0	2	0	2	19	0	0	0	28	1	0	53	763
9:20 AM	0	0	0	0	0	0	3	0	1	22	0	0	0	31	5	0	62	758
9:25 AM	0	0	0	0	4	0	4	0	2	23	0	0	0	32	0	0	65	758
9:30 AM	0	0	0	0	0	0	3	0	2	18	0	0	0	31	1	0	55	758
9:35 AM	0	0	0	0	0	0	3	0	0	19	0	0	0	31	2	0	55	752
9:40 AM	0	0	0	0	1	0	4	0	2	21	0	0	0	27	0	0	55	740
9:45 AM	0	0	0	0	2	0	4	0	0	27	0	0	0	29	2	0	64	742
9:50 AM	0	0	0	0	0	0	1	0	0	25	0	0	0	32	3	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	45	1	0	75	747
10:00 AM	0	0	0	0	0	0	3	0	1	29	0	0	0	37	1	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	1	24	0	0	0	29	1	0	55	742
10:10 AM	0	0	0	0	1	0	1	0	0	33	0	0	0	32	2	0	69	740
10:15 AM	0	0	0	0	1	0	1	0	1	25	0	0	0	40	1	0	69	756
10:20 AM	0	0	0	0	1	0	3	0	1	27	0	0	0	28	3	0	63	757
10:25 AM	0	0	0	0	1	0	4	0	2	31	0	0	0	30	3	0	71	763
10:30 AM	0	0	0	0	0	0	2	0	0	31	0	0	0	35	0	0	68	776
10:35 AM	0	0	0	0	1	0	2	0	0	22	0	0	0	45	2	0	72	793
10:40 AM	0	0	0	0	0	0	2	0	1	23	0	0	0	27	2	0	55	793
10:45 AM	0	0	0	0	1	0	1	0	2	22	0	0	0	42	6	0	74	803
10:50 AM	0	0	0	0	0	0	2	0	0	34	0	0	0	52	2	0	90	832
10:55 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	49	2	0	84	841
11:00 AM	0	0	0	0	1	0	0	0	2	25	0	0	0	45	1	0	74	844
11:05 AM	0	0	0	0	2	0	3	0	1	25	0	0	0	44	1	0	76	865
11:10 AM	0	0	0	0	1	0	2	0	3	43	0	0	0	37	5	0	91	887
11:15 AM	0	0	0	0	4	0	2	0	0	35	0	0	0	47	2	0	90	908
11:20 AM	0	0	0	0	1	0	4	0	1	35	0	0	0	36	1	0	78	923
11:25 AM	0	0	0	0	0	0	3	0	2	31	0	0	0	31	1	0	68	920
11:30 AM	0	0	0	0	1	0	3	0	0	35	0	0	0	34	1	0	74	926
11:35 AM	0	0	0	0	1	0	1	0	3	34	0	0	0	46	0	0	85	939
11:40 AM	0	0	0	0	2	0	1	0	4	31	0	0	0	38	4	0	80	964
11:45 AM	0	0	0	0	1	0	5	0	0	29	0	0	0	44	4	0	83	973
11:50 AM	0	0	0	0	4	0	0	0	1	31	0	0	0	44	1	0	81	964
11:55 AM	0	0	0	0	1	0	0	0	2	33	0	0	0	35	5	0	76	956
12:00 PM	0	0	0	0	1	0	4	0	1	40	0	0	0	47	3	0	96	978
12:05 PM	0	0	0	0	1	0	3	0	3	35	0	0	0	40	2	0	84	986
12:10 PM	0	0	0	0	1	0	7	0	0	38	0	0	0	33	2	0	81	976
12:15 PM	0	0	0	0	1	0	2	0	3	34	0	0	0	40	0	0	80	966
12:20 PM	0	0	0	0	2	0	2	0	2	38	0	0	0	23	0	0	67	955
12:25 PM	0	0	0	0	3	0	3	0	1	38	0	0	0	36	2	0	83	970
12:30 PM	0	0	0	0	3	0	2	0	3	33	0	0	0	35	0	0	76	972
12:35 PM	0	0	0	0	1	0	0	0	1	47	0	0	0	34	1	0	84	971
12:40 PM	0	0	0	0	1	0	1	0	1	24	0	0	0	36	0	0	63	954
12:45 PM	0	0	0	0	1	0	2	0	5	33	0	0	0	37	5	0	83	954
12:50 PM	0	0	0	0	0	0	3	0	1	38	0	0	0	35	1	0	78	951
12:55 PM	0	0	0	0	3	0	1	0	1	31	0	0	0	46	1	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	1	35	0	0	0	28	0	0	64	926
1:05 PM	0	0	0	0	1	0	0	0	3	32	0	0	0	41	5	0	82	924
1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
1:15 PM	0	0	0	0	1	0	2	0	1	44	0	0	0	30	1	0	79	919
1:20 PM	0	0	0	0	1	0	3	0	1	42	0	0	0	38	4	0	89	941
1:25 PM	0	0	0	0	1	0	2	0	0	35	0	0	0	41	3	0	82	940
1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
1:35 PM	0	0	0	0	2	0	3	0	3	34	0	0	0	42	1	0	85	957
1:40 PM	0	0	0	0	1	0	2	0	3	38	0	0	0	44	3	0	91	985
1:45 PM	0	0	0	0	1	0	3	0	0	27	0	0	0	33	1	0	65	967
1:50 PM	0	0	0	0	4	0	2	0	3	34	0	0	0	39	2	0	84	973
1:55 PM	0	0	0	0	1	0	2	0	4	26	0	0	0	31	3	0	67	957
2:00 PM	0	0	0	0	3	0	2	0	1	32	0	0	0	43	3	0	84	977
2:05 PM	0	0	0	0	0	0	3	0	2	33	0	0	0	32	3	0	73	968
2:10 PM	0	0	0	0	0	0	3	0	4	40	0	0	0	37	3	0	87	978
2:15 PM	0	0	0	0	3	0	1	0	2	32	0	0	0	38	7	0	83	982
2:20 PM	0	0	0	0	2	0	9	0	2	37	0	0	0	30	3	0	83	976
2:25 PM	0	0	0	0	4	0	10	0	0	39	0	0	0	29	3	0	85	979
2:30 PM	0	0	0	0	3	0	4	0	1	40	0	0	0	31	2	0	81	968
2:35 PM	0	0	0	0	3	0	1	0	1	37	0	0	0	46	3	0	91	974
2:40 PM	0	0	0	0	1	0	1	0	1	43	0	0	0	34	1	0	81	964
2:45 PM	0	0	0	0	2	0	5	0	1	36	0	0	0	40	3	0	87	986
2:50 PM	0	0	0	0	1	0	5	0	3	37	0	0	0	39	2	0	87	989
2:55 PM	0	0	0	0	0	0	6	0	1	39	0	0	0	60	2	0	108	1030
3:00 PM	0	0	0	0	2	0	1	0	3	39	0	0	0	39	4	0	88	1034
3:05 PM	0	0	0	0	2	0	3	0	1	33	0	0	0	46	1	0	86	1047

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	0	0	3	0	10	0	3	44	0	0	0	49	0	0	109	1069
3:15 PM	0	0	0	0	1	0	6	0	3	43	0	0	0	48	3	0	104	1090
3:20 PM	0	0	0	0	1	0	3	0	0	41	0	0	0	56	1	0	102	1109
3:25 PM	0	0	0	0	0	0	2	0	2	49	0	0	0	30	2	0	85	1109
3:30 PM	0	0	0	0	2	0	9	0	7	46	0	0	0	43	1	0	108	1136
3:35 PM	0	0	0	0	1	0	6	0	3	41	0	0	0	43	1	0	95	1140
3:40 PM	0	0	0	0	2	0	7	0	2	58	0	0	0	37	2	0	108	1167
3:45 PM	0	0	0	0	0	0	2	0	0	38	0	0	0	41	1	0	82	1162
3:50 PM	0	0	0	0	1	0	4	0	2	48	0	0	0	37	1	0	93	1168
3:55 PM	0	0	0	0	0	0	5	0	3	51	0	0	0	38	6	0	103	1163
4:00 PM	0	0	0	0	1	0	7	0	3	50	0	0	0	31	1	0	93	1168
4:05 PM	0	0	0	0	0	0	1	0	4	49	0	0	0	41	1	0	96	1178
4:10 PM	0	0	0	0	1	0	6	0	2	46	0	0	0	39	3	0	97	1166
4:15 PM	0	0	0	0	1	0	5	0	2	49	0	0	0	39	2	0	98	1160
4:20 PM	0	0	0	0	2	0	4	0	2	45	0	0	0	41	3	0	97	1155
4:25 PM	0	0	0	0	0	0	2	0	3	45	0	0	0	38	4	0	92	1162
4:30 PM	0	0	0	0	4	0	3	0	1	49	0	0	0	46	2	0	105	1159
4:35 PM	0	0	0	0	1	0	4	0	4	44	0	0	0	46	2	0	101	1165
4:40 PM	0	0	0	0	0	0	2	0	5	53	0	0	0	45	3	0	108	1165
4:45 PM	0	0	0	0	2	0	5	0	6	37	0	0	0	46	5	0	101	1184
4:50 PM	0	0	0	0	1	0	9	0	4	53	0	0	0	44	6	0	117	1208
4:55 PM	0	0	0	0	0	0	5	0	4	42	0	0	0	42	8	0	101	1206
5:00 PM	0	0	0	0	2	0	5	0	1	59	0	0	0	46	6	0	119	1232
5:05 PM	0	0	0	0	1	0	5	0	3	49	0	0	0	42	5	0	105	1241
5:10 PM	0	0	0	0	2	0	8	0	6	39	0	0	0	61	3	0	119	1263
5:15 PM	0	0	0	0	1	0	4	0	2	49	0	0	0	33	3	0	92	1257
5:20 PM	0	0	0	0	1	0	3	0	4	45	0	0	0	39	4	0	96	1256
5:25 PM	0	0	0	0	1	0	2	0	4	49	0	0	0	44	6	0	106	1270
5:30 PM	0	0	0	0	0	0	8	0	6	43	0	0	0	39	4	0	100	1265
5:35 PM	0	0	0	0	2	0	8	0	4	49	0	0	0	37	3	0	103	1267
5:40 PM	0	0	0	0	0	0	7	0	5	45	0	0	0	31	6	0	94	1253
5:45 PM	0	0	0	0	1	0	10	0	3	48	0	0	0	43	1	0	106	1258
5:50 PM	0	0	0	0	4	0	5	0	3	45	0	0	0	40	7	0	104	1245
5:55 PM	0	0	0	0	2	0	2	0	2	41	0	0	0	29	5	0	81	1225
6:00 PM	0	0	0	0	0	0	4	0	8	45	0	0	0	47	2	0	106	1212
6:05 PM	0	0	0	0	2	0	3	0	4	47	0	0	0	31	1	0	88	1195
6:10 PM	0	0	0	0	2	0	6	0	5	43	0	0	0	36	0	0	92	1168
6:15 PM	0	0	0	0	3	0	4	0	3	46	0	0	0	40	3	0	99	1175
6:20 PM	0	0	0	0	4	0	3	0	1	35	0	0	0	32	1	0	76	1155
6:25 PM	0	0	0	0	1	0	1	0	3	34	0	0	0	31	0	0	70	1119
6:30 PM	0	0	0	0	2	0	6	0	7	31	0	0	0	37	4	0	87	1106
6:35 PM	0	0	0	0	7	0	15	0	4	38	0	0	0	24	0	0	88	1091
6:40 PM	0	0	0	0	2	0	4	0	7	42	0	0	0	26	3	0	84	1081
6:45 PM	0	0	0	0	0	0	3	0	1	41	0	0	0	31	5	0	81	1056
6:50 PM	0	0	0	0	4	0	7	0	5	39	0	0	0	32	4	0	91	1043
6:55 PM	0	0	0	0	0	0	7	0	3	37	0	0	0	28	4	0	79	1041
7:00 PM	0	0	0	0	2	0	1	0	4	27	0	0	0	23	3	0	60	995
7:05 PM	0	0	0	0	9	0	12	0	3	23	0	0	0	18	3	0	68	975
7:10 PM	0	0	0	0	2	0	4	0	3	32	0	0	0	26	2	0	69	952
7:15 PM	0	0	0	0	3	0	1	0	1	28	0	0	0	30	2	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	1	33	0	0	0	22	1	0	57	899
7:25 PM	0	0	0	0	0	0	2	0	2	23	0	0	0	18	2	0	47	876
7:30 PM	0	0	0	0	1	0	2	0	0	22	0	0	0	31	1	0	57	846
7:35 PM	0	0	0	0	0	0	2	0	0	14	0	0	0	27	5	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	3	26	0	0	0	18	2	0	49	771
7:45 PM	0	0	0	0	2	0	1	0	2	18	0	0	0	18	1	0	42	732
7:50 PM	0	0	0	0	1	0	1	0	3	20	0	0	0	17	0	0	42	683
7:55 PM	0	0	0	0	2	0	1	0	2	7	0	0	0	14	0	0	26	630
8:00 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	10	0	0	31	601
8:05 PM	0	0	0	0	1	0	2	0	1	17	0	0	0	16	2	0	39	572
8:10 PM	0	0	0	0	0	0	2	0	2	22	0	0	0	26	1	0	53	556
8:15 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	16	1	0	37	528
8:20 PM	0	0	0	0	0	0	1	0	1	14	0	0	0	18	2	0	36	507
8:25 PM	0	0	0	0	0	0	2	0	3	19	0	0	0	11	0	0	35	495
8:30 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	22	0	0	36	474
8:35 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	18	0	0	39	465
8:40 PM	0	0	0	0	1	0	1	0	4	15	0	0	0	11	1	0	33	449
8:45 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	23	1	0	42	449
8:50 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	14	2	0	36	443
8:55 PM	0	0	0	0	1	0	2	0	2	14	0	0	0	21	2	0	42	459
9:00 PM	0	0	0	0	1	0	1	0	1	8	0	0	0	17	1	0	29	457
9:05 PM	0	0	0	0	0	0	2	0	0	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	4	17	0	0	0	14	0	0	36	409

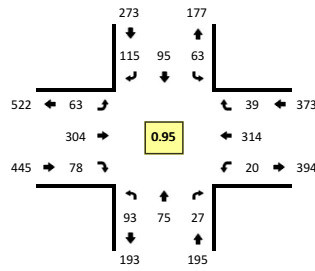
5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:20 PM	0	0	0	0	0	0	1	0	3	19	0	0	0	8	0	0	31	404
9:25 PM	0	0	0	0	0	0	1	0	0	18	0	0	0	6	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	2	12	0	0	0	5	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	1	8	0	0	0	9	1	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	11	0	0	27	351
9:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	8	0	0	17	326
9:50 PM	0	0	0	0	0	0	1	0	0	7	0	0	0	5	0	0	13	303
9:55 PM	0	0	0	0	0	0	2	0	1	9	0	0	0	4	1	0	17	278
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	20	0	72	0	40	588	0	0	0	596	56	0	1372	
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	20	0		64	
Pedestrians			0				4				0				0		4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		
<i>Comments:</i>																		

Report generated on 1/11/2019 9:18 AM

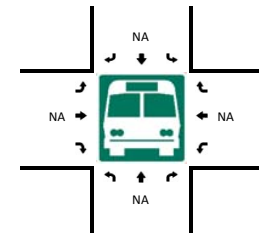
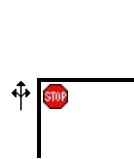
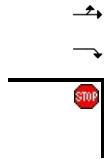
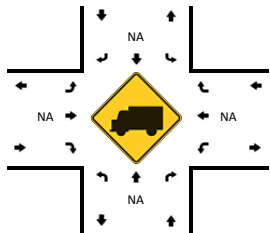
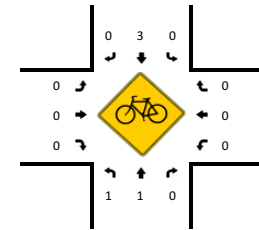
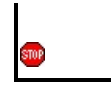
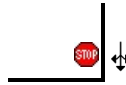
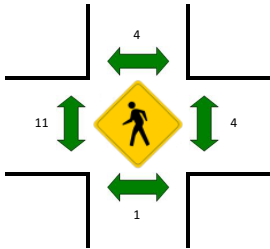
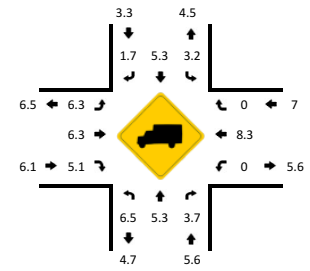
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Molalla Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 14815608
DATE: Tue, Oct 9 2018



Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:40 PM -- 4:55 PM



5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	9	3	0	11	10	10	0	5	30	4	0	3	10	7	0	107	
4:05 PM	6	5	2	0	9	10	7	0	6	27	9	0	3	26	4	0	114	
4:10 PM	2	5	1	0	10	9	7	0	4	28	6	0	1	26	2	0	101	
4:15 PM	6	6	1	0	1	11	10	0	9	20	5	0	2	18	4	0	93	
4:20 PM	10	11	3	0	5	8	6	0	8	21	6	0	4	23	0	0	105	
4:25 PM	7	5	2	0	4	13	9	0	5	29	10	0	3	30	2	0	119	
4:30 PM	6	6	1	0	5	3	8	0	3	32	6	0	1	31	4	0	106	
4:35 PM	11	8	4	0	4	13	6	0	4	23	4	0	1	22	4	0	104	
4:40 PM	11	4	3	0	8	6	8	0	5	31	8	0	1	33	2	0	120	
4:45 PM	4	10	2	0	7	9	11	0	4	28	6	0	2	25	2	0	110	
4:50 PM	5	4	3	0	7	7	11	0	4	28	9	0	0	27	4	0	109	
4:55 PM	9	2	3	0	4	4	17	0	6	20	3	0	3	29	1	0	101	1289
5:00 PM	7	4	1	0	5	11	5	0	3	25	9	0	3	30	3	0	106	1288
5:05 PM	11	8	2	0	5	4	12	0	8	20	7	0	0	23	5	0	105	1279
5:10 PM	6	7	2	0	8	6	12	0	4	27	5	0	0	23	8	0	108	1286
5:15 PM	4	9	0	0	6	11	7	0	7	22	8	0	1	19	4	0	98	1291
5:20 PM	11	3	2	0	3	11	11	0	5	21	2	0	1	23	2	0	95	1281
5:25 PM	10	9	1	0	4	12	10	0	5	21	6	0	7	21	0	0	106	1268
5:30 PM	3	6	1	0	7	7	12	0	1	27	9	0	2	30	3	0	108	1270
5:35 PM	4	9	1	0	3	9	4	0	10	23	12	0	3	18	6	0	102	1268
5:40 PM	7	10	1	0	7	8	5	0	4	24	4	0	2	29	1	0	102	1250
5:45 PM	10	5	1	0	6	10	8	0	7	23	7	0	1	29	3	0	110	1250
5:50 PM	8	8	1	0	4	8	16	0	10	17	11	0	0	19	5	0	107	1248
5:55 PM	7	2	4	0	4	10	7	0	3	29	7	0	3	20	0	0	96	1243

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	72	32	0	88	88	120	0	52	348	92	0	12	340	32	0	1356
Heavy Trucks	0	0	0		4	4	4		4	16	0		0	28	0		60
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	2	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	
























Comments:

Appendix B
Existing Year 2021 Conditions
Traffic Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: OR 213 & OR 211

08/09/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	133	4	59	213	215	12	148	109	90	79	77
Future Volume (vph)	68	133	4	59	213	215	12	148	109	90	79	77
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	145	4	64	232	234	13	161	118	98	86	84
RTOR Reduction (vph)	0	1	0	0	0	171	0	0	90	0	17	0
Lane Group Flow (vph)	74	148	0	64	232	63	13	161	28	98	153	0
Heavy Vehicles (%)	15%	15%	25%	17%	11%	16%	36%	13%	6%	20%	18%	19%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.1	22.7		7.6	22.2	22.2	1.2	19.7	19.7	12.0	30.5	
Effective Green, g (s)	8.1	22.7		7.6	22.2	22.2	1.2	19.7	19.7	12.0	30.5	
Actuated g/C Ratio	0.10	0.27		0.09	0.27	0.27	0.01	0.24	0.24	0.15	0.37	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	141	415		130	423	344	17	373	337	199	499	
v/s Ratio Prot	c0.05	0.10		0.05	c0.15		0.01	c0.10		c0.07	0.11	
v/s Ratio Perm						0.05			0.02			
v/c Ratio	0.52	0.36		0.49	0.55	0.18	0.76	0.43	0.08	0.49	0.31	
Uniform Delay, d1	35.4	24.1		35.7	25.9	23.2	40.6	26.7	24.4	32.5	18.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.3	1.1		1.7	2.6	0.5	102.0	0.3	0.0	1.1	0.1	
Delay (s)	37.7	25.2		37.4	28.5	23.8	142.5	27.0	24.5	33.6	18.7	
Level of Service	D	C		D	C	C	F	C	C	C	B	
Approach Delay (s)		29.3			27.5			31.1			24.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			82.6				Sum of lost time (s)				20.6	
Intersection Capacity Utilization			47.3%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

1: OR 213 & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↖	↖	↗	↗
Traffic Volume (veh/h)	68	133	4	59	213	215	12	148	109	90	79	77
Future Volume (veh/h)	68	133	4	59	213	215	12	148	109	90	79	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1545	1545	1545	1518	1600	1532	1325	1643	1740	1455	1483	1483
Adj Flow Rate, veh/h	74	145	4	64	232	234	13	161	118	98	86	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	15	15	15	17	11	16	36	13	6	20	18	18
Cap, veh/h	87	457	13	73	475	385	17	242	217	116	150	146
Arrive On Green	0.06	0.31	0.31	0.05	0.30	0.30	0.01	0.15	0.15	0.08	0.22	0.22
Sat Flow, veh/h	1472	1497	41	1446	1600	1298	1262	1643	1474	1386	689	673
Grp Volume(v), veh/h	74	0	149	64	232	234	13	161	118	98	0	170
Grp Sat Flow(s),veh/h/ln	1472	0	1538	1446	1600	1298	1262	1643	1474	1386	0	1362
Q Serve(g_s), s	2.5	0.0	3.7	2.2	5.9	7.7	0.5	4.6	3.7	3.5	0.0	5.6
Cycle Q Clear(g_c), s	2.5	0.0	3.7	2.2	5.9	7.7	0.5	4.6	3.7	3.5	0.0	5.6
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	87	0	470	73	475	385	17	242	217	116	0	296
V/C Ratio(X)	0.85	0.00	0.32	0.88	0.49	0.61	0.78	0.67	0.54	0.84	0.00	0.57
Avail Cap(c_a), veh/h	886	0	1543	870	1605	1302	759	1648	1479	834	0	1366
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	13.3	23.5	14.4	15.0	24.5	20.1	19.7	22.5	0.0	17.4
Incr Delay (d2), s/veh	13.2	0.0	0.8	17.6	1.7	3.3	36.7	1.2	0.8	9.8	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	2.0	1.9	3.6	4.0	0.5	2.9	2.1	2.3	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	0.0	14.1	41.1	16.1	18.3	61.2	21.3	20.5	32.3	0.0	18.1
LnGrp LOS	D	A	B	D	B	B	E	C	C	C	A	B
Approach Vol, veh/h		223			530			292			268	
Approach Delay, s/veh		21.6			20.1			22.7			23.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	12.6	7.5	20.5	5.7	16.1	7.9	20.1				
Change Period (Y+Rc), s	5.0	5.3	5.0	5.3	5.0	5.3	5.0	5.3				
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0				
Max Q Clear Time (g_c+I1), s	5.5	6.6	4.2	5.7	2.5	7.6	4.5	9.7				
Green Ext Time (p_c), s	0.1	0.7	0.1	1.6	0.0	0.6	0.1	5.1				
Intersection Summary												
HCM 6th Ctrl Delay			21.6									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Vol, veh/h	30	350	3	14	526	11	39	1	26	2	1	14
Future Vol, veh/h	30	350	3	14	526	11	39	1	26	2	1	14
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	7	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	10	10	0	0	13	0	0	0	0	0	0	7
Mvmt Flow	37	427	4	17	641	13	48	1	32	2	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	655	0	0	433	0	0	1196	1194	438	1210	1190	649
Stage 1	-	-	-	-	-	-	505	505	-	683	683	-
Stage 2	-	-	-	-	-	-	691	689	-	527	507	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	895	-	-	1137	-	-	164	188	623	141	166	445
Stage 1	-	-	-	-	-	-	553	544	-	410	419	-
Stage 2	-	-	-	-	-	-	438	450	-	508	513	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	894	-	-	1135	-	-	150	177	618	126	156	445
Mov Cap-2 Maneuver	-	-	-	-	-	-	150	177	-	126	156	-
Stage 1	-	-	-	-	-	-	529	521	-	393	412	-
Stage 2	-	-	-	-	-	-	414	443	-	458	491	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.2			28.3			17.2		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	150	566	894	-	-	1135	-	-	316
HCM Lane V/C Ratio	0.317	0.058	0.041	-	-	0.015	-	-	0.066
HCM Control Delay (s)	39.8	11.8	9.2	-	-	8.2	-	-	17.2
HCM Lane LOS	E	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.3	0.2	0.1	-	-	0	-	-	0.2

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	37	336	452	47	23	83
Future Vol, veh/h	37	336	452	47	23	83
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	10	12	2	0	18
Mvmt Flow	45	410	551	57	28	101

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	611	0	-	0	1083 583
Stage 1	-	-	-	-	583 -
Stage 2	-	-	-	-	500 -
Critical Hdwy	4.1	-	-	-	6.4 6.38
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.462
Pot Cap-1 Maneuver	978	-	-	-	243 483
Stage 1	-	-	-	-	562 -
Stage 2	-	-	-	-	613 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	975	-	-	-	227 482
Mov Cap-2 Maneuver	-	-	-	-	227 -
Stage 1	-	-	-	-	527 -
Stage 2	-	-	-	-	611 -

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	975	-	-	-	227	482
HCM Lane V/C Ratio	0.046	-	-	-	0.124	0.21
HCM Control Delay (s)	8.9	0	-	-	23.1	14.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.8

HCM 6th TWSC
6: Driveway/Ridings Ave & OR 211

08/09/2021

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	349	0	0	479	31	0	0	0	13	0	20
Future Vol, veh/h	10	349	0	0	479	31	0	0	0	13	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	17	0	0	21	7	0	0	0	0	0	5
Mvmt Flow	11	392	0	0	538	35	0	0	0	15	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	573	0	0	392	0	0	981	987	392	970	970	556
Stage 1	-	-	-	-	-	-	414	414	-	556	556	-
Stage 2	-	-	-	-	-	-	567	573	-	414	414	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.345
Pot Cap-1 Maneuver	961	-	-	1178	-	-	231	249	661	235	255	525
Stage 1	-	-	-	-	-	-	620	597	-	519	516	-
Stage 2	-	-	-	-	-	-	512	507	-	620	597	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	961	-	-	1178	-	-	219	245	661	232	251	525
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	245	-	232	251	-
Stage 1	-	-	-	-	-	-	611	588	-	511	516	-
Stage 2	-	-	-	-	-	-	490	507	-	611	588	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	16.5
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	961	-	-	1178	-	-	351
HCM Lane V/C Ratio	-	0.012	-	-	-	-	-	0.106
HCM Control Delay (s)	0	8.8	0	-	0	-	-	16.5
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.4

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗			↕			↕	
Traffic Vol, veh/h	8	338	7	3	464	4	2	1	2	3	1	4
Future Vol, veh/h	8	338	7	3	464	4	2	1	2	3	1	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	9	0	0	12	0	0	0	0	33	0	25
Mvmt Flow	9	371	8	3	510	4	2	1	2	3	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	515	0	0	379	0	0	910	910	371	914	916	513
Stage 1	-	-	-	-	-	-	389	389	-	519	519	-
Stage 2	-	-	-	-	-	-	521	521	-	395	397	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.525
Pot Cap-1 Maneuver	1061	-	-	1191	-	-	258	277	679	224	274	518
Stage 1	-	-	-	-	-	-	639	612	-	487	536	-
Stage 2	-	-	-	-	-	-	542	535	-	573	607	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1060	-	-	1191	-	-	253	274	679	220	271	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	253	274	-	220	271	-
Stage 1	-	-	-	-	-	-	634	607	-	483	534	-
Stage 2	-	-	-	-	-	-	535	533	-	565	602	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			15.6			16.6		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	345	1060	-	-	1191	-	-	319
HCM Lane V/C Ratio	0.016	0.008	-	-	0.003	-	-	0.028
HCM Control Delay (s)	15.6	8.4	-	-	8	-	-	16.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕			↕	
Traffic Vol, veh/h	45	245	29	6	297	40	89	69	17	40	49	52
Future Vol, veh/h	45	245	29	6	297	40	89	69	17	40	49	52
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	19	8	7	17	11	5	7	8	0	8	13	8
Mvmt Flow	49	269	32	7	326	44	98	76	19	44	54	57
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	18.2	19.8	13.5	12.4
HCM LOS	C	C	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	51%	16%	0%	2%	28%
Vol Thru, %	39%	84%	0%	87%	35%
Vol Right, %	10%	0%	100%	12%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	290	29	343	141
LT Vol	89	45	0	6	40
Through Vol	69	245	0	297	49
RT Vol	17	0	29	40	52
Lane Flow Rate	192	319	32	377	155
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.359	0.599	0.051	0.646	0.286
Departure Headway (Hd)	6.715	6.761	5.778	6.166	6.647
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	535	535	622	588	539
Service Time	4.768	4.474	3.491	4.179	4.703
HCM Lane V/C Ratio	0.359	0.596	0.051	0.641	0.288
HCM Control Delay	13.5	19.1	8.8	19.8	12.4
HCM Lane LOS	B	C	A	C	B
HCM 95th-tile Q	1.6	3.9	0.2	4.6	1.2

HCM Signalized Intersection Capacity Analysis

1: OR 213 & OR 211

08/09/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	118	258	18	162	170	131	26	167	117	215	202	96	
Future Volume (vph)	118	258	18	162	170	131	26	167	117	215	202	96	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Grade (%)		0%			0%			-2%				2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1525	1650		1583	1577	1293	1540	1667	1371	1538	1514		
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1525	1650		1583	1577	1293	1540	1667	1371	1538	1514		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	127	277	19	174	183	141	28	180	126	231	217	103	
RTOR Reduction (vph)	0	1	0	0	0	101	0	0	103	0	8	0	
Lane Group Flow (vph)	127	295	0	174	183	40	28	180	23	231	312	0	
Confl. Peds. (#/hr)									2	2			
Heavy Vehicles (%)	9%	5%	6%	5%	11%	15%	9%	6%	7%	7%	7%	13%	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA		
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases						8			2				
Actuated Green, G (s)	15.4	29.2		18.7	32.5	32.5	4.5	21.4	21.4	25.0	41.9		
Effective Green, g (s)	15.4	29.2		18.7	32.5	32.5	4.5	21.4	21.4	25.0	41.9		
Actuated g/C Ratio	0.13	0.25		0.16	0.28	0.28	0.04	0.19	0.19	0.22	0.36		
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3		
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0		
Lane Grp Cap (vph)	204	419		257	446	365	60	310	255	334	552		
v/s Ratio Prot	0.08	c0.18		c0.11	c0.12		0.02	0.11		c0.15	c0.21		
v/s Ratio Perm						0.03			0.02				
v/c Ratio	0.62	0.70		0.68	0.41	0.11	0.47	0.58	0.09	0.69	0.56		
Uniform Delay, d1	47.0	38.9		45.3	33.4	30.5	54.0	42.7	38.7	41.4	29.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	4.7	6.6		6.0	1.3	0.3	3.3	1.8	0.1	5.3	0.8		
Delay (s)	51.7	45.5		51.2	34.7	30.8	57.3	44.4	38.8	46.7	30.0		
Level of Service	D	D		D	C	C	E	D	D	D	C		
Approach Delay (s)		47.4			39.4			43.4			37.0		
Approach LOS		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			41.3									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			114.9									Sum of lost time (s)	20.6
Intersection Capacity Utilization			66.4%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary

1: OR 213 & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	258	18	162	170	131	26	167	117	215	202	96
Future Volume (veh/h)	118	258	18	162	170	131	26	167	117	215	202	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1627	1682	1682	1682	1600	1545	1698	1740	1726	1633	1633	1633
Adj Flow Rate, veh/h	127	277	19	174	183	141	28	180	126	231	217	103
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	5	5	5	11	15	9	6	7	7	7	7
Cap, veh/h	158	378	26	214	439	359	39	262	219	273	316	150
Arrive On Green	0.10	0.24	0.24	0.13	0.27	0.27	0.02	0.15	0.15	0.18	0.30	0.30
Sat Flow, veh/h	1550	1556	107	1602	1600	1310	1617	1740	1453	1555	1045	496
Grp Volume(v), veh/h	127	0	296	174	183	141	28	180	126	231	0	320
Grp Sat Flow(s),veh/h/ln	1550	0	1663	1602	1600	1310	1617	1740	1453	1555	0	1541
Q Serve(g_s), s	5.6	0.0	11.4	7.3	6.5	6.1	1.2	6.8	5.6	10.0	0.0	12.7
Cycle Q Clear(g_c), s	5.6	0.0	11.4	7.3	6.5	6.1	1.2	6.8	5.6	10.0	0.0	12.7
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	158	0	404	214	439	359	39	262	219	273	0	466
V/C Ratio(X)	0.80	0.00	0.73	0.81	0.42	0.39	0.72	0.69	0.58	0.85	0.00	0.69
Avail Cap(c_a), veh/h	671	0	1200	694	1155	945	700	1256	1049	673	0	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	24.2	29.2	20.6	20.4	33.6	27.9	27.4	27.6	0.0	21.3
Incr Delay (d2), s/veh	5.8	0.0	5.4	4.6	1.3	1.5	14.1	1.2	0.9	4.5	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	0.0	8.1	5.3	4.3	3.3	1.1	4.9	3.4	6.6	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	0.0	29.6	33.8	21.9	21.9	47.7	29.1	28.3	32.1	0.0	22.0
LnGrp LOS	D	A	C	C	C	C	D	C	C	C	A	C
Approach Vol, veh/h		423			498			334			551	
Approach Delay, s/veh		31.6			26.1			30.3			26.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.2	15.7	14.3	22.1	6.7	26.2	12.1	24.3				
Change Period (Y+Rc), s	5.0	5.3	5.0	5.3	5.0	5.3	5.0	5.3				
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0				
Max Q Clear Time (g_c+I1), s	12.0	8.8	9.3	13.4	3.2	14.7	7.6	8.5				
Green Ext Time (p_c), s	0.4	0.8	0.3	3.5	0.0	1.1	0.2	3.5				
Intersection Summary												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Vol, veh/h	17	672	11	22	629	15	17	1	10	6	1	23
Future Vol, veh/h	17	672	11	22	629	15	17	1	10	6	1	23
Conflicting Peds, #/hr	0	0	1	1	0	0	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	7	7	0	0	0	0	0	13
Mvmt Flow	19	738	12	24	691	16	19	1	11	7	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	707	0	0	751	0	0	1546	1538	746	1536	1536	702
Stage 1	-	-	-	-	-	-	783	783	-	747	747	-
Stage 2	-	-	-	-	-	-	763	755	-	789	789	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.417
Pot Cap-1 Maneuver	901	-	-	868	-	-	94	117	417	81	99	404
Stage 1	-	-	-	-	-	-	390	407	-	376	389	-
Stage 2	-	-	-	-	-	-	400	420	-	354	371	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	901	-	-	867	-	-	84	111	416	75	94	403
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	111	-	75	94	-
Stage 1	-	-	-	-	-	-	381	398	-	368	378	-
Stage 2	-	-	-	-	-	-	362	408	-	336	363	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			42.6			26.1		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	84	333	901	-	-	867	-	-	203
HCM Lane V/C Ratio	0.222	0.036	0.021	-	-	0.028	-	-	0.162
HCM Control Delay (s)	59.7	16.2	9.1	-	-	9.3	-	-	26.1
HCM Lane LOS	F	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.8	0.1	0.1	-	-	0.1	-	-	0.6

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	41	629	598	49	16	57
Future Vol, veh/h	41	629	598	49	16	57
Conflicting Peds, #/hr	2	0	0	2	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	7	8	2	0	2
Mvmt Flow	45	684	650	53	17	62

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	705	0	-	0	1453 680
Stage 1	-	-	-	-	679 -
Stage 2	-	-	-	-	774 -
Critical Hdwy	4.12	-	-	-	6.4 6.22
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.218	-	-	-	3.5 3.318
Pot Cap-1 Maneuver	893	-	-	-	145 451
Stage 1	-	-	-	-	507 -
Stage 2	-	-	-	-	458 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	891	-	-	-	133 450
Mov Cap-2 Maneuver	-	-	-	-	133 -
Stage 1	-	-	-	-	465 -
Stage 2	-	-	-	-	457 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	891	-	-	-	133	450
HCM Lane V/C Ratio	0.05	-	-	-	0.131	0.138
HCM Control Delay (s)	9.3	0	-	-	36.1	14.3
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4	0.5

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	627	1	1	618	18	0	0	2	15	0	29
Future Vol, veh/h	17	627	1	1	618	18	0	0	2	15	0	29
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	4	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	0	8	17	0	0	0	20	0	10
Mvmt Flow	18	660	1	1	651	19	0	0	2	16	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	674	0	0	661	0	0	1379	1373	665	1369	1364	669
Stage 1	-	-	-	-	-	-	697	697	-	667	667	-
Stage 2	-	-	-	-	-	-	682	676	-	702	697	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.3	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.68	4	3.39
Pot Cap-1 Maneuver	927	-	-	937	-	-	123	147	464	113	149	444
Stage 1	-	-	-	-	-	-	435	446	-	420	460	-
Stage 2	-	-	-	-	-	-	443	456	-	401	446	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	923	-	-	937	-	-	111	142	462	109	143	441
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	142	-	109	143	-
Stage 1	-	-	-	-	-	-	422	432	-	405	457	-
Stage 2	-	-	-	-	-	-	410	453	-	385	432	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	12.8	26.2
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	462	923	-	-	937	-	-	216
HCM Lane V/C Ratio	0.005	0.019	-	-	0.001	-	-	0.214
HCM Control Delay (s)	12.8	9	0	-	8.8	0	-	26.2
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.8

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗			↕			↕	
Traffic Vol, veh/h	4	556	52	54	561	5	47	1	48	5	2	4
Future Vol, veh/h	4	556	52	54	561	5	47	1	48	5	2	4
Conflicting Peds, #/hr	7	0	0	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	75	6	4	0	9	20	0	0	2	60	50	0
Mvmt Flow	4	573	54	56	578	5	48	1	49	5	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	590	0	0	627	0	0	1277	1283	573	1333	1335	588
Stage 1	-	-	-	-	-	-	581	581	-	700	700	-
Stage 2	-	-	-	-	-	-	696	702	-	633	635	-
Critical Hdwy	4.85	-	-	4.1	-	-	7.1	6.5	6.22	7.7	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Follow-up Hdwy	2.875	-	-	2.2	-	-	3.5	4	3.318	4.04	4.45	3.3
Pot Cap-1 Maneuver	709	-	-	965	-	-	145	167	519	99	123	513
Stage 1	-	-	-	-	-	-	503	503	-	350	376	-
Stage 2	-	-	-	-	-	-	435	443	-	383	405	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	704	-	-	965	-	-	135	155	519	84	114	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	155	-	84	114	-
Stage 1	-	-	-	-	-	-	500	500	-	346	352	-
Stage 2	-	-	-	-	-	-	404	414	-	344	403	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.8			35.3			35.3		
HCM LOS							E			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	215	704	-	-	965	-	-	130
HCM Lane V/C Ratio	0.46	0.006	-	-	0.058	-	-	0.087
HCM Control Delay (s)	35.3	10.1	-	-	9	-	-	35.3
HCM Lane LOS	E	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	2.2	0	-	-	0.2	-	-	0.3

Intersection	
Intersection Delay, s/veh	46.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕			↕	
Traffic Vol, veh/h	68	339	84	22	350	42	100	81	29	68	102	124
Future Vol, veh/h	68	339	84	22	350	42	100	81	29	68	102	124
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	5	0	8	0	6	5	4	3	5	2
Mvmt Flow	72	357	88	23	368	44	105	85	31	72	107	131
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	58.4	57.7	22.3	28.8
HCM LOS	F	F	C	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	48%	17%	0%	5%	23%
Vol Thru, %	39%	83%	0%	85%	35%
Vol Right, %	14%	0%	100%	10%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	407	84	414	294
LT Vol	100	68	0	22	68
Through Vol	81	339	0	350	102
RT Vol	29	0	84	42	124
Lane Flow Rate	221	428	88	436	309
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.546	0.983	0.183	0.945	0.706
Departure Headway (Hd)	8.889	8.26	7.45	7.809	8.208
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	405	437	480	462	439
Service Time	6.98	6.032	5.221	5.883	6.285
HCM Lane V/C Ratio	0.546	0.979	0.183	0.944	0.704
HCM Control Delay	22.3	68	11.9	57.7	28.8
HCM Lane LOS	C	F	B	F	D
HCM 95th-tile Q	3.2	12.2	0.7	11.2	5.4

Appendix C
ODOT Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-211, Woodburn-Estacada Hwy (#161) & OR-213, Cascade Hwy (#160)
 January 1, 2015 through December 31, 2019

SER#	INVEST	UNLOC?	E A / C O	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	RD CHAR	CRASH TYP	SPCL USE	MOVE	A S	G E	LICNS	PED	ERROR	ACTN	EVENT	CAUSE
02284	N N N	NONE	E A / C O	06/29/2018	CLACKAMAS	1	16		CROSS	INTER	S-1STOP	01 NONE	9 STRGHT								29
				Fri 5P		MN	0			UN	REAR	N/A	UN UN								000
					MOLALLA UA		16.10			06	PDO	PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
No	45	9	2.54	-122 36	22.92		016000100S00														000
												02 NONE	9 STOP								011
												N/A	UN UN								000
												PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
																					000
03062	N N N	NONE	E A / C O	07/27/2017	CLACKAMAS	1	16		CROSS	INTER	S-1STOP	01 NONE	9 STRGHT								29
				Thu 12P		MN	0			N	REAR	N/A	N S								000
					MOLALLA UA		16.10			06	PDO	PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
No	45	9	2.53	-122 36	22.92		016000100S00														000
												02 NONE	9 STOP								011
												N/A	N S								000
												PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
																					000
04230	N N N N N	CITY	E A / C O	11/26/2019	CLACKAMAS	1	16		CROSS	INTER	S-STRGHT	01 NONE	9 STRGHT								29
				Tue 5A		MN	0			S	REAR	N/A	S N								000
					MOLALLA UA		16.10			06	PDO	PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
No	45	9	2.56	-122 36	22.95		016000100S00														000
												02 NONE	9 STRGHT								000
												N/A	S N								000
												PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
																					000
03184	N N N N N	CITY	E A / C O	07/15/2016	CLACKAMAS	1	16		CROSS	INTER	S-1STOP	01 NONE	0 STRGHT								07
				Fri 3P		MN	0			W	REAR	RENTL	W E								000
					MOLALLA UA		16.10			06	INJ	PSNGR CAR		01 DRVR	NONE	51 M	OR-Y	043			000
No	45	9	2.53	-122 36	22.92		016000100S00														000
												02 NONE	0 STOP								011
												PRVTE	W E								000
												PSNGR CAR		01 DRVR	INJC	17 F	OR-Y	000			000
																					000
04148	N N N N N	CITY	E A / C O	09/09/2016	CLACKAMAS	1	16		CROSS	INTER	ANGL-STP	01 NONE	9 TURN-L								08,32
				Fri 6P		MN	0			W	TURN	N/A	S W								000
					MOLALLA UA		16.10			06	PDO	PSNGR CAR		01 DRVR	NONE	00 U	UNK	000			000
No	45	9	2.53	-122 36	22.92		016000100S00														000
																					000

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-211, Woodburn-Estacada Hwy (#161) & OR-213, Cascade Hwy (#160)
 January 1, 2015 through December 31, 2019

SER#	E A / C O	DATE	COUNTY	RD# FC	CONN #	INT-TYP	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH TYP	SPCL USE	TRLR QTY	MOVE	A S	PRTC	INJ	G E	LICNS	PED	LOC	ERROR	ACTN	EVENT	CAUSE
UNLOC?	D C J L K	LAT/LONG	URBAN AREA	LRS	INTERSECTION SEQ#	(#LANES)	LOCTN	CNTL	DRVWY	LIGHT	SVRTY	V#	VEH TYPE	TO	P#	TYPE	SVRTY	E X	RES	LOC	ERROR	ACTN	EVENT	CAUSE		
01405	N N N N N	03/27/2016	CLACKAMAS	1 16		CROSS	INTER	N			N CLD	O-1 L-TURN	01 NONE	0	STRGHT										02	
	CITY	N Sun 8P		MN 0			CN				N WET	TURN			W E								000		00	
			MOLALLA UA	16.10			03	0			N DUSK	INJ			PSNGR CAR		01	DRVR	INJC	20	F	OR-Y	000	000	00	
No	45 9	2.53 -122	36 22.92	016000100S00																						
													02 NONE	0	TURN-L									000	00	
													PRVTE		E S										00	
													PSNGR CAR				01	DRVR	INJC	54	F	OR-Y	028,004	000	02	
																									00	
																	02	PSNG	INJC	22	F		000	000	00	
02329	N N N	05/23/2016	CLACKAMAS	1 16		CROSS	INTER	N			N CLR	ANGL-OTH	01 NONE	9	STRGHT										04	
	NONE	N Mon 4A		MN 0			CN				N DRY	ANGL			N S									000	00	
			MOLALLA UA	16.10			03	0			N DLIT	PDO			PSNGR CAR		01	DRVR	NONE	00	U	UNK	000	000	00	
No	45 9	2.53 -122	36 22.92	016000100S00																						
													02 NONE	9	STRGHT									000	00	
													N/A		E W										00	
													PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00	
																									00	
04052	N N N N N	08/30/2016	CLACKAMAS	1 16		CROSS	INTER	N			N CLR	ANGL-OTH	01 NONE	0	STRGHT										04	
	CITY	N Tue 6P		MN 0			CN				N DRY	TURN			N S									000	00	
			MOLALLA UA	16.10			03	0			N DAY	INJ			PSNGR CAR		01	DRVR	NONE	64	M	OR-Y	020	000	04	
No	45 9	2.53 -122	36 22.92	016000100S00																						
													02 NONE	0	TURN-L										000	00
													PRVTE		W N										00	
													PSNGR CAR				01	DRVR	NONE	61	M	OR-Y	000	000	00	
																									00	
																	02	PSNG	INJB	61	F		000	000	00	
01211	N N N N N	04/13/2019	CLACKAMAS	1 16		CROSS	INTER	N			N CLD	ANGL-OTH	01 NONE	9	STRGHT										04	
	CITY	N Sat 9A		MN 0			CN				N WET	ANGL			W E									000	00	
			MOLALLA UA	16.10			03	0			N DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	U	UNK	000	000	00	
No	45 9	2.55 -122	36 22.94	016000100S00																						
													02 NONE	9	STRGHT										000	00
													N/A		N S										00	
													PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00	
																									00	
																									00	
05284	N N N	11/14/2016	CLACKAMAS	1 16		CROSS	INTER	N			N RAIN	O-1 L-TURN	01 NONE	0	STRGHT										02	
	CITY	N Mon 11A		MN 0			CN				N WET	TURN			S N									000	00	
			MOLALLA UA	16.10			04	0			N DAY	INJ			PSNGR CAR		01	DRVR	INJC	20	F	OR-Y	000	000	00	
No	45 9	2.53 -122	36 22.92	016000100S00																						

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-211, Woodburn-Estacada Hwy (#161) & OR-213, Cascade Hwy (#160)
 January 1, 2015 through December 31, 2019

SER#	EA / CO	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	SPCL USE	TRLR QTY	MOVE	A S	PRTC	INJ	G E	LICNS	PED	ACTN	EVENT	CAUSE	
UNLOC?	D C J L K	LAT/LONG	URBAN AREA	CMPT/MLG	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD WTHR	CRASH TYP	OWNER	FROM	SVR	EX	RES	LOC	ERROR			
				MILEPNT	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT SURF	COLL TYP	VEH TYPE	TO	SVR							
				LRS	INTERSECTION SEQ#	LOCTN	(#LANES)	CNTL	DRVWY	LIGHT	SVRTY	V#								
											02 NONE	0	TURN-L							
											PRVTE	N E						000	00	
											PSNGR CAR		01 DRVR	NONE	28	M	OR-Y	028,004	000	02
02130	N N N N N	06/19/2018	CLACKAMAS	1	16						02 NONE	9	TURN-L							
CITY	N	Tue 12P		MN	0	INTER	CROSS	N	N CLR	O-1 L-TURN	01 NONE	9	TURN-L						02,08	
						CN		TRF SIGNAL	N DRY	TURN	N/A		E S					000	00	
			MOLALLA UA		16.10				N DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	U	UNK	000	000	00
No	45 9	2.54 -122 36 22.93		016000100S00																
											02 NONE	9	STRGHT							
											N/A		W E					000	00	
											PSNGR CAR		01 DRVR	NONE	00	U	UNK	000	000	00
03098	N N N N N	09/06/2019	CLACKAMAS	1	16						02 NONE	9	TURN-R						02	
CITY	N	Fri 9A		MN	0	INTER	CROSS	N	N CLR	O-1 L-TURN	01 NONE	9	TURN-R					016	00	
			MOLALLA UA		16.10	CN		TRF SIGNAL	N DRY	TURN	N/A		S E							
									N DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	U	UNK	000	000	00
No	45 9	2.55 -122 36 22.94		016000100S00																
											02 NONE	9	TURN-L							
											N/A		N E					000	00	
											PSNGR CAR		01 DRVR	NONE	00	U	UNK	000	000	00

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Intersectional Crashes at OR-211, Woodburn-Estacada Hwy (#161) & OR-213, Cascade Hwy (#160)
 January 1, 2015 through December 31, 2019

SER#	EA / CO	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH TYP	SPCL USE	TRLR QTY	MOVE	A S	PRTC	INJ	G E	LICNS	PED	ACTN	EVENT	CAUSE		
INVEST	E L M H R	DAY/TIME	CITY	MILEPNT	SECOND	STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL TYP	OWNER	FROM													
UNLOC?	D C J L K	LAT/LONG	URBAN AREA	LRS	INTERSECTION	SEQ#	LOCTN	(#LANES)	CNTL	DRVWY	LIGHT	SVRTY	V#	VEH TYPE	TO	P#	TYPE	SVRTY	E X	RES	LOC	ERROR					
02749	N N N	08/07/2018	CLACKAMAS	1	16		INTER	CROSS	N		N CLR	ANGL-STP	01 NONE	9	TURN-L										29		
NONE	N	Tue 3P		MN	0		E			TRF SIGNAL	N DRY	TURN	N/A		N E									000	00		
			MOLALLA UA		11.31		05	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00		
No	45 9	2.53 -122 36 22.92			016100100S00																				00		
														02 NONE	9	STOP										011	00
														N/A		W E										00	
														PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00	00	
																										00	

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Intersectional Crashes at Main St, OR-211, Woodburn-Estacada Hwy (#161) & Leroy Ave in Molalla, OR
 January 1, 2015 through December 31, 2019

SER#	EA / CO	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH TYP	SPCL USE	TRLR QTY	MOVE	A S	G E	LICNS	PED	ERROR	ACTN	EVENT	CAUSE	
INVEST	ELMHR	DAY/TIME	CITY	MILEPNT	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL TYP	OWNER	FROM	PRTC	INJ	SVR	TY	RES	LOC	ERROR	ACTN	EVENT	CAUSE		
UNLOC?	DCJLK	LAT/LONG	URBAN AREA	LRS	INTERSECTION SEQ#	LOCTN	(#LANES)	CNTL	DRVWY	LIGHT	SVRTY	V#	VEH TYPE	TO	P#	TYPE	SVR	TY	RES	LOC	ERROR	ACTN	EVENT	CAUSE	
00871	NNNNN	03/09/2018	CLACKAMAS	1	16		3-LEG	INTER	N		N	RAIN	ANGL-OTH	01 NONE	0	STRGHT								02	
COUNTY	N	Fri 7A	MOLALLA	MN	0	LEROY AVE		E		STOP SIGN	N	WET	TURN	PRVTE	E	W						000		00	
			MOLALLA UA	12.16	MAIN ST	06	0				N	DAWN	INJ	PSNGR CAR			01	DRVR	INJB	33	F	OR-Y	000	000	00
No	45	8 55.79 -122	35 21.09	016100100S00			1																		
														02 NONE	1	TURN-L							015		00
														SEMI TOW			01	DRVR	NONE	62	M	OR-Y	028	000	02
00645	YNNNN	02/19/2015	CLACKAMAS	1	16		3-LEG	INTER	N		N	CLR	S-1STOP	01 NONE	0	STRGHT							013	01,07,29	
CITY	N	Thu 6P	MOLALLA	MN	0	LEROY AVE		W		STOP SIGN	N	DRY	REAR	PRVTE	W	E						000		00	
			MOLALLA UA	12.16	MAIN ST	06	0				N	DARK	INJ	PSNGR CAR			01	DRVR	INJC	18	M	OR-Y	047,043,026	038	01,07,29
No	45	8 55.77 -122	35 21.09	016100100S00			1																		
														02 NONE	0	STOP							011	013	00
														PRVTE	W	E									
														PSNGR CAR			01	DRVR	INJC	40	F	OR-Y	000	000	00
														03 NONE	0	STOP							022		00
														PRVTE	W	E									
														PSNGR CAR			01	DRVR	INJC	32	F	OR-Y	000	000	00
																	02	PSNG	NO<5	01	F		000	000	00
02552	NNNNN	06/07/2016	CLACKAMAS	1	16		3-LEG	INTER	N		N	CLR	S-1STOP	01 NONE	0	STRGHT								07,29	
CITY	N	Tue 9A	MOLALLA	MN	0	LEROY AVE		W		STOP SIGN	N	DRY	REAR	PRVTE	W	E						000		00	
			MOLALLA UA	12.16	MAIN ST	06	0				N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	29	F	OR-Y	043,026	000	07,29
No	45	8 55.77 -122	35 21.09	016100100S00			1																		
														02 NONE	0	STOP							012		00
														PRVTE	W	E									
														PSNGR CAR			01	DRVR	INJB	32	F	OR-Y	000	000	00
00682	NNNNN	02/23/2018	CLACKAMAS	1	16		3-LEG	INTER	N		N	CLD	S-1STOP	01 NONE	0	STRGHT							013	29	
CITY	N	Fri 12P	MOLALLA	MN	0	LEROY AVE		W		STOP SIGN	N	DRY	REAR	PRVTE	W	E						000		00	
			MOLALLA UA	12.16	MAIN ST	06	0				N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	71	F	OR-Y	026	000	29
No	45	8 55.80 -122	35 21.10	016100100S00			1																		
														02 NONE	0	STOP							011	013	00
														PRVTE	W	E									
														PSNGR CAR			01	DRVR	INJB	24	F	OR-Y	000	000	00
																	02	PSNG	INJB	02	F		000	000	00

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Intersectional Crashes at Main St, OR-211, Woodburn-Estacada Hwy (#161) & Leroy Ave in Molalla, OR
 January 1, 2015 through December 31, 2019

SER#	EA / CO	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	SPCL USE	TRLR QTY	MOVE	A S	PRTC	INJ	G E	LICNS	PED	ACTN	EVENT	CAUSE								
INVEST	E L M H R	DAY/TIME	CITY	CMPT/MLG	FIRST	STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH TYP	TRLR QTY	MOVE	OWNER	FROM	P#	TYPE	SVRTY	E X	RES	LOC	ERROR	ACTN	EVENT	CAUSE	
UNLOC?	D C J L K	LAT/LONG	URBAN AREA	MILEPNT	SECOND	STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL TYP	VEH	TYPE	TO	P#	TYPE	SVRTY	E X	RES	LOC	ERROR	ACTN	EVENT	CAUSE		
								03 NONE	0	STOP																	
								PRVTE		W E														022	013	00	
								PSNGR	CAR			01	DRVR	INJC	43	M	OR-Y					000		000		00	
												02	PSNG	INJC	49	M						000		000		00	
												03	PSNG	INJC	49	M						000		000		00	
								04 NONE	0	STOP														022		00	
								PRVTE		W E																	
								PSNGR	CAR			01	DRVR	INJC	36	M	OR-Y					000		000		00	
01711	N N N	05/04/2017	CLACKAMAS	1	16		INTER	3-LEG	N	N CLR	S-1STOP	01	NONE	0	STRGHT										004	29	
NONE	N	Thu 10A	MOLALLA	MN	0	LEROY AVE	CN		STOP SIGN	N DRY	REAR		PRVTE		E W										000	00	
			MOLALLA UA	12.16		MAIN ST	01	0		N DAY	INJ		PSNGR	CAR								026		000		29	
No	45 8	55.77 -122 35 21.09		016100100S00																							
								02 NONE	0	STOP															011	004	00
								PRVTE		E W																	
								PSNGR	CAR			01	DRVR	INJC	62	F	OR-Y					000		000		00	
												02	PSNG	INJC	42	F						000		000		00	

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF MOLALLA, CLACKAMAS COUNTY

Intersectional Crashes at Main St, OR-211, Woodburn-Estacada Hwy (#161) & Leroy Ave in Molalla, OR
January 1, 2015 through December 31, 2019

SER#	E A / C O	DATE	FC	CITY STREET	RD CHAR	INT-TYP	INT-REL	OFF-RD	WTHR	CRASH TYP	SPCL	MOVE	A S	PED	ACTN	EVENT	CAUSE			
INVEST	E L M H R	DAY/TIME	DISTNC	FIRST STREET	DIRECT	(MEDIAN)	TRAF-	RNDBT	SURF	COLL TYP	USE	FROM	G E LICNS	LOC	ERROR					
UNLOC?	D C J L K	LAT/LONG		SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	OWNER	TO	P#	TYPE	SVRTY	E X RES			
01201	N N N	04/10/2018	17	LEROY AVE	INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE	0	TURN-R						
NO RPT	N	Tue 1P	0	MAIN ST	NE		STOP SIGN	N	DRY	TURN		PRVTE	W S			018	00			
No	45 8 55.83	-122 35 21.20		1	06	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29 F OR-Y	028	000	02
																	OR<25			
											02	NONE	0	STOP						
												PRVTE	N S				011	00		
												PSNGR CAR		01	DRVR	INJC	40 F OR-Y	000	000	00
																	OR<25			

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Intersectional Crashes at Main St, Woodburn-Estacada Hwy (#161) & Ridings Ave in Molalla, OR
 January 1, 2015 through December 31, 2019

SER#	INVEST	UNLOC?	P	G	S	W	RD#	FC	CONN #	INT-TYP	SPCL USE	TRLR QTY	MOVE	A	S	G	E	LICNS	PED	ACTN	EVENT	CAUSE	
EA / CO	DATE	COUNTY	CMPT/MLG	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH TYP	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ACTN	EVENT	CAUSE		
ELMH R	DAY/TIME	CITY	MILEPNT	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL TYP	VEH TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACTN	EVENT	CAUSE
DCJLK	LAT/LONG	URBAN AREA	LRS	INTERSECTION SEQ#	LOCTN	(#LANES)	CNTL	DRVWY	LIGHT	SVRTY	V#												
00098	NNNNN	01/10/2018	CLACKAMAS	1 16	INTER	3-LEG	N	N	CLD	S-1STOP	01 NONE	0	STRGHT										29
CITY	N	Wed 9A	MOLALLA	MN 0	MAIN ST	NW	STOP SIGN	N	WET	REAR	PRVTE	W	E									000	00
			MOLALLA UA	12.31	RIDINGS AVE	06	0	N	DAY	INJ	TRUCK			01	DRVR	NONE	24	M	OR-Y	026	000	000	29
No	45	8	54.48 -122 35 9.19	016100100S00	1																		
											02	NONE	0	STOP								012	00
											PRVTE	W	E										
											PSNGR	CAR		01	DRVR	INJC	67	M	OR-Y	000	000	000	00
														02	PSNG	INJC	56	M		000	000	000	00
														03	PSNG	INJB	66	F		000	000	000	00
02567	NNN	06/26/2015	CLACKAMAS	1 16	INTER	3-LEG	N	N	CLR	ANGL-OTH	01 NONE	0	TURN-L										02
NONE	N	Fri 5P	MOLALLA	MN 0	MAIN ST	CN	STOP SIGN	N	DRY	TURN	PRVTE	NE	SE									015	00
			MOLALLA UA	12.31	RIDINGS AVE	01	0	N	DAY	INJ	PSNGR	CAR		01	DRVR	NONE	50	F	OR-Y	028	000	000	02
No	45	8	54.48 -122 35 9.19	016100100S00	1																		
											02	NONE	0	STRGHT								000	00
											PRVTE	E	W										
											PSNGR	CAR		01	DRVR	INJC	47	F	OR-Y	000	000	000	00
														02	PSNG	INJC	37	M		000	000	000	00
														03	PSNG	INJB	08	M		000	000	000	00
02983	NNN	08/28/2019	CLACKAMAS	1 16	INTER	3-LEG	N	N	CLR	ANGL-OTH	01 NONE	9	STRGHT										02
NONE	N	Wed 4P	MOLALLA	MN 0	MAIN ST	CN	STOP SIGN	N	DRY	TURN	N/A	SE	NW									000	00
			MOLALLA UA	12.31	RIDINGS AVE	01	0	N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	U	UNK	000	000	000	00
No	45	8	54.47 -122 35 9.19	016100100S00	1																		
											02	NONE	9	TURN-R								015	00
											N/A	NE	NW										
											PSNGR	CAR		01	DRVR	NONE	00	U	UNK	000	000	000	00
05085	NNN	11/30/2017	CLACKAMAS	1 16	INTER	3-LEG	N	N	RAIN	S-1TURN	01 NONE	0	TURN-L										06
NO RPT	N	Thu 6A	MOLALLA	MN 0	MAIN ST	CN	STOP SIGN	N	WET	TURN	PRVTE	W	N									000	00
			MOLALLA UA	12.31	RIDINGS AVE	02	0	N	DLIT	INJ	TRUCK			01	DRVR	NONE	33	M	OR-Y	000	000	000	00
No	45	8	54.48 -122 35 9.19	016100100S00	1																		
											02	NONE	0	STRGHT								000	00
											PRVTE	W	E										
											PSNGR	CAR		01	DRVR	INJC	26	F	OR-Y	034	000	000	06

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Intersectional Crashes at Main St, OR-211, Woodburn-Estacada Hwy (#161) & Molalla Ave in Molalla, OR
January 1, 2015 through December 31, 2019

SER#	INVEST	UNLOC?	E A / C O DATE	COUNTY	RD# FC	CONN #	INT-TYP	RD CHAR	(MEDIAN)	INT-REL	OFFRD WTHR	CRASH TYP	SPCL USE	TRLR QTY	MOVE	A S	G E LICNS	PED	ACTN	EVENT	CAUSE
			DAY/TIME	CITY	CMPT/MLG	FIRST STREET	(#LANES)	DIRECT	LEGS	TRAF-	RNDBT SURF	COLL TYP	OWNER	FROM	PRTC INJ			LOC	ERROR		
			LAT/LONG	URBAN AREA	MILEPNT	SECOND STREET		LOCTN		CNTL	DRVWY LIGHT	SVRTY	V#	VEH TYPE	TO	P#	TYPE SVRTY	E X RES			
02314	N N N N N		07/02/2018	CLACKAMAS	1 16		CROSS	INTER		N	Y CLD	FIX OBJ	01 NONE	9	TURN-R					054	08
CITY	N		Mon 6A	MOLALLA	MN 0	MAIN ST		S		STOP SIGN	N DRY	FIX	N/A		W S				000		00
				MOLALLA UA	12.76	MOLALLA AVE		05	0		N DAY	PDO			SEMI TOW	01	DRVR NONE	00 U	000	000	00
No	45 8		51.10 -122	34 37.54	016100100S00					1											UNK
02211	N N N		07/01/2019	CLACKAMAS	1 16		CROSS	INTER		N	N CLR	S-1STOP	01 NONE	0	STRGHT						29
CITY	N		Mon 6P	MOLALLA	MN 0	MAIN ST		SW		STOP SIGN	N DRY	REAR	PRVTE		SW NE				000		00
				MOLALLA UA	12.76	MOLALLA AVE		06	0		N DAY	INJ			PSNGR CAR	01	DRVR NONE	40 M	026	000	29
No	45 8		51.10 -122	34 37.54	016100100S00					1											OR<25
													02 NONE	0	STOP					011	00
													PRVTE		SW NE						
													PSNGR CAR			01	DRVR INJC	50 F	000	000	00
																					OR<25
01792	N N N		06/01/2019	CLACKAMAS	1 16		CROSS	INTER		N	N CLR	PED	01 NONE	0	TURN-L						02,19
CITY	N		Sat 12P	MOLALLA	MN 0	MAIN ST		NW		STOP SIGN	N DRY	PED	PRVTE		SW NW				000		00
				MOLALLA UA	12.76	MOLALLA AVE		05	0		N DAY	INJ			PSNGR CAR	01	DRVR NONE	22 M	029	000	02
No	45 8		51.10 -122	34 37.54	016100100S00					1											OR<25
															STRGHT	01	PED INJC	67 F	01	000	19
															SW NE						
02613	N N N		06/09/2016	CLACKAMAS	1 16		CROSS	INTER		N	N CLR	S-1STOP	01 NONE	9	STRGHT						29
NONE	N		Thu 9A	MOLALLA	MN 0	MAIN ST		NW		STOP SIGN	N DRY	REAR	N/A		NW SE				000		00
				MOLALLA UA	12.76	MOLALLA AVE		06	0		N DAY	PDO			PSNGR CAR	01	DRVR NONE	00 U	000	000	00
No	45 8		51.09 -122	34 37.54	016100100S00					1											UNK
													02 NONE	9	STOP					011	00
													N/A		NW SE						
													PSNGR CAR			01	DRVR NONE	00 U	000	000	00
																					UNK
00825	N N N		03/06/2018	CLACKAMAS	1 16		CROSS	INTER		N	N CLR	S-1STOP	01 NONE	9	STRGHT						29
NONE	N		Tue 7A	MOLALLA	MN 0	MAIN ST		NW		STOP SIGN	N DRY	REAR	N/A		NW SE				000		00
				MOLALLA UA	12.76	MOLALLA AVE		06	0		N DAY	PDO			PSNGR CAR	01	DRVR NONE	00 U	000	000	00
No	45 8		51.09 -122	34 37.54	016100100S00					1											UNK
													02 NONE	9	STOP					011	00
													N/A		NW SE						
													PSNGR CAR			01	DRVR NONE	00 U	000	000	00
																					UNK
02518	N N N		06/04/2016	CLACKAMAS	1 16		CROSS	INTER		N	N CLR	ANGL-OTH	01 NONE	9	STRGHT						02
NONE	N		Sat 10A	MOLALLA	MN 0	MAIN ST		CN		STOP SIGN	N DRY	ANGL	N/A		NE SW				015		00
				MOLALLA UA	12.76	MOLALLA AVE		01	0		N DAY	PDO			PSNGR CAR	01	DRVR NONE	00 U	000	000	00
No	45 8		51.09 -122	34 37.54	016100100S00					1											UNK

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Intersectional Crashes at Main St, OR-211, Woodburn-Estacada Hwy (#161) & Molalla Ave in Molalla, OR
 January 1, 2015 through December 31, 2019

SER#	EA / CO	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH TYP	SPCL USE	TRLR QTY	MOVE	A S	PRTC	INJ	G E	LICNS	PED	ACTN	EVENT	CAUSE	
UNLOC?	D C J L K	LAT/LONG	URBAN AREA	MILEPNT	SECOND STREET	INTERSECTION SEQ#	LOCTN	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL TYP	OWNER	FROM	P#	TYPE	SVR TY	E X	RES	LOC	ERROR				
														02 NONE	9	STRGHT										
														N/A		SE NW								015	00	
														PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00
02830	N N N	08/17/2019	CLACKAMAS	1	16		INTER	CROSS	N		N CLR	ANGL-OTH	01 NONE	0	STRGHT										03	
CITY	N	Sat	1P	MOLALLA	MN	0	MAIN ST	CN		STOP SIGN	N DRY	ANGL	PRVTE		E W								000	000	00	
					12.76		MOLALLA AVE	01		0	N DAY	INJ	PSNGR CAR				01	DRVR	NONE	34	M	OR-Y	021	000	03	
No	45	8	51.09	-122	34	37.54																				
					016100100S00					1																
														02 NONE	0	STRGHT										
														PRVTE		S N								015	00	
														PSNGR CAR				01	DRVR	INJC	31	M	OR-Y	000	000	00
																		02	PSNG	INJC	30	F		000	000	00
00188	N N N	01/17/2019	CLACKAMAS	1	16		INTER	CROSS	N		N CLR	O-1 L-TURN	01 NONE	9	STRGHT										02,08	
NO RPT	N	Thu	2P	MOLALLA	MN	0	MAIN ST	CN		STOP SIGN	N DRY	TURN	N/A		SE NW								000	000	00	
					12.76		MOLALLA AVE	02		0	N DAY	PDO	PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00	
No	45	8	51.10	-122	34	37.55																				
					016100100S00					1																
														02 NONE	9	TURN-L										
														N/A		NW NE								000	00	
														PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00
02642	N N N	08/02/2019	CLACKAMAS	1	16		INTER	CROSS	N		N CLR	ANGL-OTH	01 NONE	9	STRGHT										02	
NONE	N	Fri	9A	MOLALLA	MN	0	MAIN ST	CN		STOP SIGN	N DRY	ANGL	N/A		N S								015	000	00	
					12.76		MOLALLA AVE	03		0	N DAY	PDO	PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00	
No	45	8	51.11	-122	34	37.59																				
					016100100S00					1																
														02 NONE	9	STRGHT										
														N/A		W E								015	00	
														PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00
04906	N Y N	10/23/2016	CLACKAMAS	1	16		INTER	CROSS	N		N CLR	ANGL-OTH	01 NONE	9	STRGHT										03	
NO RPT	N	Sun	9P	MOLALLA	MN	0	MAIN ST	CN		STOP SIGN	N DRY	ANGL	N/A		S N								000	000	00	
					12.76		MOLALLA AVE	04		0	N DLIT	PDO	PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00	
No	45	8	51.09	-122	34	37.54																				
					016100100S00					1																
														02 NONE	9	STRGHT										
														N/A		W E								000	00	
														PSNGR CAR				01	DRVR	NONE	00	U	UNK	000	000	00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNE D ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUI NG OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED)
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHING
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	N-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNTD FROM WRONG LANE
007	TO WRONG	TURNTD INTO WRONG LANE
008	ILLEG U	U-TURNTD ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRG L PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)
135	RAIL OCC	INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYANCE
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OBJECT
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN OBJECT
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST
























CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Appendix D
Year 2022 Background Conditions
Traffic Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: OR 213 & OR 211

08/09/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	164	5	81	240	241	14	155	141	119	82	79
Future Volume (vph)	70	164	5	81	240	241	14	155	141	119	82	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fr _t	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Fl _t Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Fl _t Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	178	5	88	261	262	15	168	153	129	89	86
RTOR Reduction (vph)	0	1	0	0	0	187	0	0	119	0	17	0
Lane Group Flow (vph)	76	182	0	88	261	75	15	168	34	129	158	0
Heavy Vehicles (%)	15%	15%	25%	17%	11%	16%	36%	13%	6%	20%	18%	19%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.6	25.1		9.4	25.9	25.9	2.4	20.4	20.4	15.1	33.1	
Effective Green, g (s)	8.6	25.1		9.4	25.9	25.9	2.4	20.4	20.4	15.1	33.1	
Actuated g/C Ratio	0.09	0.28		0.10	0.29	0.29	0.03	0.23	0.23	0.17	0.37	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	137	418		147	450	366	32	352	319	228	494	
v/s Ratio Prot	0.05	0.12		c0.06	c0.17		0.01	c0.11		c0.09	0.12	
v/s Ratio Perm						0.06			0.02			
v/c Ratio	0.55	0.44		0.60	0.58	0.20	0.47	0.48	0.11	0.57	0.32	
Uniform Delay, d ₁	39.2	26.9		38.8	27.7	24.5	43.5	30.5	27.9	34.7	20.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂	3.4	1.5		5.0	2.9	0.6	6.2	0.4	0.1	2.3	0.1	
Delay (s)	42.6	28.5		43.8	30.6	25.1	49.7	30.8	27.9	37.1	20.8	
Level of Service	D	C		D	C	C	D	C	C	D	C	
Approach Delay (s)		32.6			30.1			30.4			27.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.1				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			90.6				Sum of lost time (s)				20.6	
Intersection Capacity Utilization			51.1%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

1: OR 213 & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	164	5	81	240	241	14	155	141	119	82	79
Future Volume (veh/h)	70	164	5	81	240	241	14	155	141	119	82	79
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1545	1545	1545	1518	1600	1532	1325	1643	1740	1455	1483	1483
Adj Flow Rate, veh/h	76	178	5	88	261	262	15	168	153	129	89	86
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	15	15	15	17	11	16	36	13	6	20	18	18
Cap, veh/h	91	449	13	106	499	405	19	244	219	156	171	165
Arrive On Green	0.06	0.30	0.30	0.07	0.31	0.31	0.01	0.15	0.15	0.11	0.25	0.25
Sat Flow, veh/h	1472	1496	42	1446	1600	1298	1262	1643	1474	1386	693	669
Grp Volume(v), veh/h	76	0	183	88	261	262	15	168	153	129	0	175
Grp Sat Flow(s),veh/h/ln	1472	0	1538	1446	1600	1298	1262	1643	1474	1386	0	1362
Q Serve(g_s), s	2.9	0.0	5.3	3.4	7.6	9.8	0.7	5.5	5.6	5.1	0.0	6.3
Cycle Q Clear(g_c), s	2.9	0.0	5.3	3.4	7.6	9.8	0.7	5.5	5.6	5.1	0.0	6.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	91	0	462	106	499	405	19	244	219	156	0	336
V/C Ratio(X)	0.84	0.00	0.40	0.83	0.52	0.65	0.80	0.69	0.70	0.83	0.00	0.52
Avail Cap(c_a), veh/h	783	0	1363	769	1418	1151	671	1456	1307	737	0	1208
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	15.7	25.8	15.9	16.7	27.7	22.8	22.8	24.5	0.0	18.4
Incr Delay (d2), s/veh	11.8	0.0	1.2	9.8	1.8	3.7	36.2	1.3	1.5	6.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	0.0	3.0	2.4	4.8	5.3	0.7	3.5	3.3	3.2	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	0.0	16.8	35.6	17.8	20.4	63.9	24.1	24.3	31.1	0.0	18.8
LnGrp LOS	D	A	B	D	B	C	E	C	C	C	A	B
Approach Vol, veh/h		259			611			336				304
Approach Delay, s/veh		23.0			21.5			26.0				24.1
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	13.7	9.1	22.2	5.8	19.2	8.5	22.9				
Change Period (Y+Rc), s	5.0	5.3	5.0	5.3	5.0	5.3	5.0	5.3				
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0				
Max Q Clear Time (g_c+I1), s	7.1	7.6	5.4	7.3	2.7	8.3	4.9	11.8				
Green Ext Time (p_c), s	0.2	0.8	0.1	2.1	0.0	0.6	0.1	5.8				
Intersection Summary												
HCM 6th Ctrl Delay				23.3								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Vol, veh/h	30	443	3	14	603	18	39	1	26	11	1	14
Future Vol, veh/h	30	443	3	14	603	18	39	1	26	11	1	14
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	7	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	10	10	0	0	13	0	0	0	0	0	0	7
Mvmt Flow	37	540	4	17	735	22	48	1	32	13	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	758	0	0	546	0	0	1407	1410	551	1421	1401	747
Stage 1	-	-	-	-	-	-	618	618	-	781	781	-
Stage 2	-	-	-	-	-	-	789	792	-	640	620	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	818	-	-	1033	-	-	118	140	538	98	121	388
Stage 1	-	-	-	-	-	-	480	484	-	358	374	-
Stage 2	-	-	-	-	-	-	387	404	-	435	451	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	817	-	-	1031	-	-	106	131	533	87	113	388
Mov Cap-2 Maneuver	-	-	-	-	-	-	106	131	-	87	113	-
Stage 1	-	-	-	-	-	-	457	461	-	342	368	-
Stage 2	-	-	-	-	-	-	363	397	-	387	430	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.2			43.2			34.8		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	106	479	817	-	-	1031	-	-	152
HCM Lane V/C Ratio	0.449	0.069	0.045	-	-	0.017	-	-	0.209
HCM Control Delay (s)	64.1	13.1	9.6	-	-	8.6	-	-	34.8
HCM Lane LOS	F	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.9	0.2	0.1	-	-	0.1	-	-	0.8

HCM 6th TWSC
3: W Cascade Center Access & OR 211

08/09/2021

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	401	73	59	540	77	42
Future Vol, veh/h	401	73	59	540	77	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	10	0	0	12	0	0
Mvmt Flow	489	89	72	659	94	51

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	578	0	1292
Stage 1	-	-	-	-	489
Stage 2	-	-	-	-	803
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1006	-	182
Stage 1	-	-	-	-	621
Stage 2	-	-	-	-	444
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1006	-	169
Mov Cap-2 Maneuver	-	-	-	-	299
Stage 1	-	-	-	-	621
Stage 2	-	-	-	-	412

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1006	-
HCM Lane V/C Ratio	0.402	-	-	0.072	-
HCM Control Delay (s)	21.5	-	-	8.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-

Intersection												
Int Delay, s/veh	10.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	37	365	41	125	476	47	40	7	85	23	9	83
Future Vol, veh/h	37	365	41	125	476	47	40	7	85	23	9	83
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	10	0	0	12	2	0	0	0	0	0	18
Mvmt Flow	45	445	50	152	580	57	49	9	104	28	11	101

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	640	0	0	495	0	0	1529	1504	470	1533	1501	612
Stage 1	-	-	-	-	-	-	560	560	-	916	916	-
Stage 2	-	-	-	-	-	-	969	944	-	617	585	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.38
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.462
Pot Cap-1 Maneuver	954	-	-	1079	-	-	97	123	598	96	123	465
Stage 1	-	-	-	-	-	-	516	514	-	329	354	-
Stage 2	-	-	-	-	-	-	307	344	-	481	501	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	951	-	-	1079	-	-	60	100	598	64	100	464
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	100	-	64	100	-
Stage 1	-	-	-	-	-	-	492	490	-	313	303	-
Stage 2	-	-	-	-	-	-	199	294	-	372	477	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.7	64.9	36.4
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	60	434	951	-	-	1079	-	-	64	342
HCM Lane V/C Ratio	0.813	0.259	0.047	-	-	0.141	-	-	0.438	0.328
HCM Control Delay (s)	176.9	16.2	9	-	-	8.9	-	-	99.4	20.6
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	3.6	1	0.1	-	-	0.5	-	-	1.7	1.4

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	473	0	1	648	0	1
Future Vol, veh/h	473	0	1	648	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	10	0	0	12	0	0
Mvmt Flow	577	0	1	790	0	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	577	0	1369 577
Stage 1	-	-	-	-	577 -
Stage 2	-	-	-	-	792 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1006	-	163 520
Stage 1	-	-	-	-	566 -
Stage 2	-	-	-	-	450 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1006	-	163 520
Mov Cap-2 Maneuver	-	-	-	-	302 -
Stage 1	-	-	-	-	566 -
Stage 2	-	-	-	-	450 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	520	-	-	1006	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	11.9	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	465	0	0	630	31	0	0	0	13	0	20
Future Vol, veh/h	10	465	0	0	630	31	0	0	0	13	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	17	0	0	21	7	0	0	0	0	0	5
Mvmt Flow	11	522	0	0	708	35	0	0	0	15	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	743	0	0	522	0	0	1281	1287	522	1270	1270	726
Stage 1	-	-	-	-	-	-	544	544	-	726	726	-
Stage 2	-	-	-	-	-	-	737	743	-	544	544	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.345
Pot Cap-1 Maneuver	829	-	-	1055	-	-	144	166	559	146	170	420
Stage 1	-	-	-	-	-	-	527	522	-	419	433	-
Stage 2	-	-	-	-	-	-	413	425	-	527	522	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	829	-	-	1055	-	-	134	163	559	144	167	420
Mov Cap-2 Maneuver	-	-	-	-	-	-	134	163	-	144	167	-
Stage 1	-	-	-	-	-	-	517	512	-	411	433	-
Stage 2	-	-	-	-	-	-	391	425	-	517	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	22.8
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	829	-	-	1055	-	-	239
HCM Lane V/C Ratio	-	0.014	-	-	-	-	-	0.155
HCM Control Delay (s)	0	9.4	0	-	0	-	-	22.8
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.5

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗		↕			↕	
Traffic Vol, veh/h	8	453	7	3	615	4	2	1	2	3	1	4
Future Vol, veh/h	8	453	7	3	615	4	2	1	2	3	1	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	9	0	0	12	0	0	0	0	33	0	25
Mvmt Flow	9	498	8	3	676	4	2	1	2	3	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	681	0	0	506	0	0	1203	1203	498	1207	1209	679
Stage 1	-	-	-	-	-	-	516	516	-	685	685	-
Stage 2	-	-	-	-	-	-	687	687	-	522	524	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.525
Pot Cap-1 Maneuver	921	-	-	1069	-	-	163	186	576	139	184	414
Stage 1	-	-	-	-	-	-	546	538	-	392	451	-
Stage 2	-	-	-	-	-	-	440	450	-	485	533	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	920	-	-	1069	-	-	159	183	576	136	181	414
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	183	-	136	181	-
Stage 1	-	-	-	-	-	-	541	533	-	388	449	-
Stage 2	-	-	-	-	-	-	433	448	-	477	528	-





















Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			20.9			22.5		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	232	920	-	-	1069	-	-	215
HCM Lane V/C Ratio	0.024	0.01	-	-	0.003	-	-	0.041
HCM Control Delay (s)	20.9	9	-	-	8.4	-	-	22.5
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

HCM Signalized Intersection Capacity Analysis

8: Molalla Ave & OR 211

08/09/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	316	44	13	384	48	110	71	24	48	50	93
Future Volume (vph)	74	316	44	13	384	48	110	71	24	48	50	93
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.98			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1396	1620	1361	1420	1556			1574			1463	
Flt Permitted	0.39	1.00	1.00	0.51	1.00			0.77			0.88	
Satd. Flow (perm)	568	1620	1361	767	1556			1249			1301	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	81	347	48	14	422	53	121	78	26	53	55	102
RTOR Reduction (vph)	0	0	26	0	5	0	0	6	0	0	40	0
Lane Group Flow (vph)	81	347	22	14	470	0	0	219	0	0	170	0
Confl. Peds. (#/hr)	2		1	1		2	1					1
Heavy Vehicles (%)	19%	8%	7%	17%	11%	5%	7%	8%	0%	8%	13%	8%
Parking (#/hr)						2			2			2
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8		4			
Actuated Green, G (s)	21.2	21.2	21.2	21.2	21.2			16.2			16.2	
Effective Green, g (s)	21.2	21.2	21.2	21.2	21.2			16.2			16.2	
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.46			0.35			0.35	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	259	740	621	350	710			436			454	
v/s Ratio Prot		0.21			c0.30							
v/s Ratio Perm	0.14		0.02	0.02				c0.18			0.13	
v/c Ratio	0.31	0.47	0.04	0.04	0.66			0.50			0.37	
Uniform Delay, d1	8.0	8.7	7.0	7.0	9.8			11.9			11.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.5	0.0	0.0	2.3			0.9			0.5	
Delay (s)	8.7	9.2	7.0	7.0	12.1			12.8			11.8	
Level of Service	A	A	A	A	B			B			B	
Approach Delay (s)		8.9			12.0			12.8			11.8	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			11.0					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			46.4					Sum of lost time (s)			9.0	
Intersection Capacity Utilization			65.0%					ICU Level of Service			C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	316	44	13	384	48	110	71	24	48	50	93
Future Volume (veh/h)	74	316	44	13	384	48	110	71	24	48	50	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00	0.89	1.00	1.00	0.89
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1491	1641	1654	1518	1600	1600	1641	1641	1641	1573	1573	1573
Adj Flow Rate, veh/h	81	347	48	14	422	53	121	78	26	53	55	102
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	19	8	7	17	11	11	8	8	8	13	13	13
Cap, veh/h	396	821	700	522	620	78	302	141	37	179	108	151
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	795	1641	1399	871	1240	156	593	576	153	212	441	617
Grp Volume(v), veh/h	81	347	48	14	0	475	225	0	0	210	0	0
Grp Sat Flow(s),veh/h/ln	795	1641	1399	871	0	1395	1321	0	0	1269	0	0
Q Serve(g_s), s	3.0	4.7	0.6	0.4	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.2	4.7	0.6	5.1	0.0	9.1	5.0	0.0	0.0	5.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.11	0.54		0.12	0.25		0.49
Lane Grp Cap(c), veh/h	396	821	700	522	0	698	481	0	0	439	0	0
V/C Ratio(X)	0.20	0.42	0.07	0.03	0.00	0.68	0.47	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	1018	2106	1796	1204	0	1791	1372	0	0	1340	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.3	5.6	4.6	7.2	0.0	6.7	12.0	0.0	0.0	12.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	1.2	0.7	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	1.9	0.2	0.1	0.0	3.4	2.5	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	6.0	4.6	7.2	0.0	7.9	12.7	0.0	0.0	12.8	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		476			489			225			210	
Approach Delay, s/veh		6.8			7.9			12.7			12.8	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.2		13.2		22.2		13.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		45.5		35.5		45.5		35.5				
Max Q Clear Time (g_c+I1), s		14.2		7.0		11.1		7.0				
Green Ext Time (p_c), s		3.2		1.4		3.8		1.6				
Intersection Summary												
HCM 6th Ctrl Delay				9.0								
HCM 6th LOS				A								

HCM Signalized Intersection Capacity Analysis

1: OR 213 & OR 211

08/09/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	121	291	20	189	196	157	29	173	145	246	210	98	
Future Volume (vph)	121	291	20	189	196	157	29	173	145	246	210	98	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Grade (%)		0%			0%			-2%				2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1525	1649		1583	1577	1293	1540	1667	1370	1538	1515		
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1525	1649		1583	1577	1293	1540	1667	1370	1538	1515		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	130	313	22	203	211	169	31	186	156	265	226	105	
RTOR Reduction (vph)	0	1	0	0	0	118	0	0	129	0	8	0	
Lane Group Flow (vph)	130	334	0	203	211	51	31	186	27	265	323	0	
Confl. Peds. (#/hr)									2	2			
Heavy Vehicles (%)	9%	5%	6%	5%	11%	15%	9%	6%	7%	7%	7%	13%	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA		
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases						8			2				
Actuated Green, G (s)	16.3	33.7		22.0	39.4	39.4	4.9	22.2	22.2	31.0	48.3		
Effective Green, g (s)	16.3	33.7		22.0	39.4	39.4	4.9	22.2	22.2	31.0	48.3		
Actuated g/C Ratio	0.13	0.26		0.17	0.30	0.30	0.04	0.17	0.17	0.24	0.37		
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3		
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0		
Lane Grp Cap (vph)	191	429		268	479	393	58	285	234	368	565		
v/s Ratio Prot	0.09	c0.20		c0.13	0.13		0.02	c0.11		c0.17	0.21		
v/s Ratio Perm						0.04			0.02				
v/c Ratio	0.68	0.78		0.76	0.44	0.13	0.53	0.65	0.11	0.72	0.57		
Uniform Delay, d1	54.1	44.4		51.2	36.2	32.6	61.2	50.1	45.3	45.3	32.4		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	8.4	10.0		10.8	1.4	0.3	6.2	4.0	0.1	6.1	0.9		
Delay (s)	62.5	54.4		62.0	37.5	33.0	67.4	54.1	45.4	51.4	33.2		
Level of Service	E	D		E	D	C	E	D	D	D	C		
Approach Delay (s)		56.7			44.7			51.6			41.3		
Approach LOS		E			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			47.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.73										
Actuated Cycle Length (s)			129.5									Sum of lost time (s)	20.6
Intersection Capacity Utilization			72.2%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary

1: OR 213 & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	291	20	189	196	157	29	173	145	246	210	98
Future Volume (veh/h)	121	291	20	189	196	157	29	173	145	246	210	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1627	1682	1682	1682	1600	1545	1698	1740	1726	1633	1633	1633
Adj Flow Rate, veh/h	130	313	22	203	211	169	31	186	156	265	226	105
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	5	5	5	11	15	9	6	7	7	7	7
Cap, veh/h	160	402	28	240	489	400	40	258	215	302	335	155
Arrive On Green	0.10	0.26	0.26	0.15	0.31	0.31	0.02	0.15	0.15	0.19	0.32	0.32
Sat Flow, veh/h	1550	1553	109	1602	1600	1310	1617	1740	1453	1555	1053	489
Grp Volume(v), veh/h	130	0	335	203	211	169	31	186	156	265	0	331
Grp Sat Flow(s),veh/h/ln	1550	0	1662	1602	1600	1310	1617	1740	1453	1555	0	1543
Q Serve(g_s), s	6.8	0.0	15.5	10.2	8.7	8.5	1.6	8.4	8.5	13.7	0.0	15.4
Cycle Q Clear(g_c), s	6.8	0.0	15.5	10.2	8.7	8.5	1.6	8.4	8.5	13.7	0.0	15.4
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	160	0	430	240	489	400	40	258	215	302	0	490
V/C Ratio(X)	0.81	0.00	0.78	0.85	0.43	0.42	0.78	0.72	0.72	0.88	0.00	0.68
Avail Cap(c_a), veh/h	562	0	1005	581	968	792	587	1052	878	564	0	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	28.5	34.2	23.0	22.9	40.1	33.6	33.6	32.4	0.0	24.5
Incr Delay (d2), s/veh	6.1	0.0	6.4	5.0	1.3	1.5	17.7	1.4	1.7	5.2	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.8	0.0	10.6	7.5	5.9	4.8	1.4	6.3	5.4	9.0	0.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	34.9	39.2	24.3	24.4	57.8	35.0	35.3	37.5	0.0	25.1
LnGrp LOS	D	A	C	D	C	C	E	D	D	D	A	C
Approach Vol, veh/h		465			583			373				596
Approach Delay, s/veh		37.0			29.5			37.1				30.6
Approach LOS		D			C			D				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	17.6	17.4	26.7	7.0	31.6	13.5	30.6				
Change Period (Y+Rc), s	5.0	5.3	5.0	5.3	5.0	5.3	5.0	5.3				
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0				
Max Q Clear Time (g_c+I1), s	15.7	10.5	12.2	17.5	3.6	17.4	8.8	10.7				
Green Ext Time (p_c), s	0.4	0.9	0.3	3.9	0.0	1.2	0.2	4.1				
Intersection Summary												
HCM 6th Ctrl Delay			33.0									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔			↔	
Traffic Vol, veh/h	17	767	11	22	713	22	17	1	10	15	1	23
Future Vol, veh/h	17	767	11	22	713	22	17	1	10	15	1	23
Conflicting Peds, #/hr	0	0	1	1	0	0	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	7	7	0	0	0	0	0	13
Mvmt Flow	19	843	12	24	784	24	19	1	11	16	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	808	0	0	856	0	0	1748	1744	851	1738	1738	799
Stage 1	-	-	-	-	-	-	888	888	-	844	844	-
Stage 2	-	-	-	-	-	-	860	856	-	894	894	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.417
Pot Cap-1 Maneuver	826	-	-	793	-	-	68	87	363	57	73	353
Stage 1	-	-	-	-	-	-	341	365	-	328	348	-
Stage 2	-	-	-	-	-	-	353	377	-	306	328	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	826	-	-	792	-	-	60	82	362	52	69	352
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	82	-	52	69	-
Stage 1	-	-	-	-	-	-	333	356	-	320	338	-
Stage 2	-	-	-	-	-	-	316	366	-	289	320	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			62			60.3		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	60	276	826	-	-	792	-	-	106
HCM Lane V/C Ratio	0.311	0.044	0.023	-	-	0.031	-	-	0.404
HCM Control Delay (s)	90.1	18.6	9.5	-	-	9.7	-	-	60.3
HCM Lane LOS	F	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.1	0.1	0.1	-	-	0.1	-	-	1.7

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	691	82	56	670	75	48
Future Vol, veh/h	691	82	56	670	75	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	8	0	0
Mvmt Flow	751	89	61	728	82	52

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	840	0	1601
Stage 1	-	-	-	-	751
Stage 2	-	-	-	-	850
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	804	-	118
Stage 1	-	-	-	-	470
Stage 2	-	-	-	-	422
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	804	-	109
Mov Cap-2 Maneuver	-	-	-	-	244
Stage 1	-	-	-	-	470
Stage 2	-	-	-	-	390

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	27.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	291	-	-	804	-
HCM Lane V/C Ratio	0.459	-	-	0.076	-
HCM Control Delay (s)	27.5	-	-	9.8	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.3	-	-	0.2	-

HCM 6th TWSC
4: Leroy Ave & OR 211

08/09/2021

Intersection												
Int Delay, s/veh	17											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	41	647	51	125	623	49	46	8	113	16	10	57
Future Vol, veh/h	41	647	51	125	623	49	46	8	113	16	10	57
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	7	2	2	8	2	2	2	2	0	2	2
Mvmt Flow	45	703	55	136	677	53	50	9	123	17	11	62

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	732	0	0	758	0	0	1834	1825	731	1865	1826	707
Stage 1	-	-	-	-	-	-	821	821	-	978	978	-
Stage 2	-	-	-	-	-	-	1013	1004	-	887	848	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.318
Pot Cap-1 Maneuver	873	-	-	853	-	-	59	77	422	56	77	435
Stage 1	-	-	-	-	-	-	369	389	-	304	329	-
Stage 2	-	-	-	-	-	-	288	320	-	341	378	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	871	-	-	853	-	-	~ 37	61	422	30	61	434
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 37	61	-	30	61	-
Stage 1	-	-	-	-	-	-	350	369	-	288	276	-
Stage 2	-	-	-	-	-	-	199	268	-	224	358	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.6	139	67.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	37	303	871	-	-	853	-	-	30	227
HCM Lane V/C Ratio	1.351	0.434	0.051	-	-	0.159	-	-	0.58	0.321
HCM Control Delay (s)	\$ 437.1	25.7	9.4	-	-	10	-	-	231.1	28.2
HCM Lane LOS	F	D	A	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	5.2	2.1	0.2	-	-	0.6	-	-	1.9	1.3

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	775	1	1	797	0	1
Future Vol, veh/h	775	1	1	797	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	8	0	0
Mvmt Flow	842	1	1	866	0	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	843	0	1711
Stage 1	-	-	-	-	843
Stage 2	-	-	-	-	868
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	802	-	101
Stage 1	-	-	-	-	426
Stage 2	-	-	-	-	414
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	802	-	101
Mov Cap-2 Maneuver	-	-	-	-	238
Stage 1	-	-	-	-	426
Stage 2	-	-	-	-	414

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	367	-	-	802	-
HCM Lane V/C Ratio	0.003	-	-	0.001	-
HCM Control Delay (s)	14.8	-	-	9.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	758	1	1	769	18	0	0	2	15	0	29
Future Vol, veh/h	17	758	1	1	769	18	0	0	2	15	0	29
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	4	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	0	8	17	0	0	0	20	0	10
Mvmt Flow	18	798	1	1	809	19	0	0	2	16	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	832	0	0	799	0	0	1675	1669	803	1665	1660	827
Stage 1	-	-	-	-	-	-	835	835	-	825	825	-
Stage 2	-	-	-	-	-	-	840	834	-	840	835	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.3	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.68	4	3.39
Pot Cap-1 Maneuver	809	-	-	833	-	-	77	97	387	70	98	360
Stage 1	-	-	-	-	-	-	365	386	-	342	390	-
Stage 2	-	-	-	-	-	-	363	386	-	335	386	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	806	-	-	833	-	-	68	93	386	67	93	357
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	93	-	67	93	-
Stage 1	-	-	-	-	-	-	350	371	-	327	388	-
Stage 2	-	-	-	-	-	-	330	384	-	319	371	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	14.4	41.4
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	386	806	-	-	833	-	-	144
HCM Lane V/C Ratio	0.005	0.022	-	-	0.001	-	-	0.322
HCM Control Delay (s)	14.4	9.6	0	-	9.3	0	-	41.4
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	1.3

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗		↕			↕	
Traffic Vol, veh/h	4	685	52	54	711	5	47	1	48	5	2	4
Future Vol, veh/h	4	685	52	54	711	5	47	1	48	5	2	4
Conflicting Peds, #/hr	7	0	0	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	75	6	4	0	9	20	0	0	2	60	50	0
Mvmt Flow	4	706	54	56	733	5	48	1	49	5	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	745	0	0	760	0	0	1565	1571	706	1621	1623	743
Stage 1	-	-	-	-	-	-	714	714	-	855	855	-
Stage 2	-	-	-	-	-	-	851	857	-	766	768	-
Critical Hdwy	4.85	-	-	4.1	-	-	7.1	6.5	6.22	7.7	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Follow-up Hdwy	2.875	-	-	2.2	-	-	3.5	4	3.318	4.04	4.45	3.3
Pot Cap-1 Maneuver	609	-	-	861	-	-	91	112	436	60	80	418
Stage 1	-	-	-	-	-	-	425	438	-	282	315	-
Stage 2	-	-	-	-	-	-	358	377	-	319	348	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	605	-	-	861	-	-	83	103	436	50	74	415
Mov Cap-2 Maneuver	-	-	-	-	-	-	83	103	-	50	74	-
Stage 1	-	-	-	-	-	-	422	435	-	278	292	-
Stage 2	-	-	-	-	-	-	329	350	-	280	346	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			76.7			57.3		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	140	605	-	-	861	-	-	80
HCM Lane V/C Ratio	0.707	0.007	-	-	0.065	-	-	0.142
HCM Control Delay (s)	76.7	11	-	-	9.5	-	-	57.3
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	4	0	-	-	0.2	-	-	0.5

HCM Signalized Intersection Capacity Analysis

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	414	101	28	437	48	122	83	36	76	105	166
Future Volume (vph)	103	414	101	28	437	48	122	83	36	76	105	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99			0.98			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1566	1651	1387	1662	1604			1578			1546	
Flt Permitted	0.34	1.00	1.00	0.41	1.00			0.66			0.89	
Satd. Flow (perm)	566	1651	1387	723	1604			1072			1385	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	436	106	29	460	51	128	87	38	80	111	175
RTOR Reduction (vph)	0	0	57	0	5	0	0	8	0	0	39	0
Lane Group Flow (vph)	108	436	49	29	506	0	0	245	0	0	327	0
Confl. Peds. (#/hr)	4		1	1		4	11		4	4		11
Confl. Bikes (#/hr)									1			3
Heavy Vehicles (%)	6%	6%	5%	0%	8%	0%	6%	5%	4%	3%	5%	2%
Parking (#/hr)						2			2			2
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	24.5	24.5	24.5	24.5	24.5			19.5			19.5	
Effective Green, g (s)	24.5	24.5	24.5	24.5	24.5			19.5			19.5	
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.46			0.37			0.37	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	261	763	641	334	741			394			509	
v/s Ratio Prot		0.26			c0.32							
v/s Ratio Perm	0.19		0.04	0.04				0.23			c0.24	
v/c Ratio	0.41	0.57	0.08	0.09	0.68			0.62			0.64	
Uniform Delay, d1	9.5	10.4	7.9	8.0	11.2			13.7			13.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	1.0	0.1	0.1	2.6			3.1			2.8	
Delay (s)	10.5	11.5	8.0	8.1	13.8			16.8			16.7	
Level of Service	B	B	A	A	B			B			B	
Approach Delay (s)		10.7			13.5			16.8			16.7	
Approach LOS		B			B			B			B	

Intersection Summary		
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.66	B
Actuated Cycle Length (s)	53.0	Sum of lost time (s)
Intersection Capacity Utilization	75.3%	9.0
Analysis Period (min)	15	ICU Level of Service
		D

c Critical Lane Group

HCM 6th Signalized Intersection Summary

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	414	101	28	437	48	122	83	36	76	105	166
Future Volume (veh/h)	103	414	101	28	437	48	122	83	36	76	105	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00	0.89	1.00	1.00	0.89
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1668	1682	1750	1641	1641	1682	1682	1682	1682	1682	1682
Adj Flow Rate, veh/h	108	436	106	29	460	51	128	87	38	80	111	175
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	0	8	8	5	5	5	5	5	5
Cap, veh/h	301	823	701	393	637	71	239	142	52	146	169	224
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	860	1668	1419	876	1291	143	420	394	144	207	471	621
Grp Volume(v), veh/h	108	436	106	29	0	511	253	0	0	366	0	0
Grp Sat Flow(s),veh/h/ln	860	1668	1419	876	0	1434	958	0	0	1300	0	0
Q Serve(g_s), s	6.9	11.0	2.5	1.4	0.0	17.2	0.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	24.1	11.0	2.5	12.4	0.0	17.2	15.6	0.0	0.0	15.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.51		0.15	0.22		0.48
Lane Grp Cap(c), veh/h	301	823	701	393	0	708	433	0	0	539	0	0
V/C Ratio(X)	0.36	0.53	0.15	0.07	0.00	0.72	0.58	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	514	1237	1053	610	0	1064	679	0	0	815	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.7	10.6	8.5	14.9	0.0	12.2	17.1	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.5	0.1	0.1	0.0	1.4	1.3	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	6.6	1.3	0.5	0.0	8.7	5.5	0.0	0.0	7.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	11.2	8.6	15.0	0.0	13.6	18.4	0.0	0.0	18.9	0.0	0.0
LnGrp LOS	C	B	A	B	A	B	B	A	A	B	A	A
Approach Vol, veh/h		650			540			253			366	
Approach Delay, s/veh		12.6			13.7			18.4			18.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.8		26.6		34.8		26.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		45.5		35.5		45.5		35.5				
Max Q Clear Time (g_c+I1), s		26.1		17.1		19.2		17.6				
Green Ext Time (p_c), s		3.9		2.4		4.0		1.6				

Intersection Summary

HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B

Notes
























User approved pedestrian interval to be less than phase max green.

Appendix E
Year 2022 Total Conditions Traffic
Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: OR 213 & OR 211

08/09/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	166	5	85	248	251	14	155	142	123	82	79
Future Volume (vph)	70	166	5	85	248	251	14	155	142	123	82	79
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	180	5	92	270	273	15	168	154	134	89	86
RTOR Reduction (vph)	0	1	0	0	0	188	0	0	121	0	18	0
Lane Group Flow (vph)	76	184	0	92	270	85	15	168	33	134	157	0
Heavy Vehicles (%)	15%	15%	25%	17%	11%	16%	36%	13%	6%	20%	18%	19%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.9	26.0		12.1	29.2	29.2	2.5	20.2	20.2	15.4	33.1	
Effective Green, g (s)	8.9	26.0		12.1	29.2	29.2	2.5	20.2	20.2	15.4	33.1	
Actuated g/C Ratio	0.09	0.28		0.13	0.31	0.31	0.03	0.21	0.21	0.16	0.35	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	136	416		182	488	396	32	335	303	224	475	
v/s Ratio Prot	0.05	0.12		c0.06	c0.17		0.01	c0.11		c0.10	0.12	
v/s Ratio Perm						0.07			0.02			
v/c Ratio	0.56	0.44		0.51	0.55	0.21	0.47	0.50	0.11	0.60	0.33	
Uniform Delay, d1	40.8	28.2		38.3	27.1	24.1	45.2	32.6	29.8	36.6	22.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	1.6		1.3	2.3	0.6	6.2	0.4	0.1	3.3	0.2	
Delay (s)	44.3	29.7		39.6	29.4	24.6	51.4	33.0	29.9	39.9	22.6	
Level of Service	D	C		D	C	C	D	C	C	D	C	
Approach Delay (s)		34.0			28.8			32.4			30.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.7				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			94.3				Sum of lost time (s)				20.6	
Intersection Capacity Utilization			51.8%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

1: OR 213 & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (veh/h)	70	166	5	85	248	251	14	155	142	123	82	79
Future Volume (veh/h)	70	166	5	85	248	251	14	155	142	123	82	79
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1545	1545	1545	1518	1600	1532	1325	1643	1740	1455	1483	1483
Adj Flow Rate, veh/h	76	180	5	92	270	273	15	168	154	134	89	86
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	15	15	15	17	11	16	36	13	6	20	18	18
Cap, veh/h	91	455	13	111	511	414	19	243	218	162	173	167
Arrive On Green	0.06	0.30	0.30	0.08	0.32	0.32	0.01	0.15	0.15	0.12	0.25	0.25
Sat Flow, veh/h	1472	1496	42	1446	1600	1298	1262	1643	1474	1386	693	669
Grp Volume(v), veh/h	76	0	185	92	270	273	15	168	154	134	0	175
Grp Sat Flow(s),veh/h/ln	1472	0	1538	1446	1600	1298	1262	1643	1474	1386	0	1362
Q Serve(g_s), s	3.0	0.0	5.5	3.6	8.0	10.5	0.7	5.6	5.8	5.5	0.0	6.4
Cycle Q Clear(g_c), s	3.0	0.0	5.5	3.6	8.0	10.5	0.7	5.6	5.8	5.5	0.0	6.4
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	91	0	468	111	511	414	19	243	218	162	0	341
V/C Ratio(X)	0.84	0.00	0.40	0.83	0.53	0.66	0.80	0.69	0.71	0.83	0.00	0.51
Avail Cap(c_a), veh/h	759	0	1322	745	1375	1115	651	1412	1267	715	0	1171
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	16.0	26.5	16.2	17.1	28.6	23.5	23.6	25.1	0.0	18.8
Incr Delay (d2), s/veh	11.6	0.0	1.2	9.1	1.8	3.8	36.7	1.3	1.6	6.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	3.2	2.6	5.1	5.7	0.7	3.7	3.5	3.4	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	0.0	17.2	35.6	18.0	20.9	65.3	24.9	25.2	31.5	0.0	19.2
LnGrp LOS	D	A	B	D	B	C	E	C	C	C	A	B
Approach Vol, veh/h		261			635			337			309	
Approach Delay, s/veh		23.4			21.8			26.8			24.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8	13.9	9.5	23.0	5.9	19.9	8.6	23.9				
Change Period (Y+Rc), s	5.0	5.3	5.0	5.3	5.0	5.3	5.0	5.3				
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0				
Max Q Clear Time (g_c+I1), s	7.5	7.8	5.6	7.5	2.7	8.4	5.0	12.5				
Green Ext Time (p_c), s	0.2	0.8	0.1	2.1	0.0	0.6	0.1	6.0				
Intersection Summary												
HCM 6th Ctrl Delay			23.7									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Vol, veh/h	30	450	3	14	625	18	39	1	26	11	1	14
Future Vol, veh/h	30	450	3	14	625	18	39	1	26	11	1	14
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	7	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	10	10	0	0	13	0	0	0	0	0	0	7
Mvmt Flow	37	549	4	17	762	22	48	1	32	13	1	17

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	785	0	0	555	0	0	1443	1446	560	1457	1437	774
Stage 1	-	-	-	-	-	-	627	627	-	808	808	-
Stage 2	-	-	-	-	-	-	816	819	-	649	629	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	799	-	-	1026	-	-	111	133	532	92	115	374
Stage 1	-	-	-	-	-	-	475	479	-	345	363	-
Stage 2	-	-	-	-	-	-	374	392	-	430	446	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	798	-	-	1024	-	-	100	124	527	81	108	374
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	124	-	81	108	-
Stage 1	-	-	-	-	-	-	452	456	-	329	356	-
Stage 2	-	-	-	-	-	-	350	385	-	382	425	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.6		0.2		46.8		37.5	
HCM LOS					E		E	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	100	470	798	-	-	1024	-	-	142
HCM Lane V/C Ratio	0.476	0.07	0.046	-	-	0.017	-	-	0.223
HCM Control Delay (s)	70.1	13.2	9.7	-	-	8.6	-	-	37.5
HCM Lane LOS	F	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	2.1	0.2	0.1	-	-	0.1	-	-	0.8

HCM 6th TWSC
3: W Cascade Center Access & OR 211

08/09/2021

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	408	73	59	562	77	42
Future Vol, veh/h	408	73	59	562	77	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	10	0	0	12	0	0
Mvmt Flow	498	89	72	685	94	51

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	587	0	1327
Stage 1	-	-	-	-	498
Stage 2	-	-	-	-	829
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	998	-	173
Stage 1	-	-	-	-	615
Stage 2	-	-	-	-	432
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	998	-	161
Mov Cap-2 Maneuver	-	-	-	-	290
Stage 1	-	-	-	-	615
Stage 2	-	-	-	-	401

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	-	-	998	-
HCM Lane V/C Ratio	0.412	-	-	0.072	-
HCM Control Delay (s)	22.2	-	-	8.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	2	-	-	0.2	-

HCM 6th TWSC
4: Leroy Ave & OR 211

08/09/2021

Intersection												
Int Delay, s/veh	21.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	37	365	48	126	476	47	62	9	95	23	10	83
Future Vol, veh/h	37	365	48	126	476	47	62	9	95	23	10	83
Conflicting Peds, #/hr	3	0	0	0	0	3	10	0	0	0	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	10	0	0	12	2	0	0	0	0	0	18
Mvmt Flow	45	445	59	154	580	57	76	11	116	28	12	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	640	0	0	504	0	0	1548	1513	475	1548	1514	622
Stage 1	-	-	-	-	-	-	565	565	-	920	920	-
Stage 2	-	-	-	-	-	-	983	948	-	628	594	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.38
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.462
Pot Cap-1 Maneuver	954	-	-	1071	-	-	94	121	594	94	121	459
Stage 1	-	-	-	-	-	-	513	511	-	327	352	-
Stage 2	-	-	-	-	-	-	302	342	-	474	496	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	951	-	-	1071	-	-	~ 56	98	594	59	98	453
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 56	98	-	59	98	-
Stage 1	-	-	-	-	-	-	489	487	-	311	300	-
Stage 2	-	-	-	-	-	-	191	292	-	355	473	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			1.7			145.7			39.7		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	56	413	951	-	-	1071	-	-	59	326
HCM Lane V/C Ratio	1.35	0.307	0.047	-	-	0.143	-	-	0.475	0.348
HCM Control Delay (s)	\$ 360.8	17.5	9	-	-	8.9	-	-	112.3	21.8
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	6.7	1.3	0.1	-	-	0.5	-	-	1.8	1.5

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
5: E Cascade Center Access & OR 211

08/09/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	
Traffic Vol, veh/h	483	0	1	649	0	1
Future Vol, veh/h	483	0	1	649	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	10	0	0	12	0	0
Mvmt Flow	589	0	1	791	0	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	589	0	1382 589
Stage 1	-	-	-	-	589 -
Stage 2	-	-	-	-	793 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	996	-	160 512
Stage 1	-	-	-	-	558 -
Stage 2	-	-	-	-	449 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	996	-	160 512
Mov Cap-2 Maneuver	-	-	-	-	299 -
Stage 1	-	-	-	-	558 -
Stage 2	-	-	-	-	449 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	512	-	-	996	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	12	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	475	0	0	631	31	0	0	0	13	0	20
Future Vol, veh/h	10	475	0	0	631	31	0	0	0	13	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	17	0	0	21	7	0	0	0	0	0	5
Mvmt Flow	11	534	0	0	709	35	0	0	0	15	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	744	0	0	534	0	0	1294	1300	534	1283	1283	727
Stage 1	-	-	-	-	-	-	556	556	-	727	727	-
Stage 2	-	-	-	-	-	-	738	744	-	556	556	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.345
Pot Cap-1 Maneuver	828	-	-	1044	-	-	141	163	550	143	167	419
Stage 1	-	-	-	-	-	-	519	516	-	419	432	-
Stage 2	-	-	-	-	-	-	413	424	-	519	516	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	828	-	-	1044	-	-	132	160	550	141	164	419
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	160	-	141	164	-
Stage 1	-	-	-	-	-	-	509	506	-	411	432	-
Stage 2	-	-	-	-	-	-	391	424	-	509	506	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	23.1
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	828	-	-	1044	-	-	236
HCM Lane V/C Ratio	-	0.014	-	-	-	-	-	0.157
HCM Control Delay (s)	0	9.4	0	-	0	-	-	23.1
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.5

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗		↕			↕	
Traffic Vol, veh/h	8	463	7	3	616	4	2	1	2	3	1	4
Future Vol, veh/h	8	463	7	3	616	4	2	1	2	3	1	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	9	0	0	12	0	0	0	0	33	0	25
Mvmt Flow	9	509	8	3	677	4	2	1	2	3	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	682	0	0	517	0	0	1215	1215	509	1219	1221	680
Stage 1	-	-	-	-	-	-	527	527	-	686	686	-
Stage 2	-	-	-	-	-	-	688	688	-	533	535	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.525
Pot Cap-1 Maneuver	920	-	-	1059	-	-	160	183	568	136	181	414
Stage 1	-	-	-	-	-	-	538	532	-	391	451	-
Stage 2	-	-	-	-	-	-	440	450	-	478	527	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	919	-	-	1059	-	-	156	180	568	133	178	414
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	180	-	133	178	-
Stage 1	-	-	-	-	-	-	533	527	-	387	449	-
Stage 2	-	-	-	-	-	-	433	448	-	471	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	21.2	22.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	919	-	-	1059	-	-	211
HCM Lane V/C Ratio	0.024	0.01	-	-	0.003	-	-	0.042
HCM Control Delay (s)	21.2	9	-	-	8.4	-	-	22.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

HCM Signalized Intersection Capacity Analysis

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	319	48	13	384	48	111	71	24	48	50	93
Future Volume (vph)	77	319	48	13	384	48	111	71	24	48	50	93
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.98			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1396	1620	1361	1420	1556			1574			1463	
Flt Permitted	0.39	1.00	1.00	0.51	1.00			0.77			0.88	
Satd. Flow (perm)	568	1620	1361	761	1556			1247			1301	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	85	351	53	14	422	53	122	78	26	53	55	102
RTOR Reduction (vph)	0	0	29	0	5	0	0	6	0	0	40	0
Lane Group Flow (vph)	85	351	24	14	470	0	0	220	0	0	170	0
Confl. Peds. (#/hr)	2		1	1		2	1					1
Heavy Vehicles (%)	19%	8%	7%	17%	11%	5%	7%	8%	0%	8%	13%	8%
Parking (#/hr)						2			2			2
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8		4			
Actuated Green, G (s)	21.2	21.2	21.2	21.2	21.2			16.2			16.2	
Effective Green, g (s)	21.2	21.2	21.2	21.2	21.2			16.2			16.2	
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.46			0.35			0.35	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	259	740	621	347	710			435			454	
v/s Ratio Prot		0.22			c0.30							
v/s Ratio Perm	0.15		0.02	0.02				c0.18			0.13	
v/c Ratio	0.33	0.47	0.04	0.04	0.66			0.51			0.37	
Uniform Delay, d1	8.1	8.7	7.0	7.0	9.8			11.9			11.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.7	0.5	0.0	0.0	2.3			0.9			0.5	
Delay (s)	8.8	9.2	7.0	7.0	12.1			12.9			11.8	
Level of Service	A	A	A	A	B			B			B	
Approach Delay (s)		8.9			12.0			12.9			11.8	
Approach LOS		A			B			B			B	

Intersection Summary

HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	46.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	319	48	13	384	48	111	71	24	48	50	93
Future Volume (veh/h)	77	319	48	13	384	48	111	71	24	48	50	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00	0.89	1.00	1.00	0.89
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1491	1641	1654	1518	1600	1600	1641	1641	1641	1573	1573	1573
Adj Flow Rate, veh/h	85	351	53	14	422	53	122	78	26	53	55	102
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	19	8	7	17	11	11	8	8	8	13	13	13
Cap, veh/h	397	826	704	519	624	78	301	141	37	178	108	152
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	795	1641	1399	864	1240	156	596	572	152	212	441	617
Grp Volume(v), veh/h	85	351	53	14	0	475	226	0	0	210	0	0
Grp Sat Flow(s),veh/h/ln	795	1641	1399	864	0	1395	1320	0	0	1270	0	0
Q Serve(g_s), s	3.2	4.8	0.7	0.4	0.0	9.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.4	4.8	0.7	5.2	0.0	9.2	5.1	0.0	0.0	5.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.11	0.54		0.12	0.25		0.49
Lane Grp Cap(c), veh/h	397	826	704	519	0	703	479	0	0	438	0	0
V/C Ratio(X)	0.21	0.42	0.08	0.03	0.00	0.68	0.47	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	1005	2081	1775	1179	0	1770	1356	0	0	1325	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.4	5.6	4.6	7.3	0.0	6.7	12.1	0.0	0.0	12.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	1.1	0.7	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	2.0	0.2	0.1	0.0	3.4	2.5	0.0	0.0	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	6.0	4.6	7.3	0.0	7.9	12.9	0.0	0.0	13.0	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		489			489			226			210	
Approach Delay, s/veh		6.8			7.8			12.9			13.0	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.6		13.3		22.6		13.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		45.5		35.5		45.5		35.5				
Max Q Clear Time (g_c+I1), s		14.4		7.1		11.2		7.1				
Green Ext Time (p_c), s		3.3		1.4		3.8		1.6				
Intersection Summary												
HCM 6th Ctrl Delay				9.0								
HCM 6th LOS				A								

HCM Signalized Intersection Capacity Analysis

1: OR 213 & OR 211

08/09/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	121	300	20	192	201	164	29	173	148	257	210	98	
Future Volume (vph)	121	300	20	192	201	164	29	173	148	257	210	98	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Grade (%)		0%			0%			-2%			2%		
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1525	1650		1583	1577	1293	1540	1667	1370	1538	1515		
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1525	1650		1583	1577	1293	1540	1667	1370	1538	1515		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	130	323	22	206	216	176	31	186	159	276	226	105	
RTOR Reduction (vph)	0	1	0	0	0	121	0	0	132	0	8	0	
Lane Group Flow (vph)	130	344	0	206	216	55	31	186	27	276	323	0	
Confl. Peds. (#/hr)									2	2			
Heavy Vehicles (%)	9%	5%	6%	5%	11%	15%	9%	6%	7%	7%	7%	13%	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA		
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases						8			2				
Actuated Green, G (s)	16.4	34.7		22.5	40.8	40.8	5.0	22.5	22.5	31.0	48.5		
Effective Green, g (s)	16.4	34.7		22.5	40.8	40.8	5.0	22.5	22.5	31.0	48.5		
Actuated g/C Ratio	0.12	0.26		0.17	0.31	0.31	0.04	0.17	0.17	0.24	0.37		
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3		
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0		
Lane Grp Cap (vph)	190	436		271	490	401	58	285	234	363	559		
v/s Ratio Prot	0.09	c0.21		c0.13	0.14		0.02	c0.11		c0.18	0.21		
v/s Ratio Perm						0.04			0.02				
v/c Ratio	0.68	0.79		0.76	0.44	0.14	0.53	0.65	0.12	0.76	0.58		
Uniform Delay, d1	55.0	44.9		51.8	36.1	32.6	62.0	50.8	46.0	46.7	33.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	8.5	10.5		11.1	1.3	0.3	6.2	4.0	0.1	8.5	0.9		
Delay (s)	63.5	55.4		62.9	37.5	32.9	68.2	54.8	46.1	55.2	34.1		
Level of Service	E	E		E	D	C	E	D	D	E	C		
Approach Delay (s)		57.6			44.9			52.2			43.7		
Approach LOS		E			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			48.8									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			131.3									Sum of lost time (s)	20.6
Intersection Capacity Utilization			73.5%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary

1: OR 213 & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	300	20	192	201	164	29	173	148	257	210	98
Future Volume (veh/h)	121	300	20	192	201	164	29	173	148	257	210	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1627	1682	1682	1682	1600	1545	1698	1740	1726	1633	1633	1633
Adj Flow Rate, veh/h	130	323	22	206	216	176	31	186	159	276	226	105
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	5	5	5	11	15	9	6	7	7	7	7
Cap, veh/h	159	409	28	242	497	407	39	258	216	311	342	159
Arrive On Green	0.10	0.26	0.26	0.15	0.31	0.31	0.02	0.15	0.15	0.20	0.32	0.32
Sat Flow, veh/h	1550	1557	106	1602	1600	1310	1617	1740	1453	1555	1053	489
Grp Volume(v), veh/h	130	0	345	206	216	176	31	186	159	276	0	331
Grp Sat Flow(s),veh/h/ln	1550	0	1663	1602	1600	1310	1617	1740	1453	1555	0	1543
Q Serve(g_s), s	7.1	0.0	16.7	10.9	9.3	9.3	1.7	8.8	9.1	14.9	0.0	16.0
Cycle Q Clear(g_c), s	7.1	0.0	16.7	10.9	9.3	9.3	1.7	8.8	9.1	14.9	0.0	16.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	159	0	436	242	497	407	39	258	216	311	0	500
V/C Ratio(X)	0.82	0.00	0.79	0.85	0.43	0.43	0.79	0.72	0.74	0.89	0.00	0.66
Avail Cap(c_a), veh/h	537	0	960	555	924	756	560	1004	839	539	0	891
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	29.7	35.8	23.8	23.8	42.0	35.1	35.2	33.7	0.0	25.2
Incr Delay (d2), s/veh	6.2	0.0	6.7	5.2	1.3	1.5	18.9	1.4	1.8	6.2	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.1	0.0	11.3	7.9	6.4	5.2	1.5	6.6	5.8	9.7	0.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	0.0	36.4	41.0	25.1	25.3	60.9	36.6	37.1	39.9	0.0	25.7
LnGrp LOS	D	A	D	D	C	C	E	D	D	D	A	C
Approach Vol, veh/h		475			598			376				607
Approach Delay, s/veh		38.6			30.6			38.8				32.2
Approach LOS		D			C			D				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.3	18.2	18.1	28.0	7.1	33.4	13.9	32.2				
Change Period (Y+Rc), s	5.0	5.3	5.0	5.3	5.0	5.3	5.0	5.3				
Max Green Setting (Gmax), s	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0				
Max Q Clear Time (g_c+I1), s	16.9	11.1	12.9	18.7	3.7	18.0	9.1	11.3				
Green Ext Time (p_c), s	0.4	0.9	0.3	4.0	0.0	1.2	0.2	4.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.4									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↕	
Traffic Vol, veh/h	17	790	11	22	728	22	17	1	10	15	1	23
Future Vol, veh/h	17	790	11	22	728	22	17	1	10	15	1	23
Conflicting Peds, #/hr	0	0	1	1	0	0	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	7	7	0	0	0	0	0	13
Mvmt Flow	19	868	12	24	800	24	19	1	11	16	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	824	0	0	881	0	0	1789	1785	876	1779	1779	815
Stage 1	-	-	-	-	-	-	913	913	-	860	860	-
Stage 2	-	-	-	-	-	-	876	872	-	919	919	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.417
Pot Cap-1 Maneuver	815	-	-	776	-	-	64	82	351	53	68	345
Stage 1	-	-	-	-	-	-	330	355	-	321	341	-
Stage 2	-	-	-	-	-	-	346	371	-	296	319	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	815	-	-	775	-	-	56	78	350	49	64	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	78	-	49	64	-
Stage 1	-	-	-	-	-	-	322	346	-	314	330	-
Stage 2	-	-	-	-	-	-	309	359	-	279	311	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			67.4			65.6		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	56	266	815	-	-	775	-	-	100
HCM Lane V/C Ratio	0.334	0.045	0.023	-	-	0.031	-	-	0.429
HCM Control Delay (s)	98.6	19.2	9.5	-	-	9.8	-	-	65.6
HCM Lane LOS	F	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.2	0.1	0.1	-	-	0.1	-	-	1.8

HCM 6th TWSC
 3: W Cascade Center Access & OR 211

08/09/2021

Intersection						
Int Delay, s/veh	2.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	714	82	56	685	75	48
Future Vol, veh/h	714	82	56	685	75	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	8	0	0
Mvmt Flow	776	89	61	745	82	52

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	865	0	1643 776
Stage 1	-	-	-	-	776 -
Stage 2	-	-	-	-	867 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	787	-	111 401
Stage 1	-	-	-	-	457 -
Stage 2	-	-	-	-	415 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	787	-	102 401
Mov Cap-2 Maneuver	-	-	-	-	236 -
Stage 1	-	-	-	-	457 -
Stage 2	-	-	-	-	383 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	28.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	281	-	-	787	-
HCM Lane V/C Ratio	0.476	-	-	0.077	-
HCM Control Delay (s)	28.9	-	-	10	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.4	-	-	0.3	-

Intersection												
Int Delay, s/veh	31.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	41	647	74	134	623	49	61	8	119	16	12	57
Future Vol, veh/h	41	647	74	134	623	49	61	8	119	16	12	57
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	0	0	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	7	2	2	8	2	2	2	2	0	2	2
Mvmt Flow	45	703	80	146	677	53	66	9	129	17	13	62

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	732	0	0	783	0	0	1873	1857	743	1900	1871	713
Stage 1	-	-	-	-	-	-	833	833	-	998	998	-
Stage 2	-	-	-	-	-	-	1040	1024	-	902	873	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.318
Pot Cap-1 Maneuver	873	-	-	835	-	-	~ 55	74	415	53	72	432
Stage 1	-	-	-	-	-	-	363	384	-	296	322	-
Stage 2	-	-	-	-	-	-	278	313	-	335	368	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	871	-	-	835	-	-	~ 32	58	415	27	56	428
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 32	58	-	27	56	-
Stage 1	-	-	-	-	-	-	344	364	-	280	265	-
Stage 2	-	-	-	-	-	-	185	258	-	213	349	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.7	265.6	78.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	32	299	871	-	-	835	-	-	27	199
HCM Lane V/C Ratio	2.072	0.462	0.051	-	-	0.174	-	-	0.644	0.377
HCM Control Delay (s)	\$ 762.5	27	9.4	-	-	10.2	-	-	270.5	33.6
HCM Lane LOS	F	D	A	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	7.6	2.3	0.2	-	-	0.6	-	-	2	1.6

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
5: E Cascade Center Access & OR 211

08/09/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	781	1	1	806	0	1
Future Vol, veh/h	781	1	1	806	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	8	0	0
Mvmt Flow	849	1	1	876	0	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	850	0	1728	850
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	878	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	797	-	98	363
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	797	-	98	363
Mov Cap-2 Maneuver	-	-	-	-	235	-
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	410	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	14.9			
HCM LOS						B
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	363	-	-	797	-	
HCM Lane V/C Ratio	0.003	-	-	0.001	-	
HCM Control Delay (s)	14.9	-	-	9.5	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 6th TWSC
6: Driveway/Ridings Ave & OR 211

08/09/2021

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	764	1	1	778	18	0	0	2	15	0	29
Future Vol, veh/h	17	764	1	1	778	18	0	0	2	15	0	29
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	4	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	0	8	17	0	0	0	20	0	10
Mvmt Flow	18	804	1	1	819	19	0	0	2	16	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	842	0	0	805	0	0	1691	1685	809	1681	1676	837
Stage 1	-	-	-	-	-	-	841	841	-	835	835	-
Stage 2	-	-	-	-	-	-	850	844	-	846	841	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.3	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.3	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.68	4	3.39
Pot Cap-1 Maneuver	802	-	-	828	-	-	75	95	384	68	96	355
Stage 1	-	-	-	-	-	-	362	383	-	337	386	-
Stage 2	-	-	-	-	-	-	358	382	-	333	383	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	799	-	-	828	-	-	66	91	383	65	91	352
Mov Cap-2 Maneuver	-	-	-	-	-	-	66	91	-	65	91	-
Stage 1	-	-	-	-	-	-	347	367	-	322	384	-
Stage 2	-	-	-	-	-	-	325	380	-	316	367	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			14.5			42.5		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	383	799	-	-	828	-	-	141
HCM Lane V/C Ratio	0.005	0.022	-	-	0.001	-	-	0.328
HCM Control Delay (s)	14.5	9.6	0	-	9.4	0	-	42.5
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	1.3

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↗			↕			↕	
Traffic Vol, veh/h	4	691	52	54	720	5	47	1	48	5	2	4
Future Vol, veh/h	4	691	52	54	720	5	47	1	48	5	2	4
Conflicting Peds, #/hr	7	0	0	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	75	6	4	0	9	20	0	0	2	60	50	0
Mvmt Flow	4	712	54	56	742	5	48	1	49	5	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	754	0	0	766	0	0	1580	1586	712	1636	1638	752
Stage 1	-	-	-	-	-	-	720	720	-	864	864	-
Stage 2	-	-	-	-	-	-	860	866	-	772	774	-
Critical Hdwy	4.85	-	-	4.1	-	-	7.1	6.5	6.22	7.7	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Follow-up Hdwy	2.875	-	-	2.2	-	-	3.5	4	3.318	4.04	4.45	3.3
Pot Cap-1 Maneuver	604	-	-	856	-	-	89	109	432	59	78	413
Stage 1	-	-	-	-	-	-	422	435	-	279	312	-
Stage 2	-	-	-	-	-	-	353	373	-	317	346	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	600	-	-	856	-	-	81	100	432	49	72	410
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	100	-	49	72	-
Stage 1	-	-	-	-	-	-	419	432	-	275	290	-
Stage 2	-	-	-	-	-	-	324	346	-	278	344	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			80.4			58.1		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	137	600	-	-	856	-	-	79
HCM Lane V/C Ratio	0.722	0.007	-	-	0.065	-	-	0.144
HCM Control Delay (s)	80.4	11	-	-	9.5	-	-	58.1
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	4.2	0	-	-	0.2	-	-	0.5

HCM Signalized Intersection Capacity Analysis

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	105	415	104	28	439	48	126	83	36	76	105	169	
Future Volume (vph)	105	415	104	28	439	48	126	83	36	76	105	169	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00		
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.98		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00		
Frt	1.00	1.00	0.85	1.00	0.99			0.98			0.93		
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97			0.99		
Satd. Flow (prot)	1566	1651	1387	1662	1604			1577			1545		
Flt Permitted	0.34	1.00	1.00	0.41	1.00			0.65			0.89		
Satd. Flow (perm)	559	1651	1387	717	1604			1054			1384		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	111	437	109	29	462	51	133	87	38	80	111	178	
RTOR Reduction (vph)	0	0	59	0	5	0	0	7	0	0	39	0	
Lane Group Flow (vph)	111	437	50	29	508	0	0	251	0	0	330	0	
Confl. Peds. (#/hr)	4		1	1		4	11		4	4		11	
Confl. Bikes (#/hr)									1			3	
Heavy Vehicles (%)	6%	6%	5%	0%	8%	0%	6%	5%	4%	3%	5%	2%	
Parking (#/hr)						2			2			2	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			8			4		
Permitted Phases	2		2	6			8			4			
Actuated Green, G (s)	24.9	24.9	24.9	24.9	24.9			20.1			20.1		
Effective Green, g (s)	24.9	24.9	24.9	24.9	24.9			20.1			20.1		
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.46			0.37			0.37		
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5			4.5		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0		
Lane Grp Cap (vph)	257	761	639	330	739			392			515		
v/s Ratio Prot		0.26			c0.32								
v/s Ratio Perm	0.20		0.04	0.04				0.24			c0.24		
v/c Ratio	0.43	0.57	0.08	0.09	0.69			0.64			0.64		
Uniform Delay, d1	9.8	10.7	8.1	8.2	11.5			14.0			14.0		
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00		
Incremental Delay, d2	1.2	1.1	0.1	0.1	2.7			3.6			2.7		
Delay (s)	11.0	11.7	8.2	8.3	14.2			17.5			16.7		
Level of Service	B	B	A	A	B			B			B		
Approach Delay (s)		11.0			13.8			17.5			16.7		
Approach LOS		B			B			B			B		
Intersection Summary													
HCM 2000 Control Delay			13.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			54.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			76.6%									ICU Level of Service	D
Analysis Period (min)			15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary

8: Molalla Ave & OR 211

08/09/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	415	104	28	439	48	126	83	36	76	105	169
Future Volume (veh/h)	105	415	104	28	439	48	126	83	36	76	105	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00	0.89	1.00	1.00	0.89
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1668	1682	1750	1641	1641	1682	1682	1682	1682	1682	1682
Adj Flow Rate, veh/h	111	437	109	29	462	51	133	87	38	80	111	178
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	0	8	8	5	5	5	5	5	5
Cap, veh/h	296	824	702	389	638	70	239	137	50	144	169	227
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	858	1668	1419	873	1291	143	421	376	138	206	465	625
Grp Volume(v), veh/h	111	437	109	29	0	513	258	0	0	369	0	0
Grp Sat Flow(s),veh/h/ln	858	1668	1419	873	0	1434	935	0	0	1296	0	0
Q Serve(g_s), s	7.4	11.4	2.7	1.5	0.0	17.8	1.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	25.2	11.4	2.7	12.8	0.0	17.8	17.0	0.0	0.0	15.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.52		0.15	0.22		0.48
Lane Grp Cap(c), veh/h	296	824	702	389	0	709	426	0	0	540	0	0
V/C Ratio(X)	0.37	0.53	0.16	0.07	0.00	0.72	0.61	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	489	1200	1021	585	0	1032	647	0	0	789	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.5	11.0	8.8	15.4	0.0	12.6	17.8	0.0	0.0	17.8	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.5	0.1	0.1	0.0	1.4	1.4	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	6.8	1.4	0.5	0.0	9.0	5.9	0.0	0.0	8.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	11.5	8.9	15.4	0.0	14.0	19.2	0.0	0.0	19.3	0.0	0.0
LnGrp LOS	C	B	A	B	A	B	B	A	A	B	A	A
Approach Vol, veh/h		657			542			258			369	
Approach Delay, s/veh		13.1			14.1			19.2			19.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.8		27.5		35.8		27.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		45.5		35.5		45.5		35.5				
Max Q Clear Time (g_c+I1), s		27.2		17.8		19.8		19.0				
Green Ext Time (p_c), s		3.8		2.4		4.0		1.6				

Intersection Summary

HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Appendix F
Signal Warrant Analysis
Worksheets



KITTELSON & ASSOCIATES, INC.
 610 SW Alder, Suite 700
 Portland, Oregon 97205
 (503) 228-5230

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
12:00 AM	1:00 AM	0	0	0	0
1:00 AM		0	0	0	0
2:00 AM		0	0	0	0
3:00 AM		0	0	0	0
4:00 AM		0	0	0	0
5:00 AM		0	0	0	0
6:00 AM		284	474	7	6
7:00 AM		450	649	71	33
8:00 AM		374	457	26	12
9:00 AM		385	514	32	14
10:00 AM		432	622	41	13
11:00 AM		523	701	59	29
12:00 PM		583	672	69	30
1:00 PM		581	663	63	27
2:00 PM		596	698	64	34
3:00 PM		705	737	64	27
4:00 PM		762	806	69	25
5:00 PM		768	757	73	29
6:00 PM		670	606	63	38
7:00 PM		391	419	48	31
8:00 PM		286	320	36	11
9:00 PM		207	168	25	7
10:00 PM		0	0	0	0
11:00 PM		0	0	0	0

Project #: 26752
Project Name: Cascade Center Multi-Family
Analyst: ZHB
Date: 8/9/2021
File: H:\26\26752 - Cascade Center Multi-Family\Signal warrant\Signal Warrant_OR 211 Leroy_total.xls>Data Input
Intersection: OR 211/Leroy Ave
Scenario: Year 2022 Total Traffic

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Daily

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	600	150	0	No	No
	B	900	75	0	No	No
80%	A	480	120	0	No	Yes
	B	720	60	8	Yes	Yes
70%	A	420	105	0	No	Yes
	B	630	53	9	Yes	Yes
56%	A	336	84	0	No	Yes
	B	504	42	10	Yes	Yes

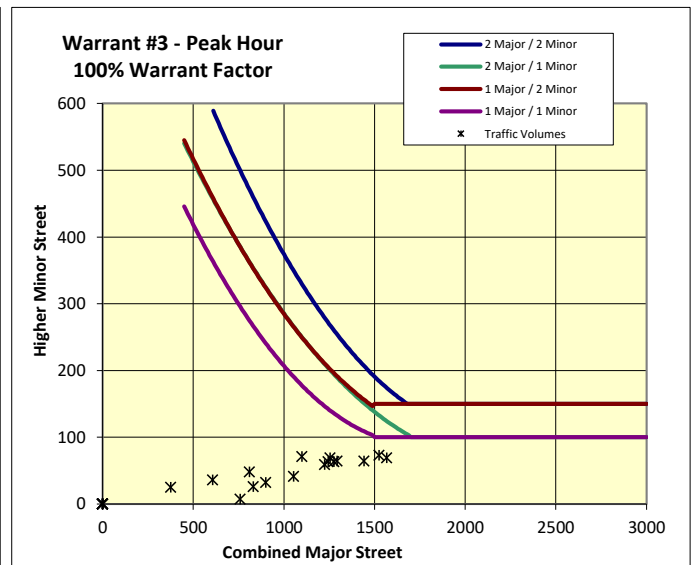
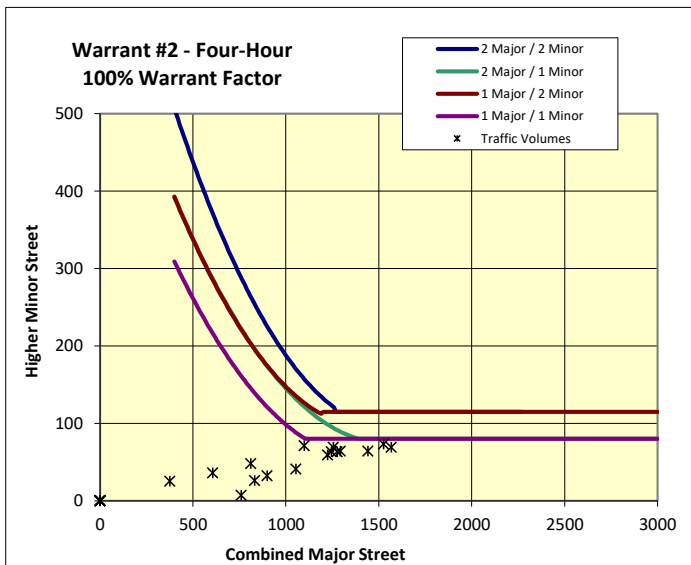


Exhibit E: Preliminary Stormwater Report

Cascade Place Molalla, Oregon Preliminary Stormwater Report

Date: August 2021

Client: I & E Construction, Inc

Engineering Contact: Lawrence Pankey, PE

Prepared By: Vu Nguyen, PE

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

AKS Job Number: 7710-01



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- Appendix E:** Soils Information from the USDA NRCS Soil Survey of Clackamas County, Oregon
- Appendix F:** Relevant Information from Technical Release 55 Urban Hydrology for Small Watersheds, ODOT Hydraulics Manual, City of Molalla Public Works Design Standard, and City of Molalla Stormwater Master Plan

Preliminary Stormwater Report

CASCADE PLACE, MOLALLA, OREGON

1.0 Purpose of Report

The purpose of this report is to analyze the effect development of this site will have on the downstream stormwater conveyance system, document the criteria the proposed stormwater system was designed to meet, identify the sources of information on which the analysis was based, detail the design methodology, and document the results of the analysis.

2.0 Project Location/Description

The subject site is located on Tax Lots 4500, 4600, 4601, 4700, and 5000 of Clackamas County Assessor's Map 5 2E 08C. The site is located south of OR Highway 211 and the Cascade Center commercial development that is currently under construction, and is bisected by the extension of Leroy Avenue that is also currently under construction. Currently the site area drains to the north and west. The stormwater runoff from the developed site will be routed to Stormfilter catch basins located throughout the site for treatment and then conveyed to two underground stormwater detention pipe systems. From there, runoff from the west side of Leroy will be discharged to the storm drain stub provided by the Cascade Center commercial development. Runoff from the east side of Leroy will be discharged to the public storm system in OR highway 211 via a new storm drain pipe.

3.0 Regulatory Design Criteria

3.1 Stormwater Quantity Management Criteria

3.1.1 City of Molalla Standards

The site will provide stormwater quantity management per City of Molalla requirements, including:

- Stormwater quantity on-site detention facilities shall be designed to capture runoff so the post-development runoff rates from the site do not exceed the predevelopment runoff rates, based on a 2- through 25-year, 24-hour return storm.
- Sizing the storm sewer pipes to convey stormwater flows for the 25-year storm.
- Providing an emergency overflow calculation for the 100-year storm.

The underground stormwater facilities for the subject site were designed to meet the above criteria for detention, conveyance, and overflow.

3.2 Stormwater Quality Management Criteria

3.2.1 Oregon Department of Transportation (ODOT) Standards

The stormwater facilities will provide stormwater quality management per ODOT standards, detailed in the ODOT *Hydraulics Design Manual* (April 2014), which require the water quality design flow rate generated by 50 percent of the 2-year, 24-hour storm (2.5 inches) to be treated. The water quality design storm depth is 1.25 inches.

3.2.2 City of Molalla Standards

Per Section 3.5.1.c of the *2020 Molalla Standard Specifications for Public Works Construction*, stormwater quality facilities shall be designed to capture and treat 80% of the average annual runoff volume, to the maximum extent possible, with the goal of 70% total suspended solids (TSS) removal. I

4.0 Design Methodology

The Santa Barbara Urban Hydrograph (SBUH) Method was used to design the stormwater facilities. The SBUH Method utilizes the Natural Resources Conservation Service (NRCS) Type 1A 24-hour storm. HydroCAD computer software aided in the analysis. Representative runoff curve numbers (CN) were obtained from the *Technical Release 55 Urban Hydrology for Small Watersheds* and are included in Appendix F.

5.0 Design Parameters

5.1 Design Storm

5.1.1 On-Site Inlet and Conduit Sizing

Stormwater inlets for the site will be placed at locations that will adequately control stormwater runoff from drive aisles and parking lots. The on-site stormwater pipes will be sized using Manning's equation, based on peak flows for the 25-year, 24-hour storm event and per the Oregon Plumbing Specialty Code.

5.1.2 Upstream Basin

Stormwater runoff from the off-site upstream basin along the southern property line of the site is captured and treated on the existing Stoneplace Apartments site.

5.2 Predeveloped Site Topography and Land Use

5.2.1 Site Topography

Generally, the site has topography with slopes of less than 5%. The vegetative cover of the site consists of grass and brush.

5.2.2 Land Use

Currently, the site is vacant.

5.3 Soil Type

The soils for this site are classified as Clackamas silt loam (hydrologic group "C/D") and Sawtell silt loam (hydrologic group "C") by the USDA NRCS Web Soil Survey for Clackamas County. Information on these soil types is provided in Appendix E.

5.4 Post-developed Site Topography and Land Use

5.4.1 Site Topography

The post-developed site topography will be altered from the predeveloped site topography to allow for the construction of parking lots, drive aisles, multi-family residential buildings, concrete sidewalks, and other associated infrastructure and features.

5.4.2 Land Use

The post-developed land use will consist of a multi-family residential apartment community.

5.4.4 Post-Developed Input Parameters

Appendices B.2, C.2, and C.3 provide the HydroCAD reports and input parameters that were generated for the analyzed storm events with respect to the site improvements contributing to the drainage basins.

5.5 Description of Off-Site Contributory Basins

There are no off-site stormwater runoff basins contributing to this site (other than the basins described in Section 5.1.2).

6.0 Calculation Methodology

6.1 Proposed Stormwater Conduit Sizing and Inlet Spacing

To meet standards for a private site, the on-site stormwater conduits will be sized per the Oregon Plumbing Specialty Code and will be sized using Manning's equation, based on peak flows for the 25-year, 24-hour storm event. Catch basins will be placed at locations to adequately convey stormwater runoff from the drive aisles and parking lots.

6.2 Proposed Stormwater Quantity Control Facility Design

This project includes 600 LF of 36-inch diameter pipe that will be installed under parking lot/drive aisle on the west side and 1200 LF of 36-inch diameter pipe that will be installed under parking lot/drive aisle on the east side. The system was designed to accommodate flows generated by the developed areas of the subject property and to meet City of Molalla water quantity requirements (described in Section 3.1).

6.3 Proposed Stormwater Quality Facility Design

The Storm filter catch basins were sized to treat stormwater runoff from impervious area generated by the 1.25-inch storm. The design flow rate for treatment on the west side is 0.40 cubic feet per second (cfs) and 0.88 cfs on the east side. Stormfilter catch basins with a total of 43 cartridges (each 18-inch cartridge can treat up to 0.03 cfs) will be used to accommodate flows generated by developed areas of the subject property in compliance with ODOT water quality requirements (described in Section 3.2).

6.4 Emergency Overflow Calculations

The flow-control manholes were designed to allow overflow stormwater runoff to flow through the overflow riser inside the flow-control manholes and continue flow downstream conveyance system.

6.5 Downstream Analysis

The underground stormwater detention pipe systems have been designed such that the duration and rate of stormwater peak flow from the post-developed site for the 2- through 25-year storm will be less than the duration and rate of peak flow from the pre-developed site for the 2- through 25-year storm. For the west side of Leroy Avenue, the stormwater discharge from the underground detention pipe system will flow to the stormwater system currently under construction as part of the Cascade Center commercial development. For the east side of Leroy Avenue, the stormwater discharge from the underground detention pipe system will flow to the existing public stormwater conveyance system in OR Highway 211. This development will not negatively impact the downstream capacity.

7.0 Stormwater Summary Table

The tables below summarize the pre-developed and post-developed peak flows for each storm event that is routed to the new stormwater facility:

Table 7.1 Pre-Developed Peak Flow for 2, 10, & 25-year Storm Event

Catchment	Peak Flows (cfs)		
	2-YR	10-YR	25-YR
W (Pre-Developed)	0.34	0.69	0.87
E (Pre-Developed)	0.77	1.46	1.81

Table 7.2 West Post-Developed Peak Flow for 2, 10, & 25-year Storm Event

Catchment	Peak Flows (cfs)		
	2-YR	10-YR	25-YR
W (Post-Developed)	0.98	1.45	1.68
Allowable Release Rate*	0.34	0.69	0.87
Design Release Rate	0.31	0.66	0.79

Table 7.3 East Post-Developed Peak Flow for 2, 10, & 25-year Storm Event

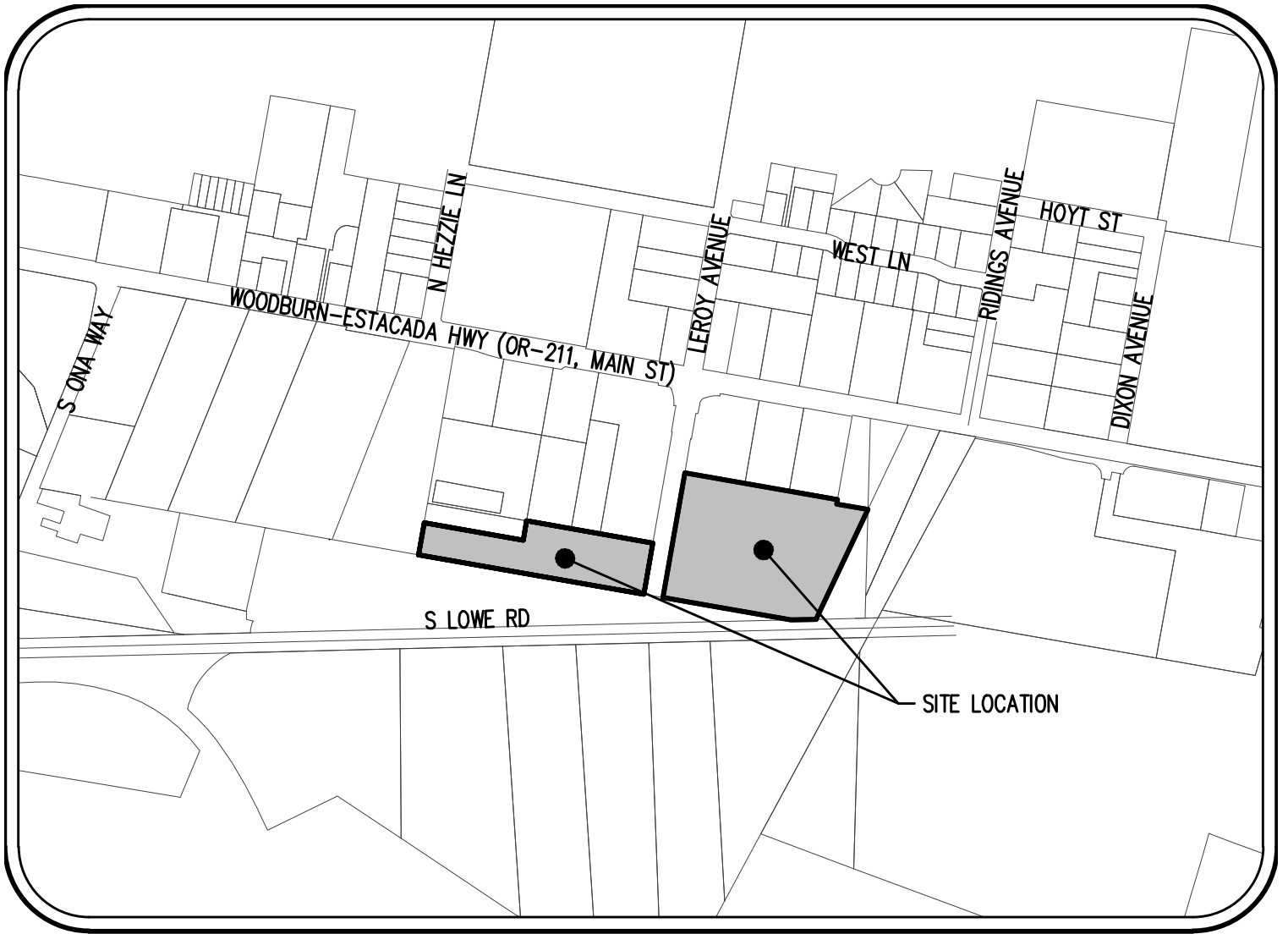
Catchment	Peak Flows (cfs)		
	2-YR	10-YR	25-YR
E (Post-Developed)	2.12	3.14	3.63
Allowable Release Rate*	0.77	1.46	1.81
Design Release Rate	0.76	1.41	1.69

*The allowable release rate for the post-developed 2-year storm event per City of Molalla standards is equal to the pre-developed peak flow rate for the 2-year storm.

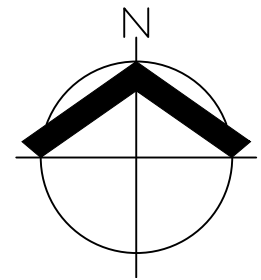
*The allowable release rate for the post-developed 10-year storm event per City of Molalla standards is equal to the pre-developed peak flow rate for the 10-year storm.

*The allowable release rate for the post-developed 25-year storm event per City of Molalla standards is equal to the pre-developed peak flow rate for the 25-year storm.

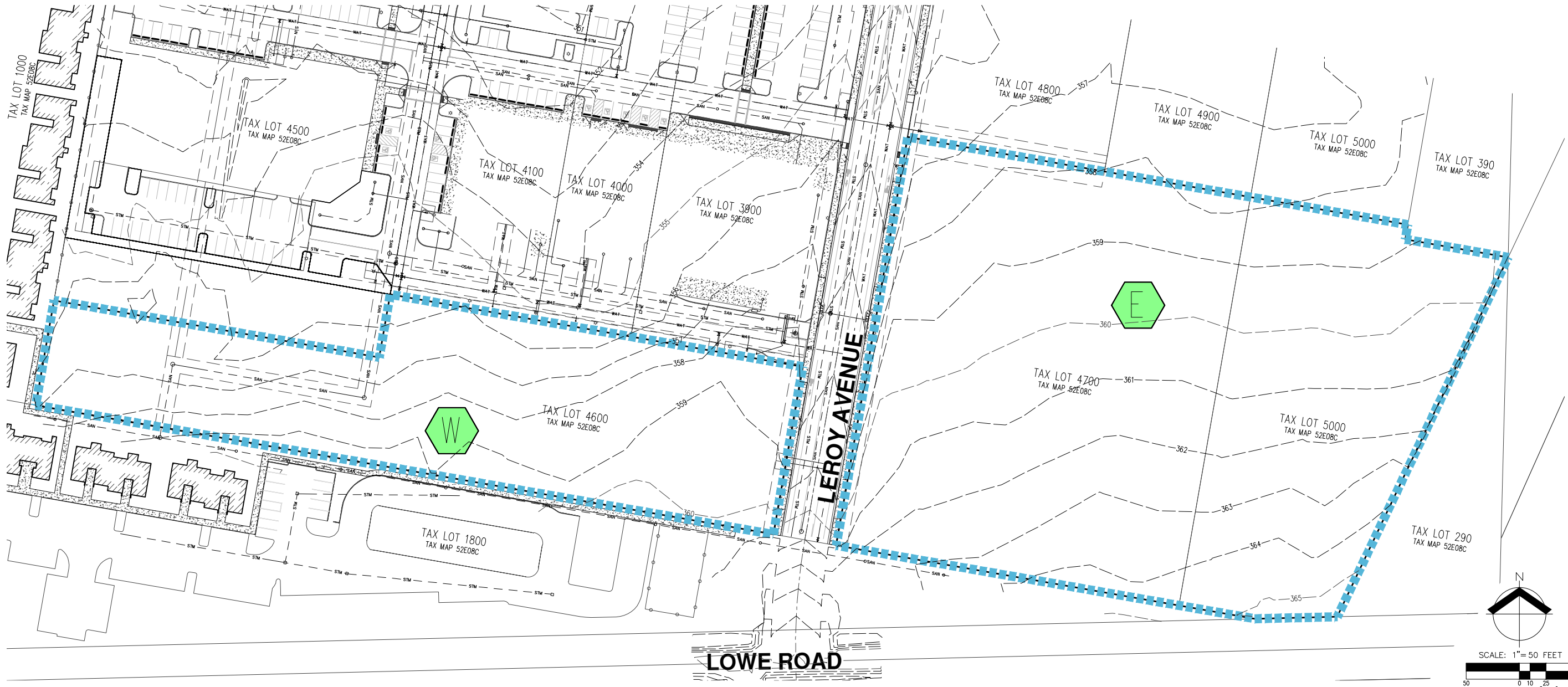
Appendix A: Vicinity Map



VICINITY MAP



Appendix B.1: Pre-Developed Catchment Map and Detail



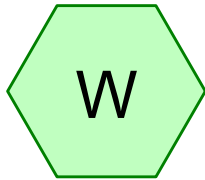
PRE-DEVELOPED CATCHMENT MAP AND DETAIL

**CASCADE PLACE
 MULTI-FAMILY
 MOLALLA, OREGON**

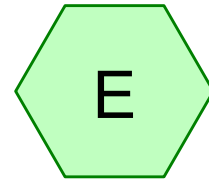


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DATE:	
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DRAWN BY:	JJA
CHECKED BY:	MBH

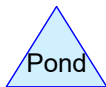
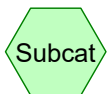
**Appendix B.2:
Pre-Developed Hydrograph and Flow
Information 2, 10, & 25-Year Storm Event**



WEST
PRE-DEVELOPMENT



EAST
PRE-DEVELOPMENT



Routing Diagram for 7710-01 HydroCAD Pre
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7710-01 HydroCAD Pre

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
240,122	84	Lawns - Grass cover 50% to 75% (E, W)
56,628	79	Lawns - Grass cover 50% to 75% (W)

7710-01 HydroCAD Pre

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Type IA 24-hr 2-YR Rainfall=2.50"

Printed 7/29/2021

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EAST

Runoff Area=202,740 sf 0.00% Impervious Runoff Depth>1.10"

Flow Length=300' Slope=0.0150 '/' Tc=29.4 min CN=84/0 Runoff=0.77 cfs 18,541 cf

Subcatchment W: WEST

Runoff Area=94,010 sf 0.00% Impervious Runoff Depth>0.93"

Flow Length=150' Slope=0.0200 '/' Tc=15.0 min CN=81/0 Runoff=0.34 cfs 7,316 cf

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Prepared by AKS Engineering & Forestry, LLC

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Type IA 24-hr 2-YR Rainfall=2.50"

Printed 7/29/2021

Summary for Subcatchment E: EAST PRE-DEVELOPMENT

Runoff = 0.77 cfs @ 8.20 hrs, Volume= 18,541 cf, Depth> 1.10"

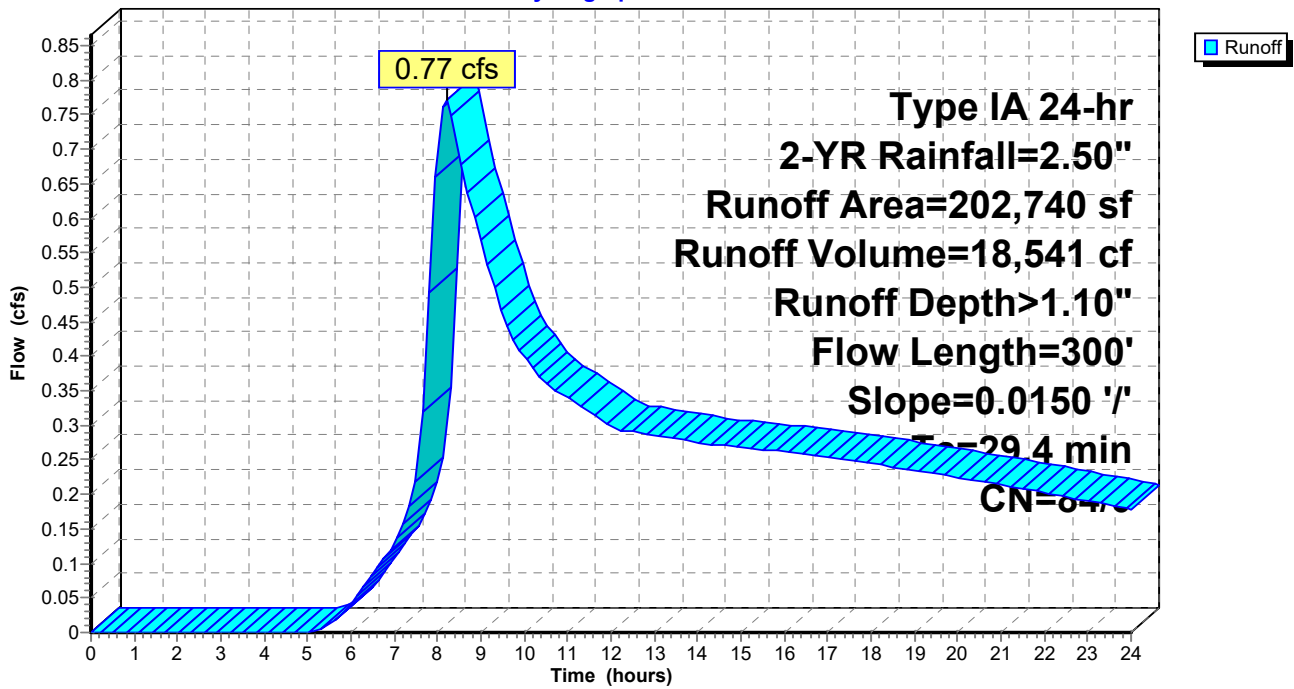
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 2-YR Rainfall=2.50"

Area (sf)	CN	Description
* 202,740	84	Lawns - Grass cover 50% to 75%
202,740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	300	0.0150	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

Subcatchment E: EAST PRE-DEVELOPMENT

Hydrograph



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Type IA 24-hr 2-YR Rainfall=2.50"

Printed 7/29/2021

Summary for Subcatchment W: WEST PRE-DEVELOPMENT

Runoff = 0.34 cfs @ 8.12 hrs, Volume= 7,316 cf, Depth> 0.93"

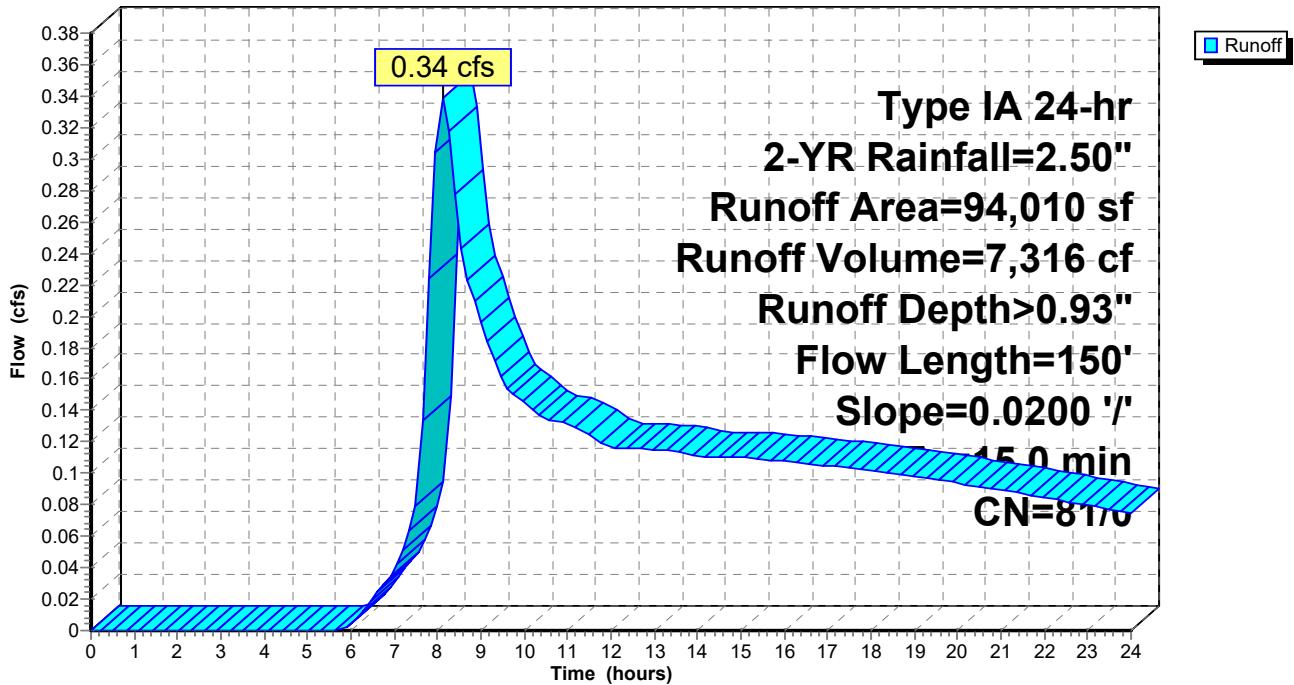
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Type IA 24-hr 2-YR Rainfall=2.50"

	Area (sf)	CN	Description
*	56,628	79	Lawns - Grass cover 50% to 75%
*	37,382	84	Lawns - Grass cover 50% to 75%
	94,010	81	Weighted Average
	94,010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	150	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

Subcatchment W: WEST PRE-DEVELOPMENT

Hydrograph



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Type IA 24-hr 10-YR Rainfall=3.45"

Printed 7/29/2021

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EAST

Runoff Area=202,740 sf 0.00% Impervious Runoff Depth>1.87"

Flow Length=300' Slope=0.0150 '/' Tc=29.4 min CN=84/0 Runoff=1.46 cfs 31,519 cf

Subcatchment W: WEST

Runoff Area=94,010 sf 0.00% Impervious Runoff Depth>1.65"

Flow Length=150' Slope=0.0200 '/' Tc=15.0 min CN=81/0 Runoff=0.69 cfs 12,964 cf

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Type IA 24-hr 10-YR Rainfall=3.45"

Printed 7/29/2021

Summary for Subcatchment E: EAST PRE-DEVELOPMENT

Runoff = 1.46 cfs @ 8.17 hrs, Volume= 31,519 cf, Depth> 1.87"

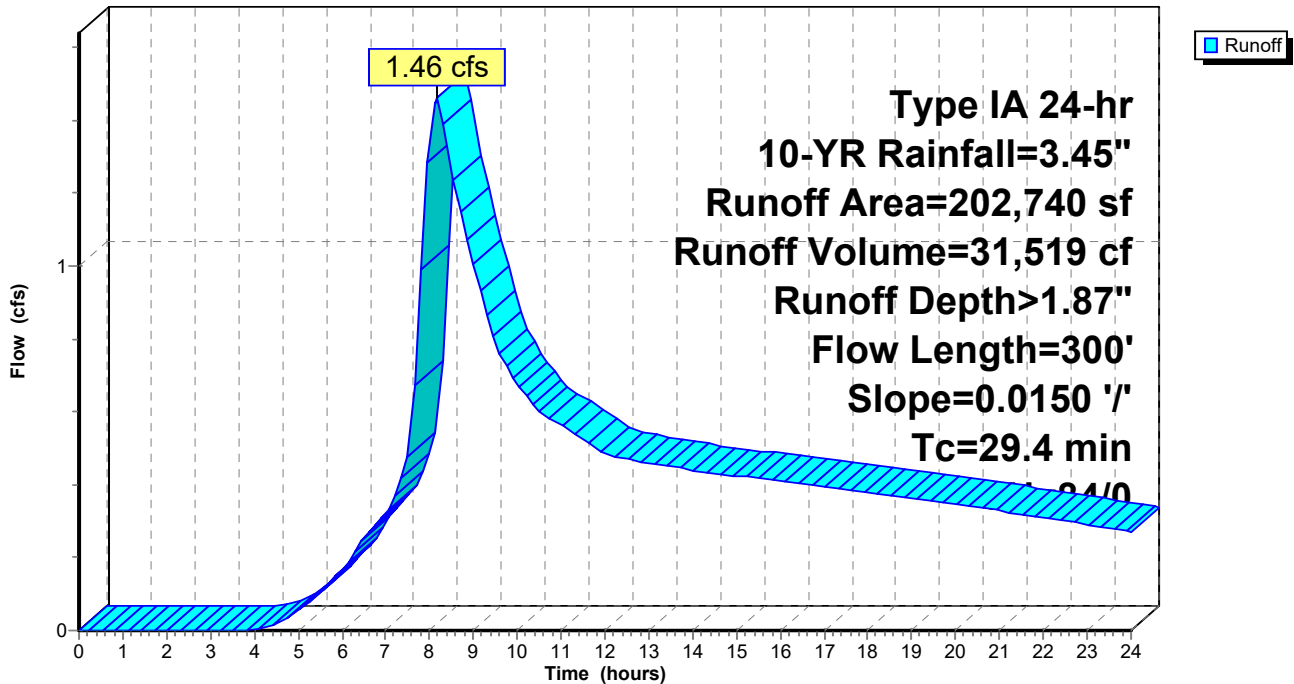
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Type IA 24-hr 10-YR Rainfall=3.45"

Area (sf)	CN	Description
* 202,740	84	Lawns - Grass cover 50% to 75%
202,740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	300	0.0150	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

Subcatchment E: EAST PRE-DEVELOPMENT

Hydrograph



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Type IA 24-hr 10-YR Rainfall=3.45"

Printed 7/29/2021

Summary for Subcatchment W: WEST PRE-DEVELOPMENT

Runoff = 0.69 cfs @ 8.09 hrs, Volume= 12,964 cf, Depth> 1.65"

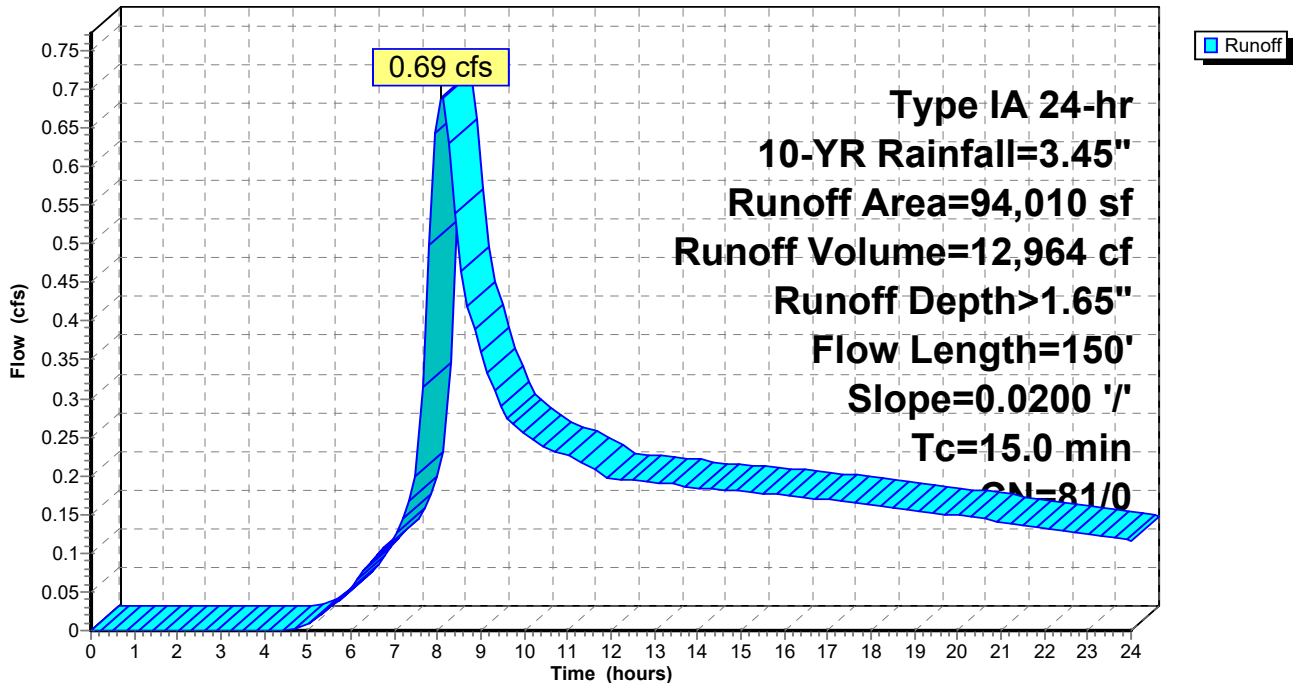
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Type IA 24-hr 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	56,628	79	Lawns - Grass cover 50% to 75%
*	37,382	84	Lawns - Grass cover 50% to 75%
	94,010	81	Weighted Average
	94,010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	150	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

Subcatchment W: WEST PRE-DEVELOPMENT

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EAST

Runoff Area=202,740 sf 0.00% Impervious Runoff Depth>2.25"

Flow Length=300' Slope=0.0150 '/ Tc=29.4 min CN=84/0 Runoff=1.81 cfs 38,023 cf

Subcatchment W: WEST

Runoff Area=94,010 sf 0.00% Impervious Runoff Depth>2.02"

Flow Length=150' Slope=0.0200 '/ Tc=15.0 min CN=81/0 Runoff=0.87 cfs 15,841 cf

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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment E: EAST PRE-DEVELOPMENT

Runoff = 1.81 cfs @ 8.16 hrs, Volume= 38,023 cf, Depth> 2.25"

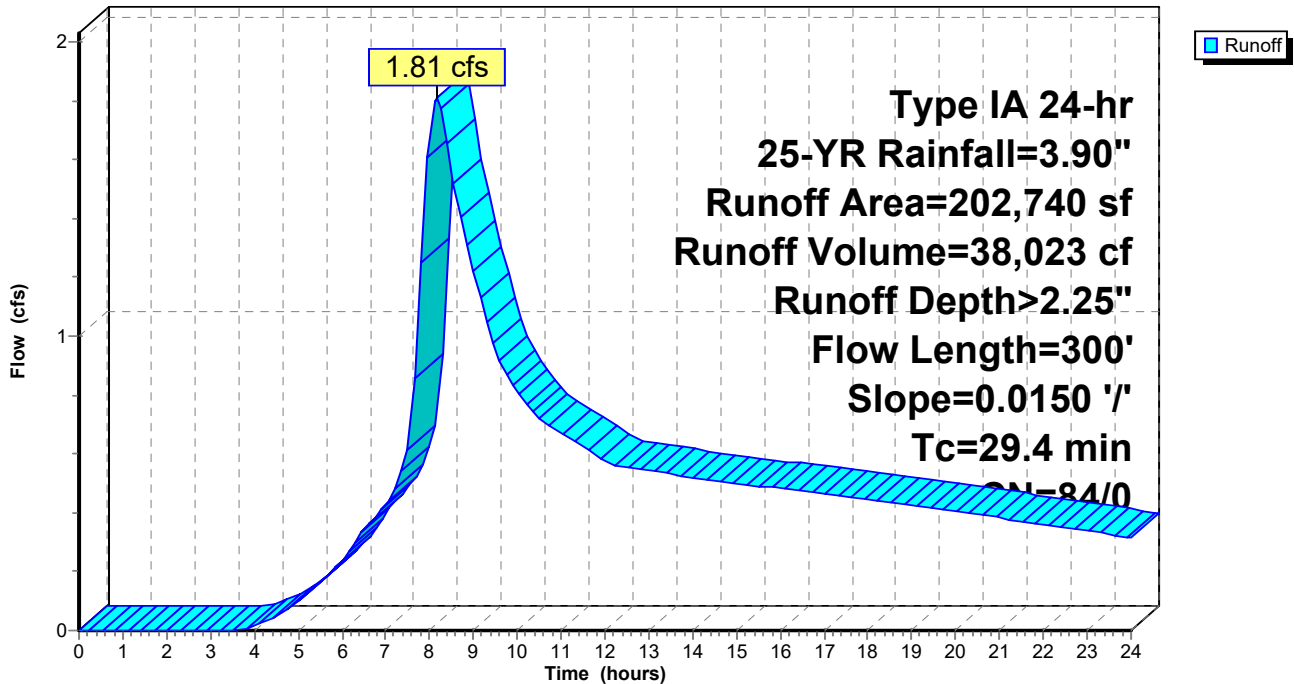
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Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
* 202,740	84	Lawns - Grass cover 50% to 75%
202,740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	300	0.0150	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

Subcatchment E: EAST PRE-DEVELOPMENT

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

Printed 7/29/2021

Summary for Subcatchment W: WEST PRE-DEVELOPMENT

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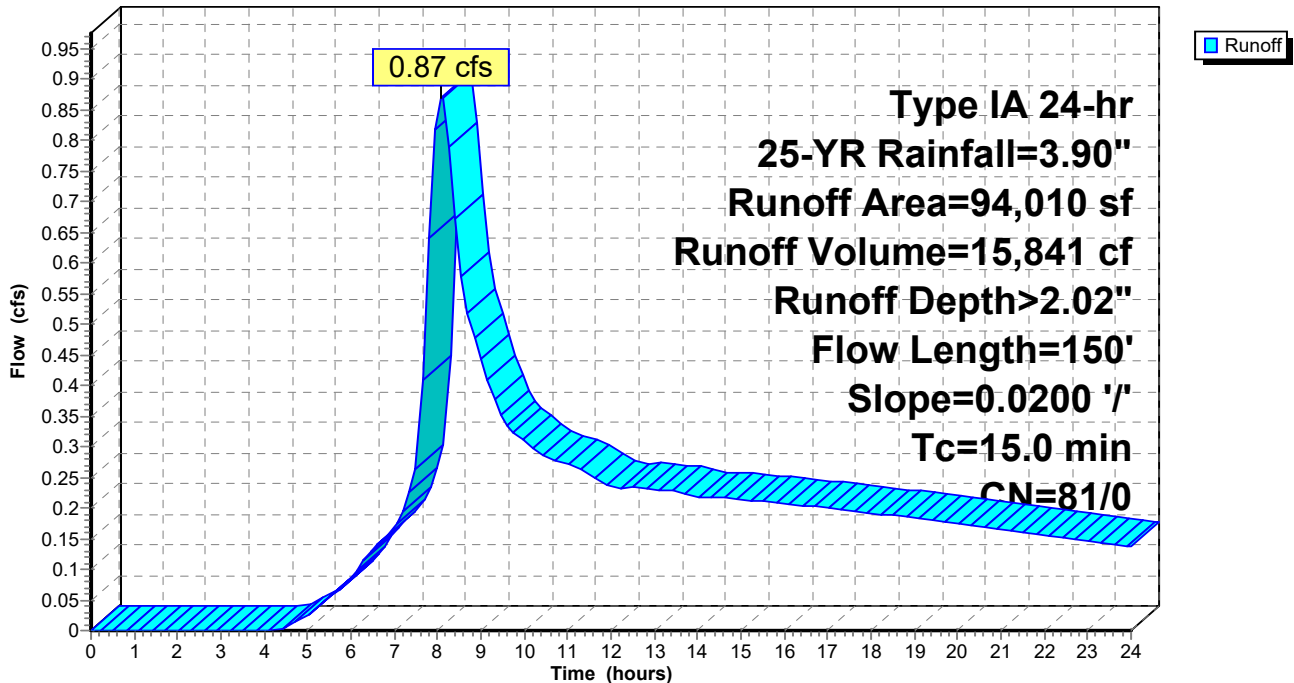
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Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	56,628	79	Lawns - Grass cover 50% to 75%
*	37,382	84	Lawns - Grass cover 50% to 75%
	94,010	81	Weighted Average
	94,010		100.00% Pervious Area

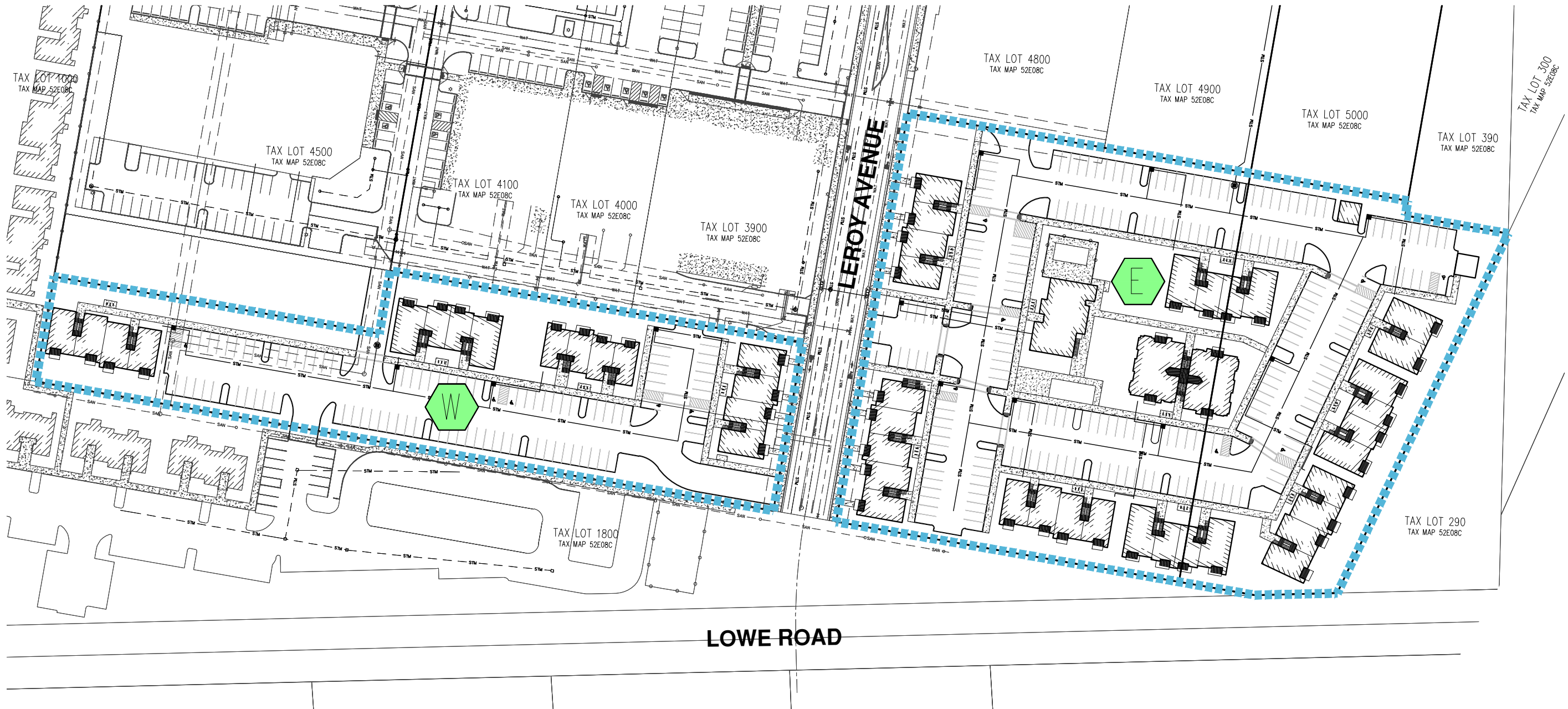
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Subcatchment W: WEST PRE-DEVELOPMENT

Hydrograph



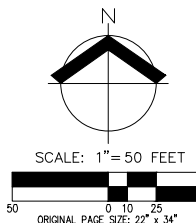
Appendix C.1: Post-Developed Catchment Map and Detail



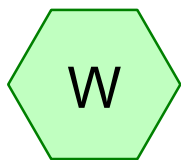
POST-DEVELOPED CATCHMENT MAP AND DETAIL
CASCADE PLACE
MULTI-FAMILY
MOLALLA, OREGON



JOB NUMBER:	7710-01
DATE:	
DESIGNED BY:	LTP
DRAWN BY:	JJA
CHECKED BY:	MBH



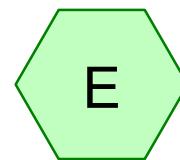
**Appendix C.2:
Post-Developed Hydrograph and Flow
Information Water Quality Storm Event**



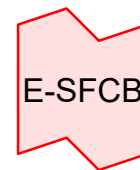
WEST
POST-DEVELOPED
IMPERVIOUS AREA



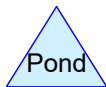
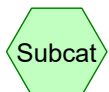
West Stormfilter CBs



EAST
POST-DEVELOPED
IMPERVIOUS AREA



East Stormfilter CBs



Routing Diagram for 7710-01 HydroCAD Water Quality
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7710-01 HydroCAD Water Quality

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
209,200	98	Impervious (E, W)

7710-01 HydroCAD Water Quality

Type IA 24-hr WATER QUALITY Rainfall=1.25"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Weighted-CN

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

Subcatchment E: EAST

Runoff Area=143,300 sf 100.00% Impervious Runoff Depth>1.03"
Tc=5.0 min CN=98 Runoff=0.88 cfs 12,331 cf

Subcatchment W: WEST

Runoff Area=65,900 sf 100.00% Impervious Runoff Depth>1.03"
Tc=5.0 min CN=98 Runoff=0.40 cfs 5,671 cf

Link E-SFCB: East Stormfilter CBs

Inflow=0.88 cfs 12,331 cf
Primary=0.88 cfs 12,331 cf

Link W-SFCB: West Stormfilter CBs

Inflow=0.40 cfs 5,671 cf
Primary=0.40 cfs 5,671 cf

7710-01 HydroCAD Water Quality

Type IA 24-hr WATER QUALITY Rainfall=1.25"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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Summary for Subcatchment E: EAST POST-DEVELOPED IMPERVIOUS AREA

Runoff = 0.88 cfs @ 7.93 hrs, Volume= 12,331 cf, Depth> 1.03"

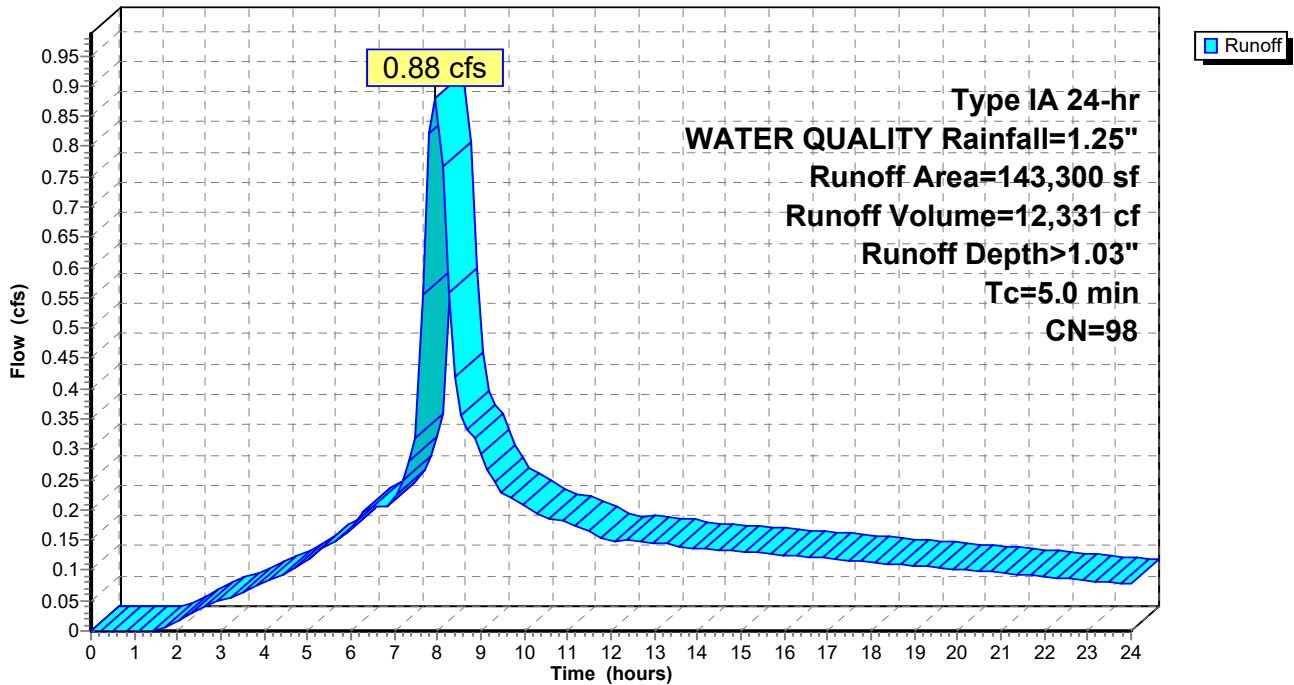
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Type IA 24-hr WATER QUALITY Rainfall=1.25"

Area (sf)	CN	Description
* 143,300	98	Impervious
143,300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment E: EAST POST-DEVELOPED IMPERVIOUS AREA

Hydrograph



7710-01 HydroCAD Water Quality

Type IA 24-hr WATER QUALITY Rainfall=1.25"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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Summary for Subcatchment W: WEST POST-DEVELOPED IMPERVIOUS AREA

Runoff = 0.40 cfs @ 7.93 hrs, Volume= 5,671 cf, Depth> 1.03"

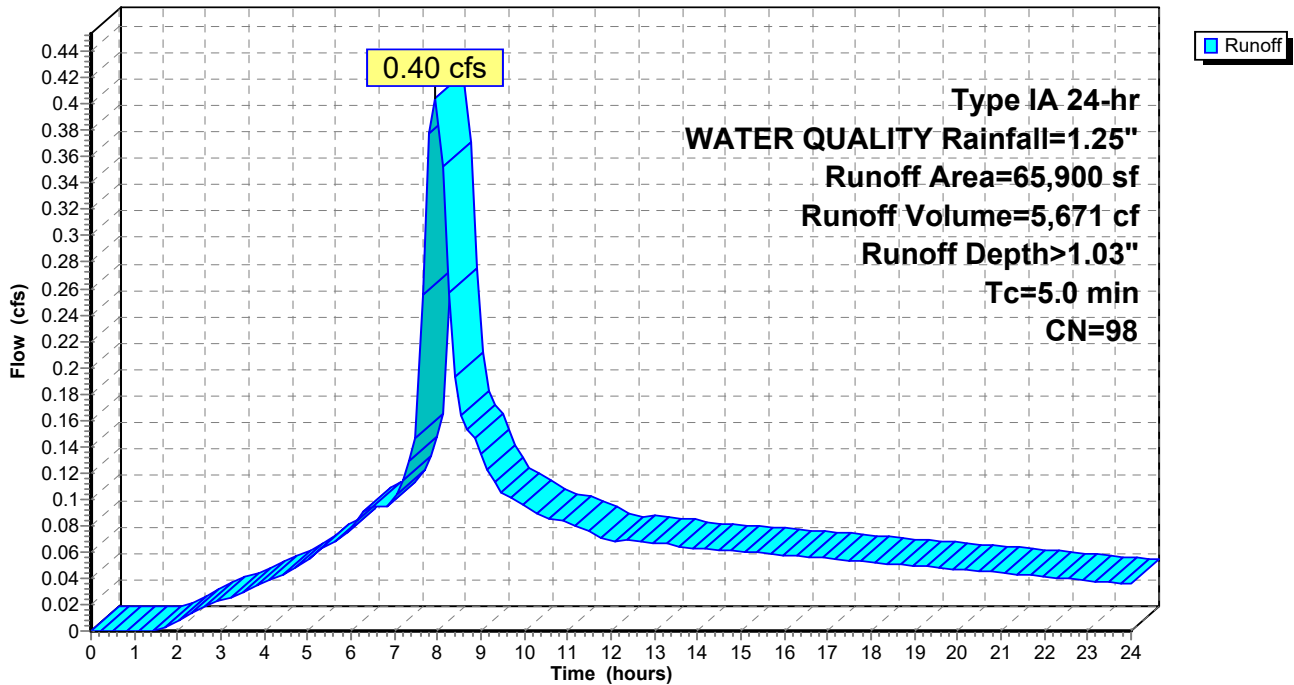
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Type IA 24-hr WATER QUALITY Rainfall=1.25"

Area (sf)	CN	Description
* 65,900	98	Impervious
65,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment W: WEST POST-DEVELOPED IMPERVIOUS AREA

Hydrograph

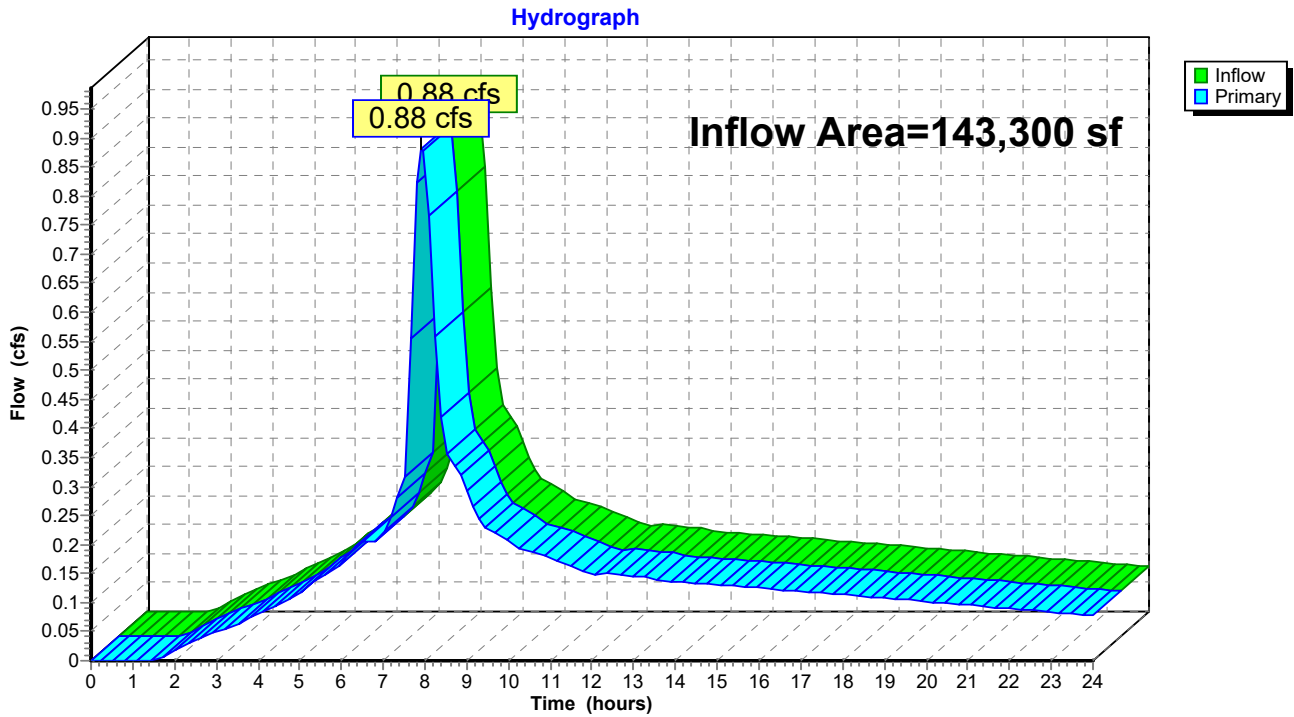


Summary for Link E-SFCB: East Stormfilter CBs

Inflow Area = 143,300 sf, 100.00% Impervious, Inflow Depth > 1.03" for WATER QUALITY event
Inflow = 0.88 cfs @ 7.93 hrs, Volume= 12,331 cf
Primary = 0.88 cfs @ 7.93 hrs, Volume= 12,331 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs

Link E-SFCB: East Stormfilter CBs

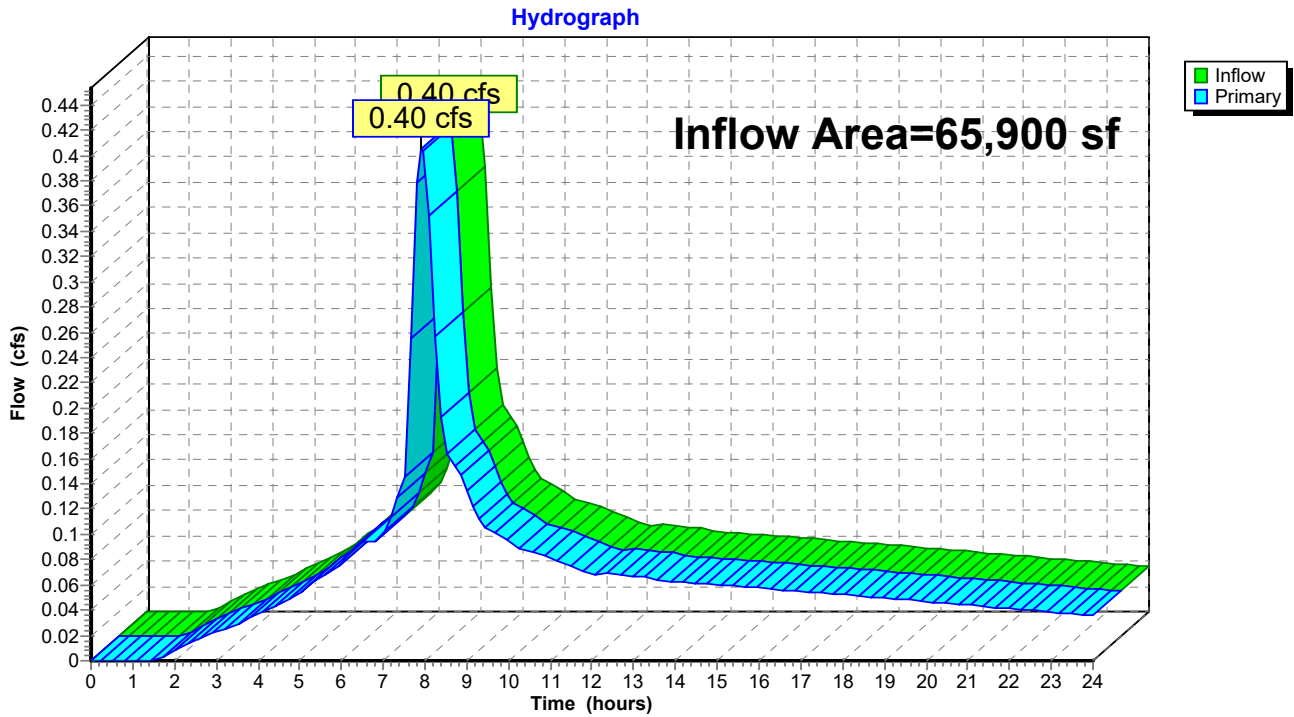


Summary for Link W-SFCB: West Stormfilter CBs

Inflow Area = 65,900 sf, 100.00% Impervious, Inflow Depth > 1.03" for WATER QUALITY event
Inflow = 0.40 cfs @ 7.93 hrs, Volume= 5,671 cf
Primary = 0.40 cfs @ 7.93 hrs, Volume= 5,671 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs

Link W-SFCB: West Stormfilter CBs



STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

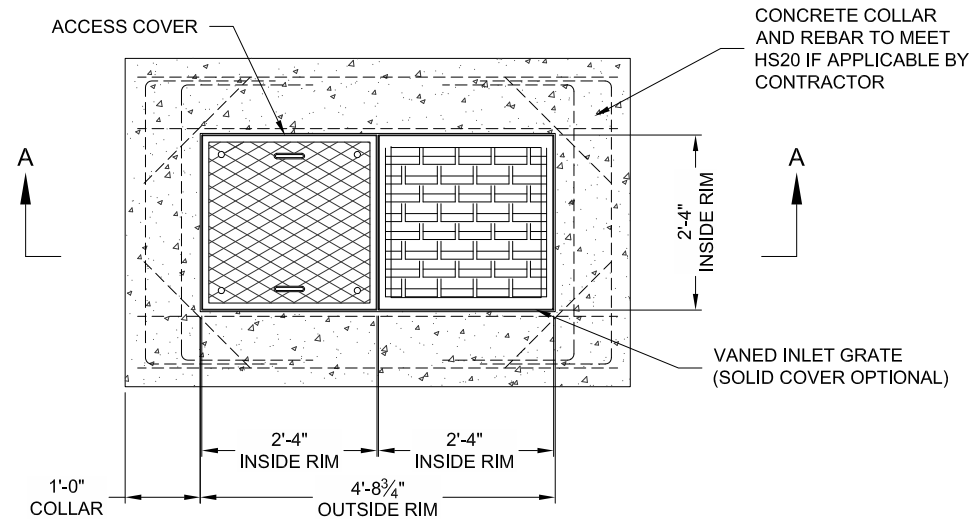
* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES

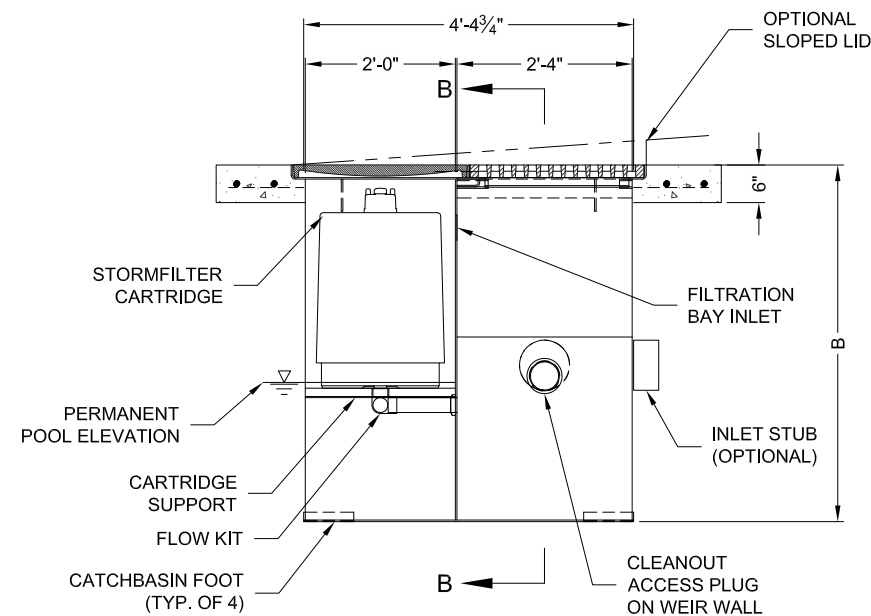
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
- STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES

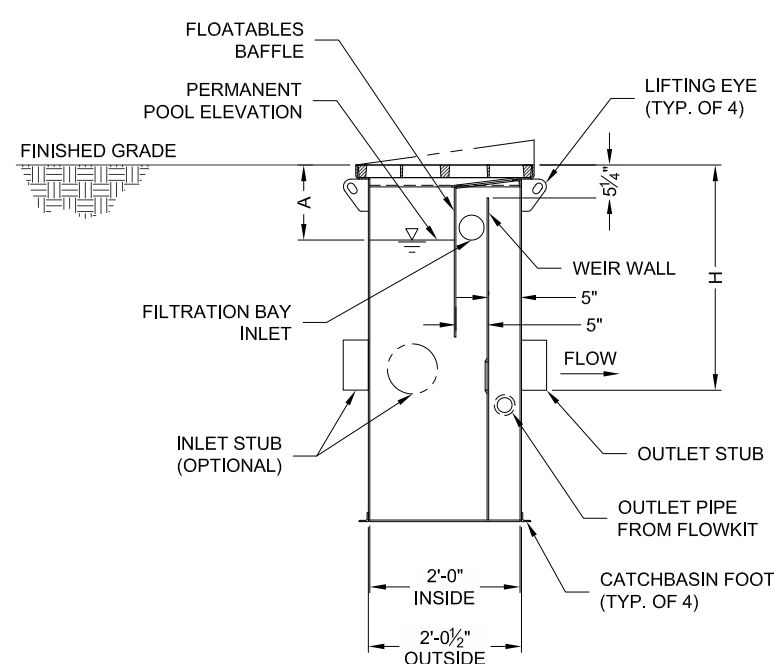
- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.



PLAN VIEW



SECTION A-A

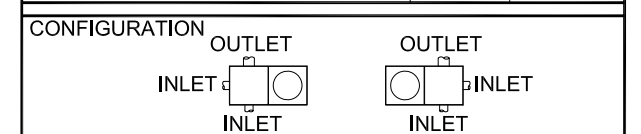


SECTION B-B

1-CARTRIDGE CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE HEIGHT (27", 18", 18" DEEP)	XX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"



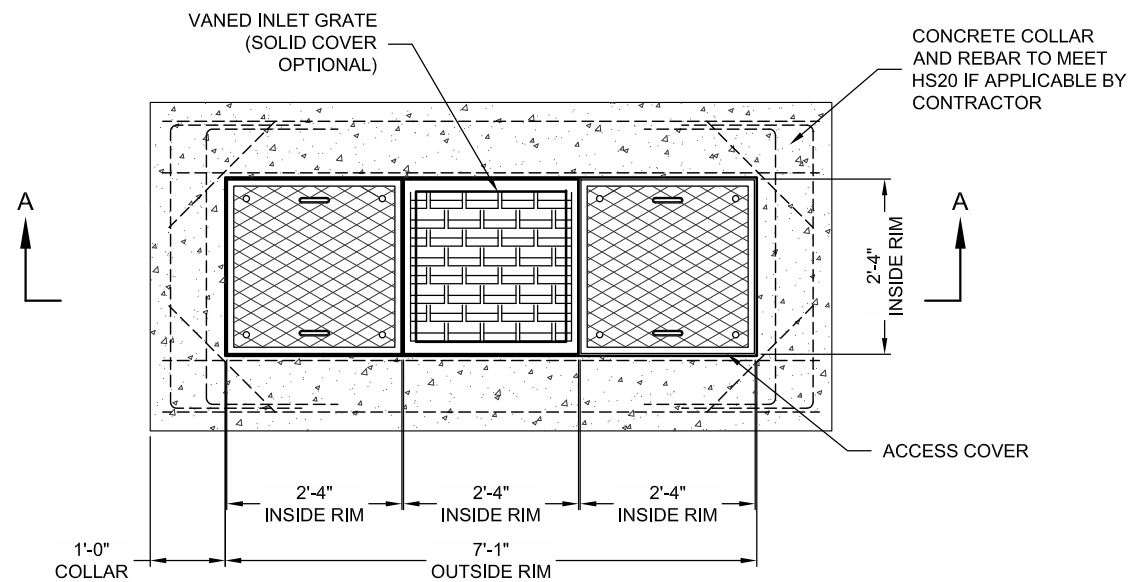
SLOPED LID	YES/NO
SOLID COVER	YES/NO
NOTES/SPECIAL REQUIREMENTS:	



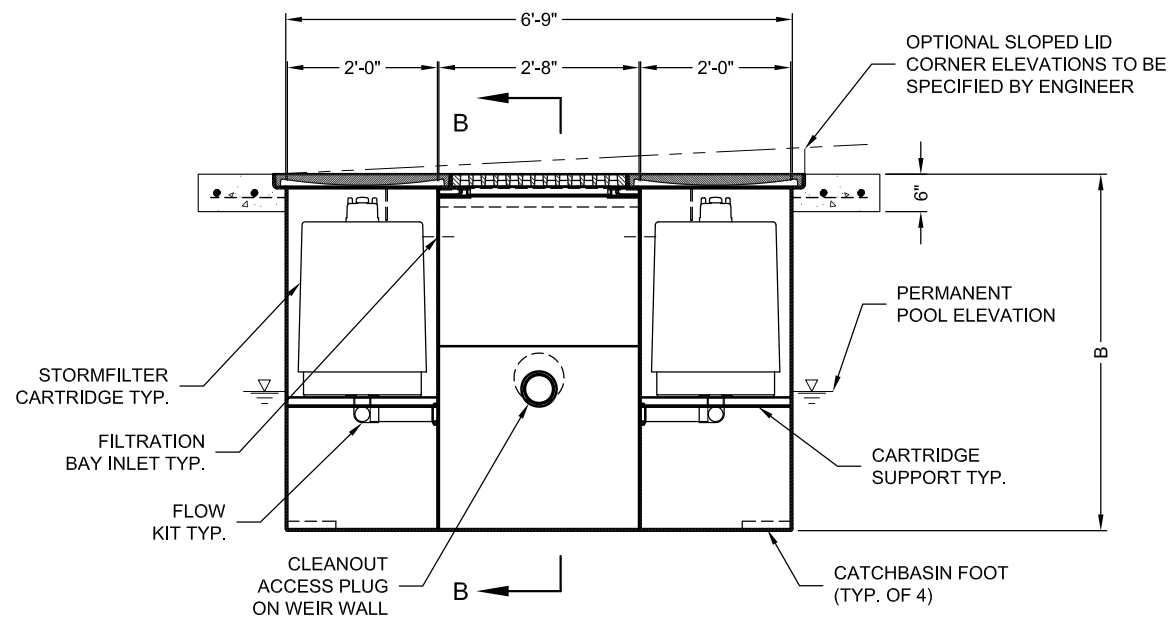
CONTECH
ENGINEERED SOLUTIONS LLC

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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-526-3999 513-645-7000 513-645-7993 FAX

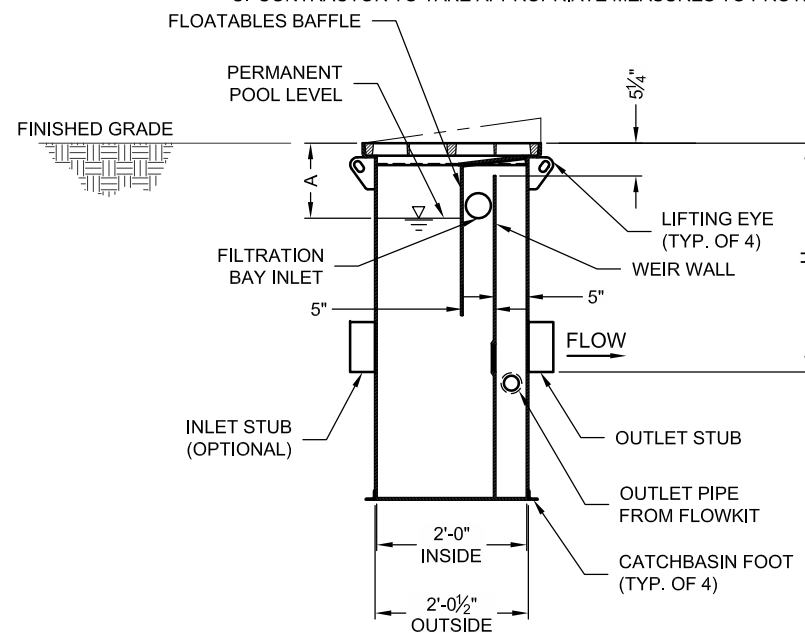
1 CARTRIDGE CATCHBASIN
STORMFILTER
STANDARD DETAIL



PLAN VIEW



SECTION A-A



SECTION B-B

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 2 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF TWO CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.75	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. WWW.CONTECHES.COM
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
- STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

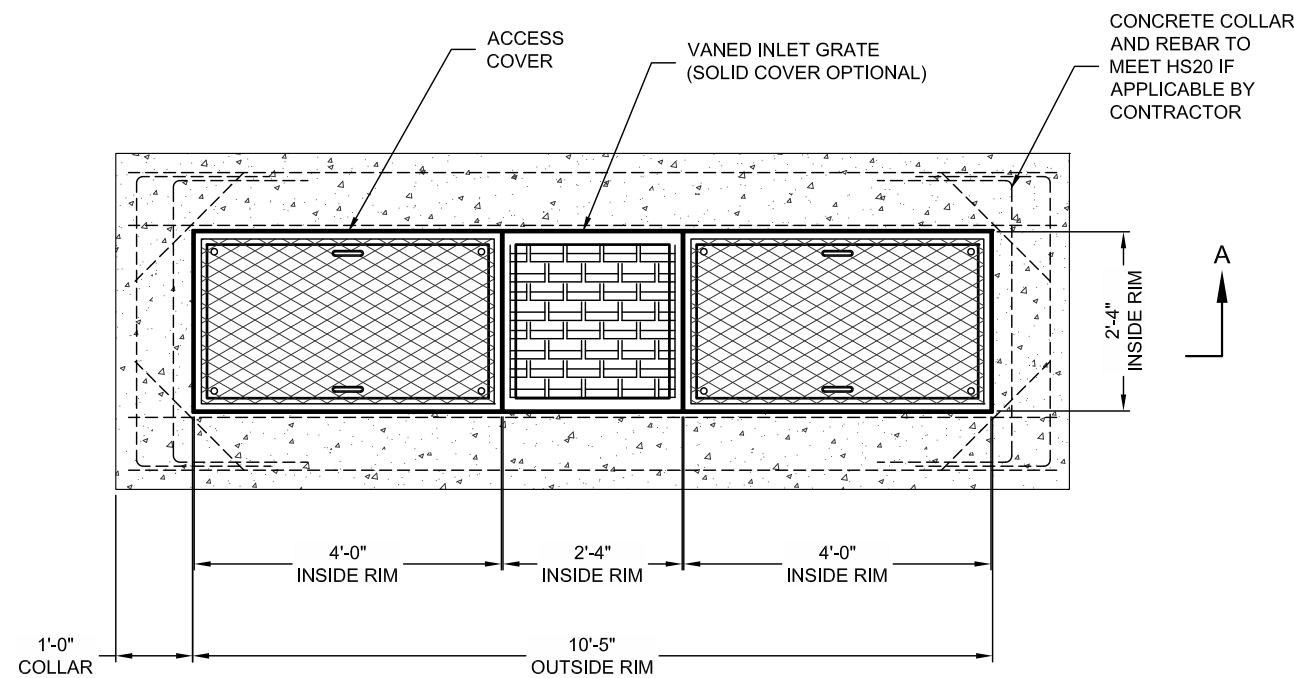
2-CARTRIDGE DEEP CATCHBASIN STORMFILTER DATA		
STRUCTURE ID	XXX	
WATER QUALITY FLOW RATE (cfs)	X.XX	
PEAK FLOW RATE (<1.8 cfs)	X.XX	
RETURN PERIOD OF PEAK FLOW (yrs)	XXX	
CARTRIDGE FLOW RATE (gpm)	XX	
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX	
RIM ELEVATION	XXX.XX'	
PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"
CONFIGURATIONS		
SLOPED LID	YES/NO	
SOLID COVER	YES/NO	
NOTES/SPECIAL REQUIREMENTS:		

R:\COMMON\ADTREATMENT\10 STORMFILTER\40 STANDARD DRAWINGS\FCB\FCB-S\DWG\SFCB2-DTL.DWG 7/18/2016 2:45 PM

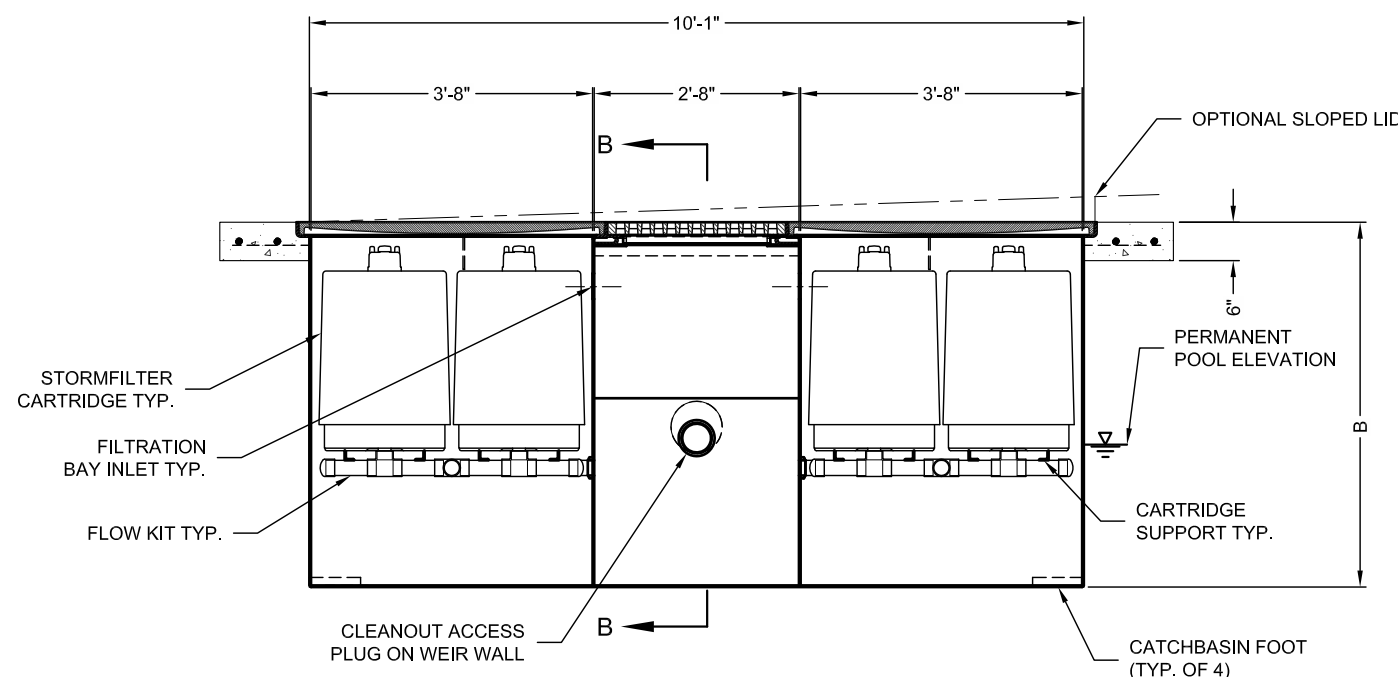


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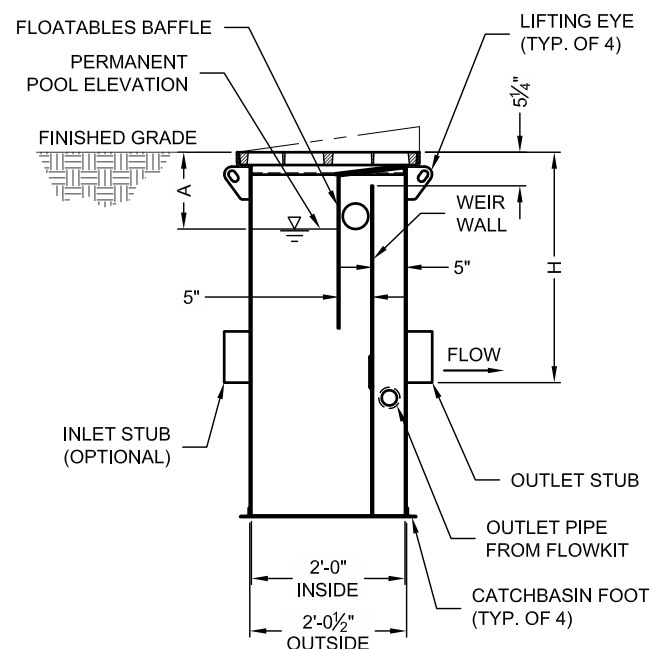
2 CARTRIDGE CATCHBASIN STORMFILTER STANDARD DETAIL



PLAN VIEW
27" CARTRIDGES



SECTION A-A



SECTION C-C

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 4 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF FOUR CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
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- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
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- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

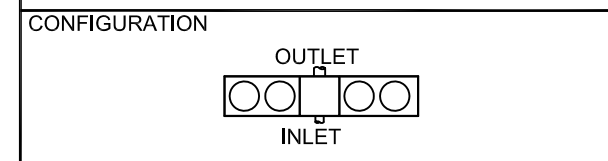
INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

**4-CARTRIDGE CATCHBASIN
STORMFILTER DATA**

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

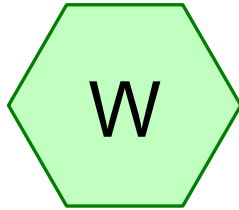


SLOPED LID	YES/NO
SOLID COVER	YES/NO

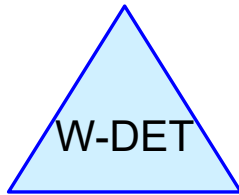
NOTES/SPECIAL REQUIREMENTS:

*PER ENGINEER OF RECORD

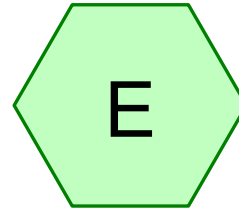
**Appendix C.3:
Post-Developed Hydrograph and Flow
Information 2, 10, & 25-Year Storm Event**



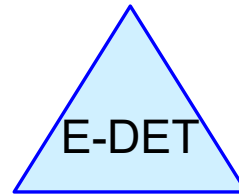
WEST
POST-DEVELOPED



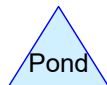
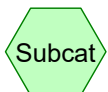
WEST
UNDERGROUND
DETENTION SYSTEM



EAST
POST-DEVELOPED



EAST UNDERGROUND
DETENTION SYSTEM



Routing Diagram for 7710-01 HydroCAD Post
Prepared by AKS Engineering & Forestry, LLC, Printed 7/29/2021
HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

7710-01 HydroCAD Post

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
87,550	80	Grass - Good Condition (E, W)
209,200	98	Impervious (E, W)

7710-01 HydroCAD Post

Type IA 24-hr 2-YR Rainfall=2.50"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EAST

Runoff Area=202,740 sf 70.68% Impervious Runoff Depth>1.86"
Tc=5.0 min CN=80/98 Runoff=2.12 cfs 31,459 cf

Subcatchment W: WEST

Runoff Area=94,010 sf 70.10% Impervious Runoff Depth>1.85"
Tc=5.0 min CN=80/98 Runoff=0.98 cfs 14,524 cf

Pond E-DET: EAST UNDERGROUND

Peak Elev=101.56' Storage=4,467 cf Inflow=2.12 cfs 31,459 cf
Outflow=0.76 cfs 31,346 cf

Pond W-DET: WEST UNDERGROUND

Peak Elev=101.68' Storage=2,442 cf Inflow=0.98 cfs 14,524 cf
Outflow=0.31 cfs 14,419 cf

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Type IA 24-hr 2-YR Rainfall=2.50"

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Summary for Subcatchment E: EAST POST-DEVELOPED

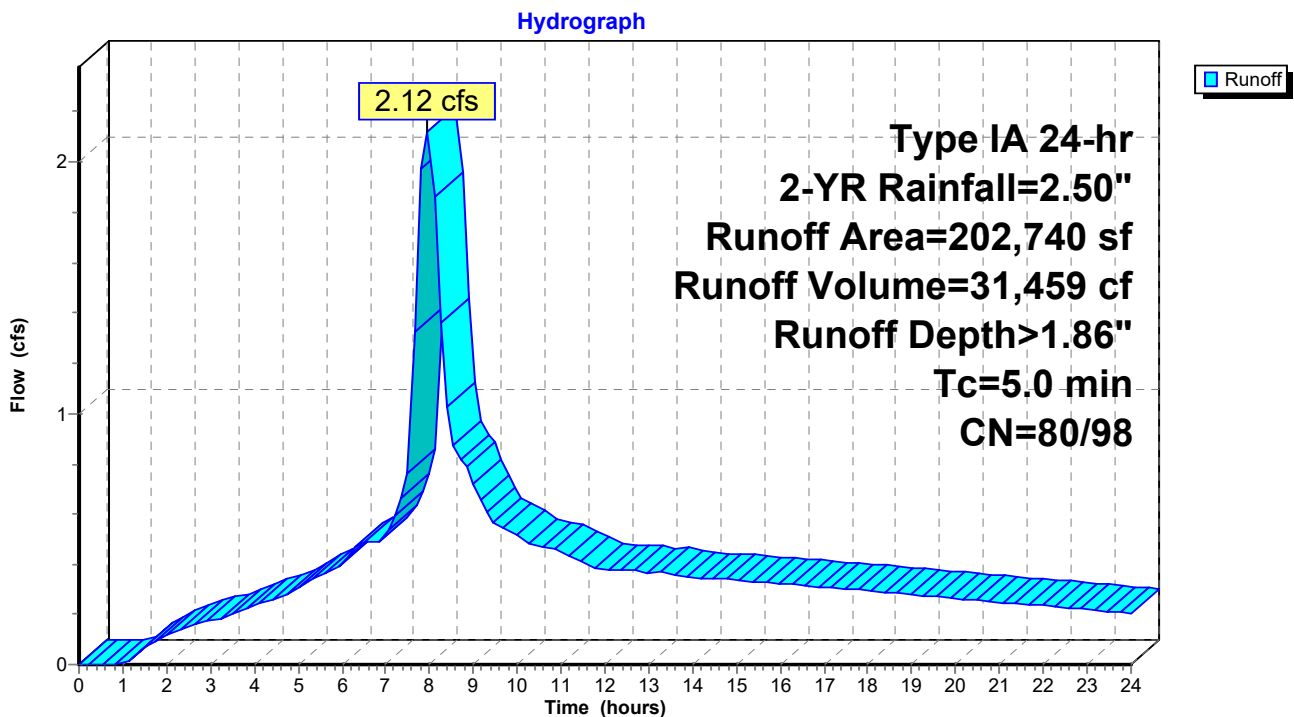
Runoff = 2.12 cfs @ 7.93 hrs, Volume= 31,459 cf, Depth> 1.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 2-YR Rainfall=2.50"

	Area (sf)	CN	Description
*	143,300	98	Impervious
*	59,440	80	Grass - Good Condition
	202,740	93	Weighted Average
	59,440		29.32% Pervious Area
	143,300		70.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment E: EAST POST-DEVELOPED



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Type IA 24-hr 2-YR Rainfall=2.50"

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Summary for Subcatchment W: WEST POST-DEVELOPED

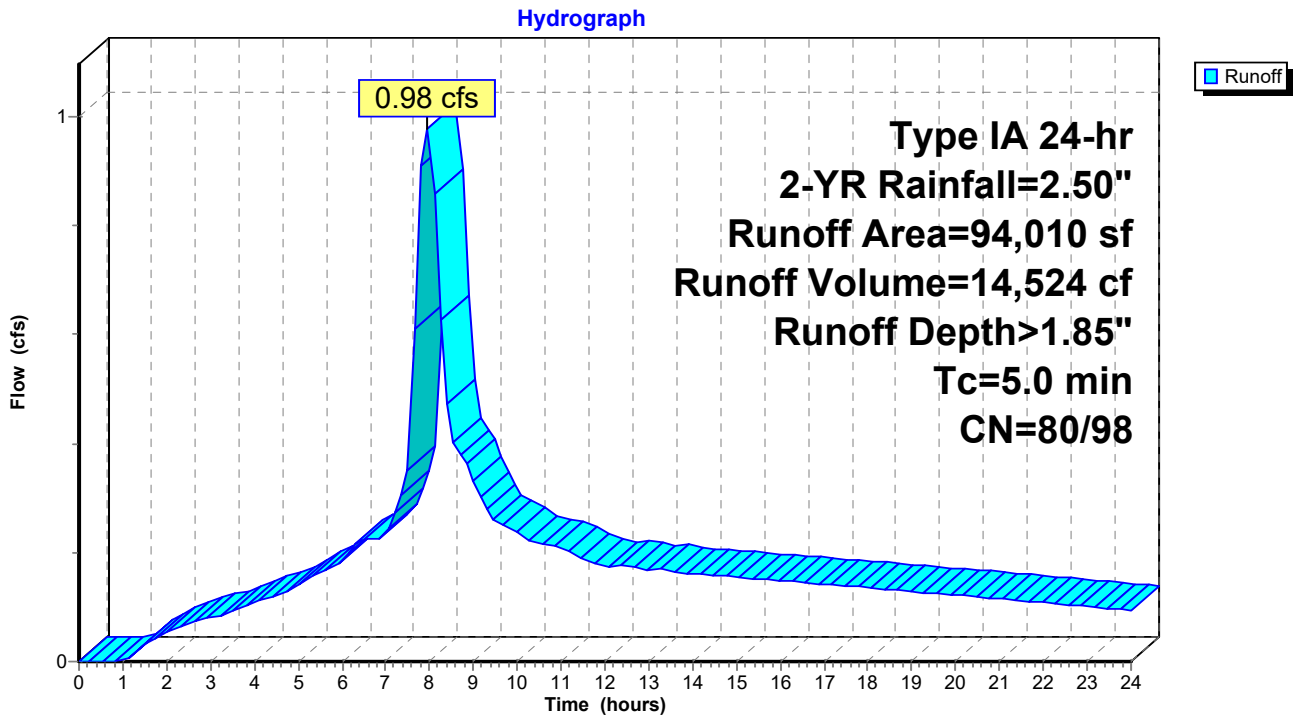
Runoff = 0.98 cfs @ 7.93 hrs, Volume= 14,524 cf, Depth> 1.85"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 2-YR Rainfall=2.50"

	Area (sf)	CN	Description
*	65,900	98	Impervious
*	28,110	80	Grass - Good Condition
	94,010	93	Weighted Average
	28,110		29.90% Pervious Area
	65,900		70.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment W: WEST POST-DEVELOPED



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Type IA 24-hr 2-YR Rainfall=2.50"

Printed 7/29/2021

Summary for Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM

Inflow Area = 202,740 sf, 70.68% Impervious, Inflow Depth > 1.86" for 2-YR event
 Inflow = 2.12 cfs @ 7.93 hrs, Volume= 31,459 cf
 Outflow = 0.76 cfs @ 8.91 hrs, Volume= 31,346 cf, Atten= 64%, Lag= 59.1 min
 Primary = 0.76 cfs @ 8.91 hrs, Volume= 31,346 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 101.56' @ 8.91 hrs Surf.Area= 3,597 sf Storage= 4,467 cf

Plug-Flow detention time= 47.6 min calculated for 31,152 cf (99% of inflow)
 Center-of-Mass det. time= 44.7 min (745.0 - 700.2)

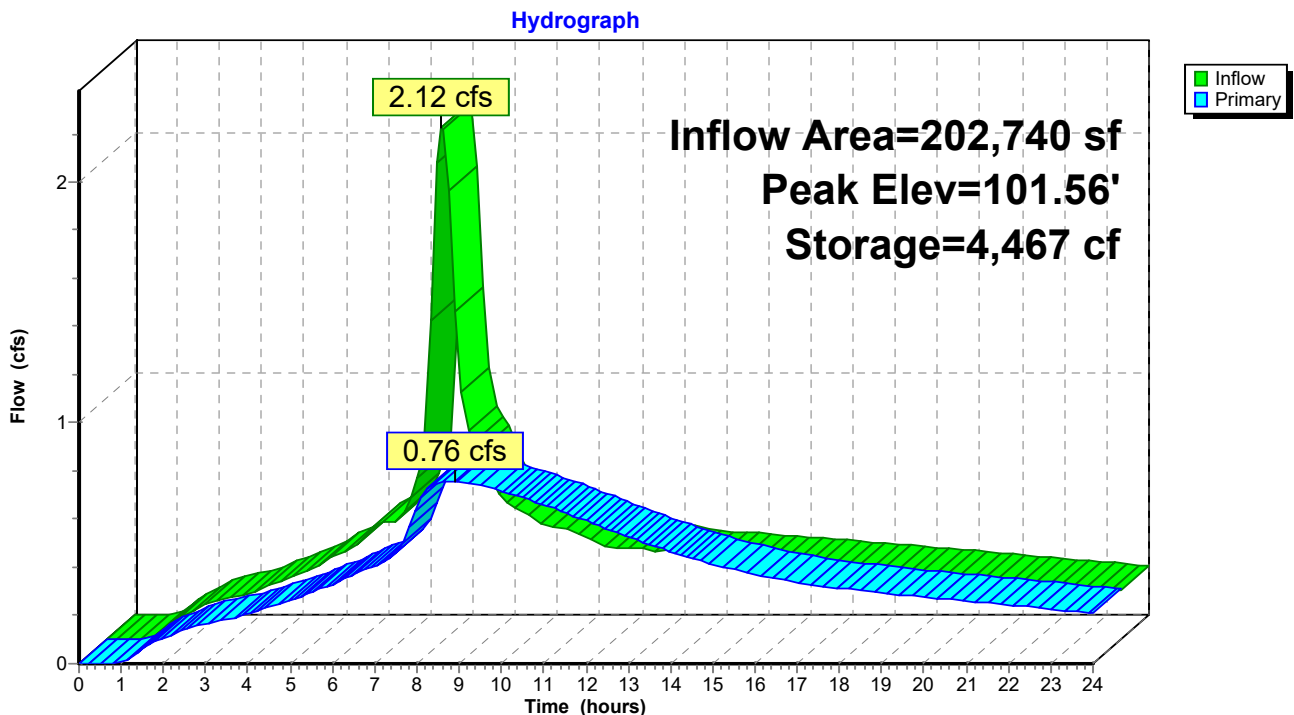
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	8,482 cf	36.0" Round Pipe Storage L= 1,200.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	4.8" Horiz. Orifice/Grate C= 0.600
#2	Primary	101.70'	5.0" Horiz. Orifice/Grate C= 0.600
#3	Primary	103.00'	18.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=0.76 cfs @ 8.91 hrs HW=101.56' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.76 cfs @ 6.02 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Overflow Riser (Controls 0.00 cfs)

Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM



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Type IA 24-hr 2-YR Rainfall=2.50"

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Summary for Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM

Inflow Area = 94,010 sf, 70.10% Impervious, Inflow Depth > 1.85" for 2-YR event
 Inflow = 0.98 cfs @ 7.93 hrs, Volume= 14,524 cf
 Outflow = 0.31 cfs @ 9.14 hrs, Volume= 14,419 cf, Atten= 69%, Lag= 72.8 min
 Primary = 0.31 cfs @ 9.14 hrs, Volume= 14,419 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 101.68' @ 9.14 hrs Surf.Area= 1,787 sf Storage= 2,442 cf

Plug-Flow detention time= 73.9 min calculated for 14,330 cf (99% of inflow)
 Center-of-Mass det. time= 68.2 min (769.0 - 700.8)

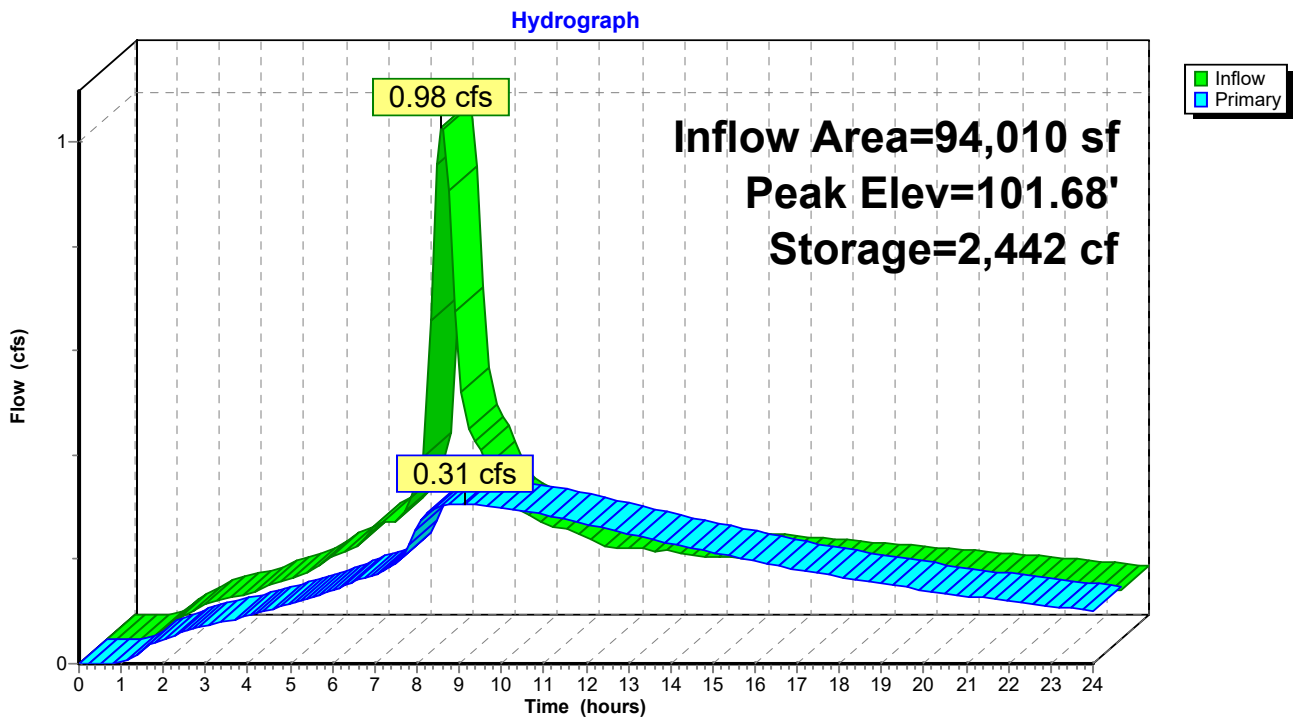
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	4,241 cf	36.0" Round Pipe Storage L= 600.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	3.0" Horiz. Orifice/Grate C= 0.600
#2	Primary	101.70'	3.8" Horiz. Orifice/Grate C= 0.600
#3	Primary	103.00'	12.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=0.31 cfs @ 9.14 hrs HW=101.68' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.31 cfs @ 6.24 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Overflow Riser (Controls 0.00 cfs)

Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM



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Type IA 24-hr 10-YR Rainfall=3.45"

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EAST

Runoff Area=202,740 sf 70.68% Impervious Runoff Depth>2.74"
Tc=5.0 min CN=80/98 Runoff=3.14 cfs 46,235 cf

Subcatchment W: WEST

Runoff Area=94,010 sf 70.10% Impervious Runoff Depth>2.73"
Tc=5.0 min CN=80/98 Runoff=1.45 cfs 21,365 cf

Pond E-DET: EAST UNDERGROUND

Peak Elev=102.28' Storage=6,903 cf Inflow=3.14 cfs 46,235 cf
Outflow=1.41 cfs 45,859 cf

Pond W-DET: WEST UNDERGROUND

Peak Elev=102.31' Storage=3,506 cf Inflow=1.45 cfs 21,365 cf
Outflow=0.66 cfs 20,929 cf

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Type IA 24-hr 10-YR Rainfall=3.45"

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Summary for Subcatchment E: EAST POST-DEVELOPED

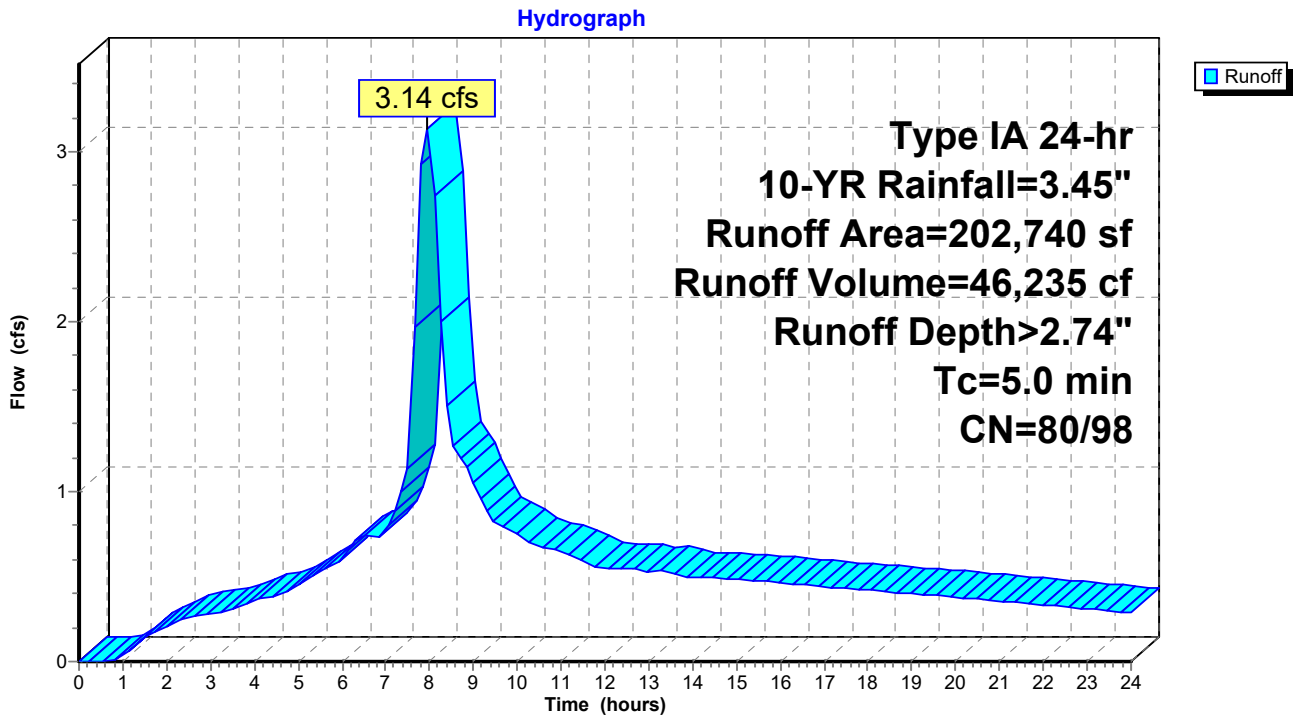
Runoff = 3.14 cfs @ 7.93 hrs, Volume= 46,235 cf, Depth> 2.74"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	143,300	98	Impervious
*	59,440	80	Grass - Good Condition
	202,740	93	Weighted Average
	59,440		29.32% Pervious Area
	143,300		70.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment E: EAST POST-DEVELOPED



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Type IA 24-hr 10-YR Rainfall=3.45"

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Summary for Subcatchment W: WEST POST-DEVELOPED

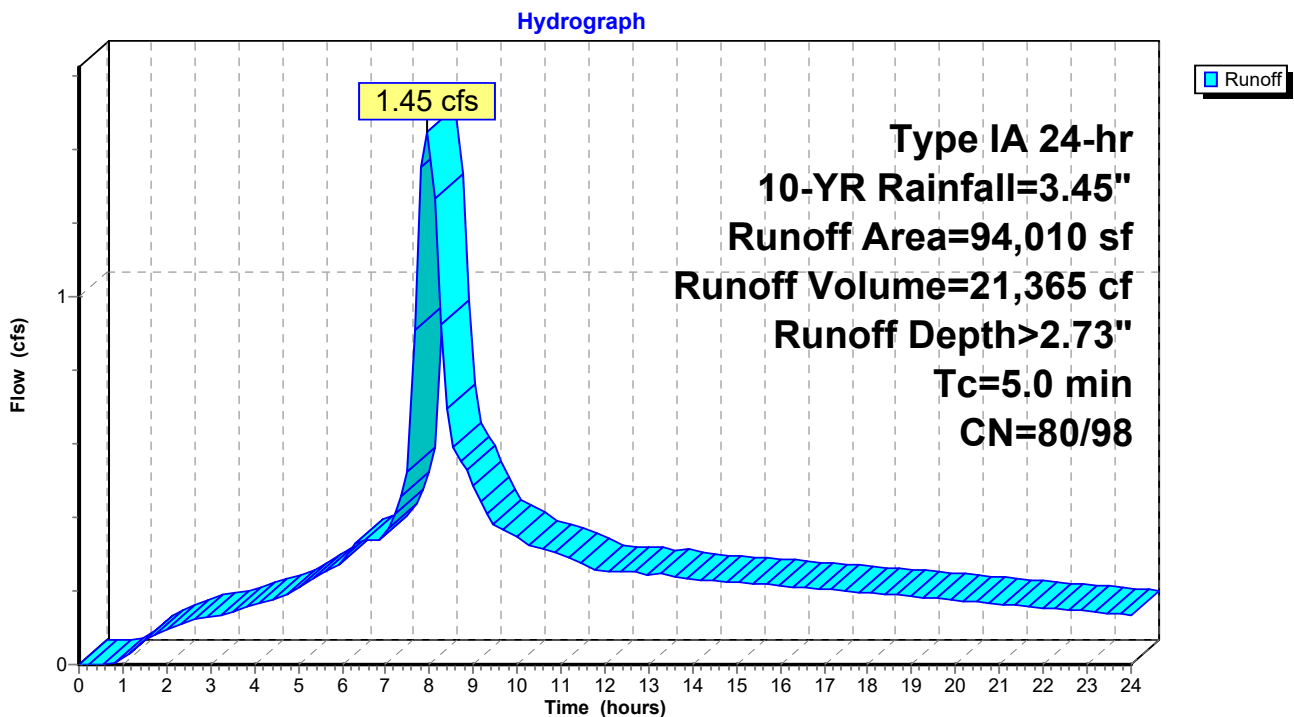
Runoff = 1.45 cfs @ 7.93 hrs, Volume= 21,365 cf, Depth> 2.73"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	65,900	98	Impervious
*	28,110	80	Grass - Good Condition
	94,010	93	Weighted Average
	28,110		29.90% Pervious Area
	65,900		70.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment W: WEST POST-DEVELOPED



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Type IA 24-hr 10-YR Rainfall=3.45"

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Summary for Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM

Inflow Area = 202,740 sf, 70.68% Impervious, Inflow Depth > 2.74" for 10-YR event
 Inflow = 3.14 cfs @ 7.93 hrs, Volume= 46,235 cf
 Outflow = 1.41 cfs @ 8.47 hrs, Volume= 45,859 cf, Atten= 55%, Lag= 32.5 min
 Primary = 1.41 cfs @ 8.47 hrs, Volume= 45,859 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 102.28' @ 8.47 hrs Surf.Area= 3,081 sf Storage= 6,903 cf

Plug-Flow detention time= 63.6 min calculated for 45,574 cf (99% of inflow)
 Center-of-Mass det. time= 57.3 min (748.8 - 691.5)

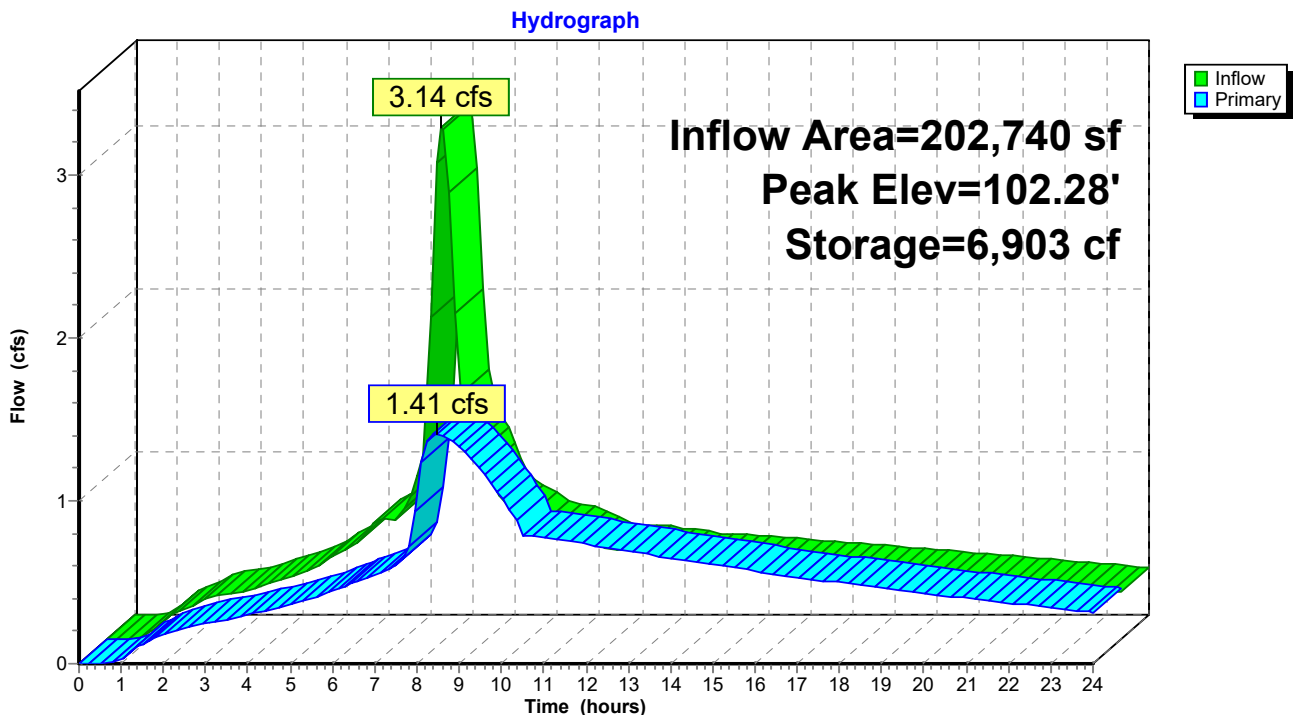
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	8,482 cf	36.0" Round Pipe Storage L= 1,200.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	4.8" Horiz. Orifice/Grate C= 0.600
#2	Primary	101.70'	5.0" Horiz. Orifice/Grate C= 0.600
#3	Primary	103.00'	18.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=1.41 cfs @ 8.47 hrs HW=102.27' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.91 cfs @ 7.25 fps)
- 2=Orifice/Grate (Orifice Controls 0.49 cfs @ 3.63 fps)
- 3=Overflow Riser (Controls 0.00 cfs)

Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM



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Type IA 24-hr 10-YR Rainfall=3.45"

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Summary for Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM

Inflow Area = 94,010 sf, 70.10% Impervious, Inflow Depth > 2.73" for 10-YR event
 Inflow = 1.45 cfs @ 7.93 hrs, Volume= 21,365 cf
 Outflow = 0.66 cfs @ 8.46 hrs, Volume= 20,929 cf, Atten= 55%, Lag= 32.3 min
 Primary = 0.66 cfs @ 8.46 hrs, Volume= 20,929 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 102.31' @ 8.46 hrs Surf.Area= 1,514 sf Storage= 3,506 cf

Plug-Flow detention time= 88.9 min calculated for 20,799 cf (97% of inflow)
 Center-of-Mass det. time= 73.6 min (765.7 - 692.1)

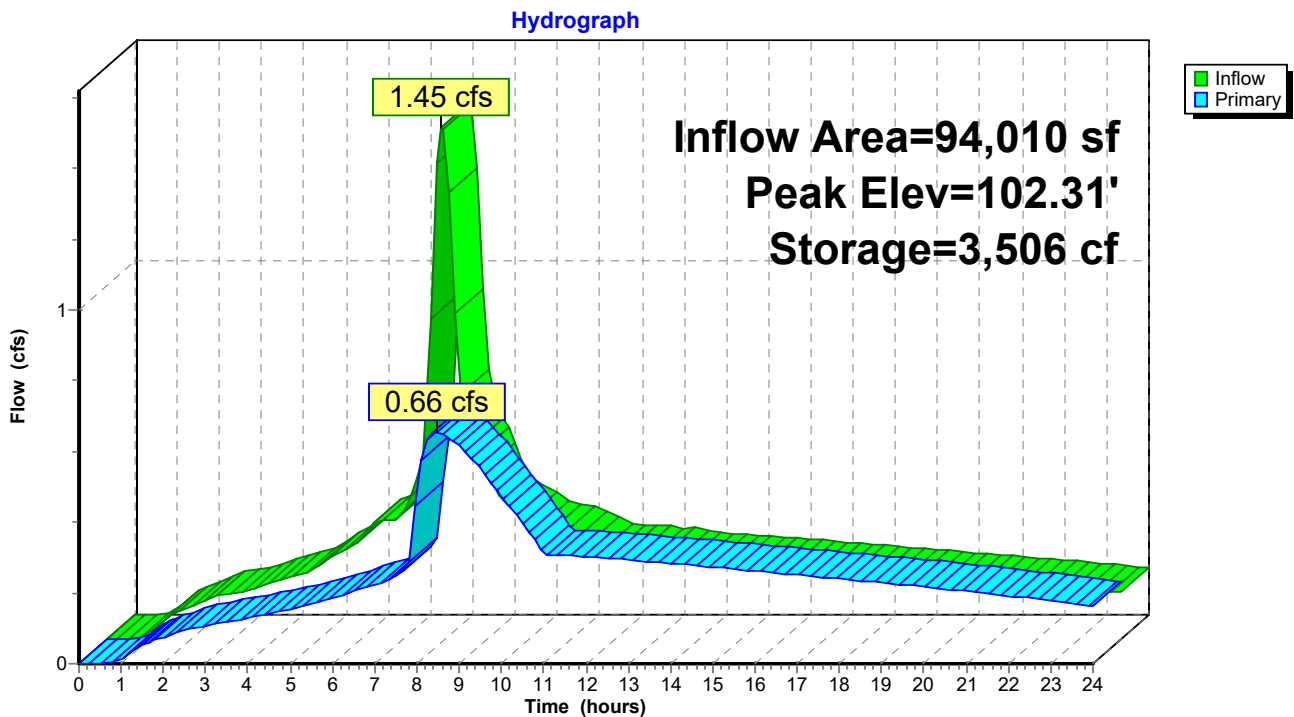
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	4,241 cf	36.0" Round Pipe Storage L= 600.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	3.0" Horiz. Orifice/Grate C= 0.600
#2	Primary	101.70'	3.8" Horiz. Orifice/Grate C= 0.600
#3	Primary	103.00'	12.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=0.65 cfs @ 8.46 hrs HW=102.30' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.36 cfs @ 7.31 fps)
- 2=Orifice/Grate (Orifice Controls 0.29 cfs @ 3.74 fps)
- 3=Overflow Riser (Controls 0.00 cfs)

Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM



7710-01 HydroCAD Post*Type IA 24-hr 25-YR Rainfall=3.90"*

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EASTRunoff Area=202,740 sf 70.68% Impervious Runoff Depth>3.16"
Tc=5.0 min CN=80/98 Runoff=3.63 cfs 53,377 cf**Subcatchment W: WEST**Runoff Area=94,010 sf 70.10% Impervious Runoff Depth>3.15"
Tc=5.0 min CN=80/98 Runoff=1.68 cfs 24,673 cf**Pond E-DET: EAST UNDERGROUND**Peak Elev=102.78' Storage=8,201 cf Inflow=3.63 cfs 53,377 cf
Outflow=1.69 cfs 52,753 cf**Pond W-DET: WEST UNDERGROUND**Peak Elev=102.79' Storage=4,112 cf Inflow=1.68 cfs 24,673 cf
Outflow=0.79 cfs 23,954 cf

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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment E: EAST POST-DEVELOPED

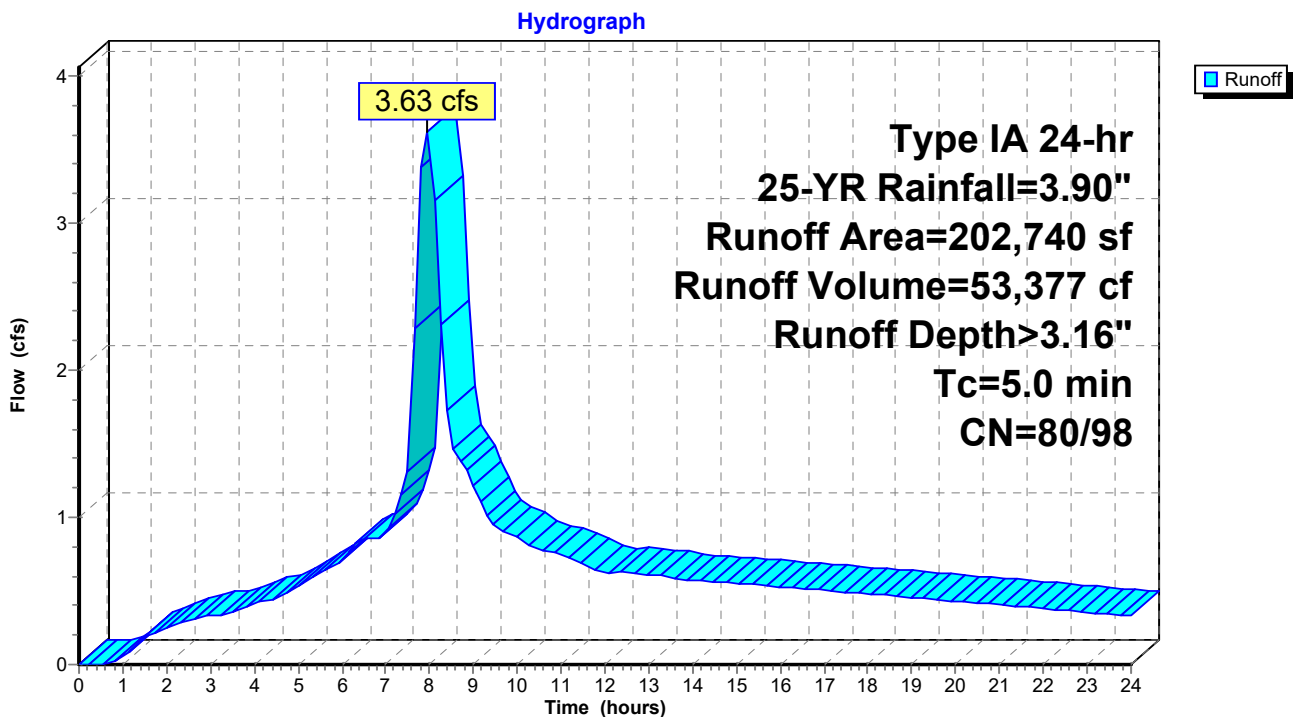
Runoff = 3.63 cfs @ 7.93 hrs, Volume= 53,377 cf, Depth> 3.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	143,300	98	Impervious
*	59,440	80	Grass - Good Condition
	202,740	93	Weighted Average
	59,440		29.32% Pervious Area
	143,300		70.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment E: EAST POST-DEVELOPED



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment W: WEST POST-DEVELOPED

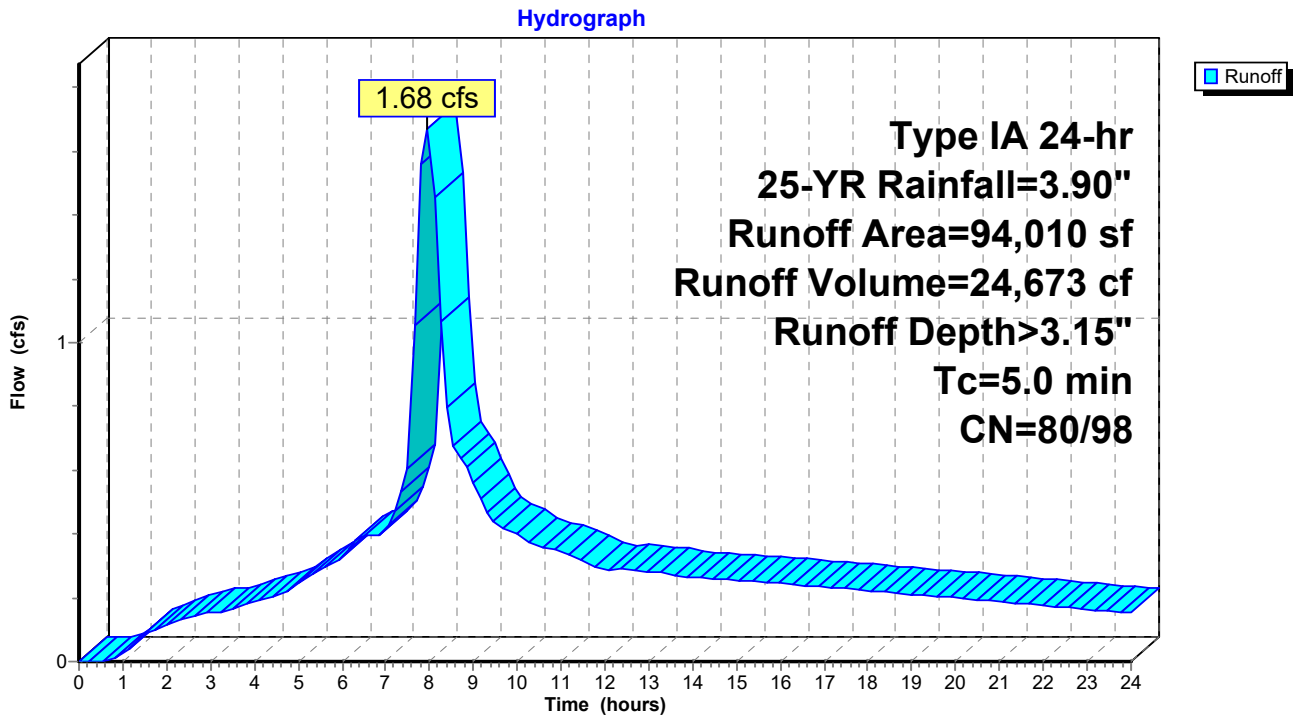
Runoff = 1.68 cfs @ 7.93 hrs, Volume= 24,673 cf, Depth> 3.15"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	65,900	98	Impervious
*	28,110	80	Grass - Good Condition
	94,010	93	Weighted Average
	28,110		29.90% Pervious Area
	65,900		70.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment W: WEST POST-DEVELOPED



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM

Inflow Area = 202,740 sf, 70.68% Impervious, Inflow Depth > 3.16" for 25-YR event
 Inflow = 3.63 cfs @ 7.93 hrs, Volume= 53,377 cf
 Outflow = 1.69 cfs @ 8.45 hrs, Volume= 52,753 cf, Atten= 53%, Lag= 31.2 min
 Primary = 1.69 cfs @ 8.45 hrs, Volume= 52,753 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 102.78' @ 8.45 hrs Surf.Area= 1,880 sf Storage= 8,201 cf

Plug-Flow detention time= 69.1 min calculated for 52,753 cf (99% of inflow)
 Center-of-Mass det. time= 60.4 min (748.7 - 688.3)

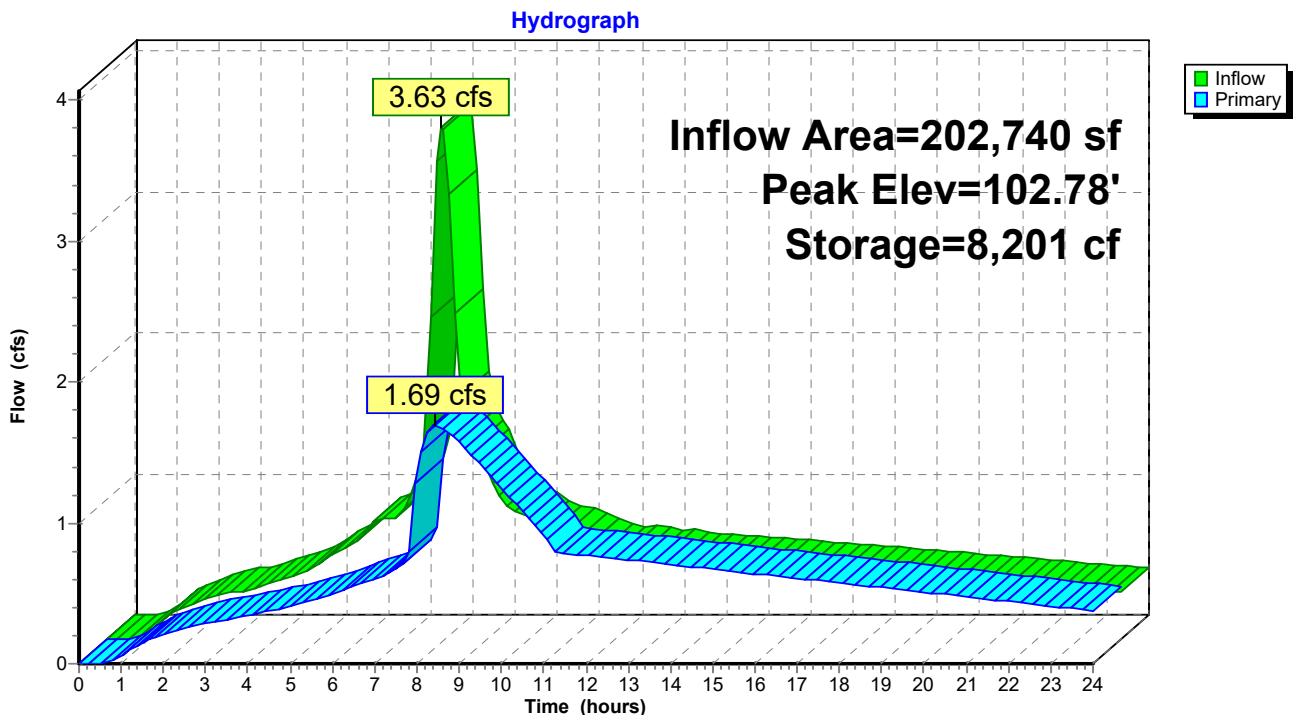
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	8,482 cf	36.0" Round Pipe Storage L= 1,200.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	4.8" Horiz. Orifice/Grate C= 0.600
#2	Primary	101.70'	5.0" Horiz. Orifice/Grate C= 0.600
#3	Primary	103.00'	18.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=1.68 cfs @ 8.45 hrs HW=102.77' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.01 cfs @ 8.01 fps)
- 2=Orifice/Grate (Orifice Controls 0.68 cfs @ 4.97 fps)
- 3=Overflow Riser (Controls 0.00 cfs)

Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM

Inflow Area = 94,010 sf, 70.10% Impervious, Inflow Depth > 3.15" for 25-YR event
 Inflow = 1.68 cfs @ 7.93 hrs, Volume= 24,673 cf
 Outflow = 0.79 cfs @ 8.44 hrs, Volume= 23,954 cf, Atten= 53%, Lag= 30.8 min
 Primary = 0.79 cfs @ 8.44 hrs, Volume= 23,954 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 102.79' @ 8.44 hrs Surf.Area= 917 sf Storage= 4,112 cf

Plug-Flow detention time= 93.8 min calculated for 23,805 cf (96% of inflow)
 Center-of-Mass det. time= 72.2 min (761.1 - 688.9)

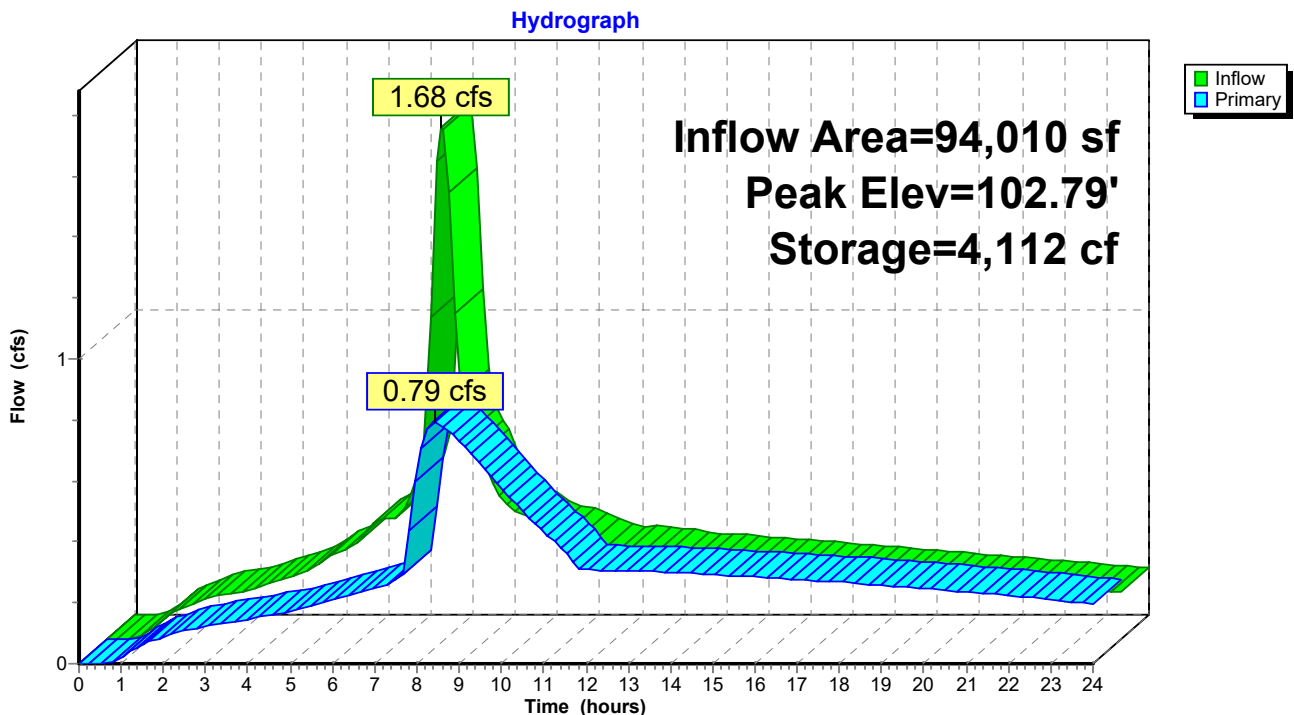
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	4,241 cf	36.0" Round Pipe Storage L= 600.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	3.0" Horiz. Orifice/Grate C= 0.600
#2	Primary	101.70'	3.8" Horiz. Orifice/Grate C= 0.600
#3	Primary	103.00'	12.0" Horiz. Overflow Riser C= 0.600

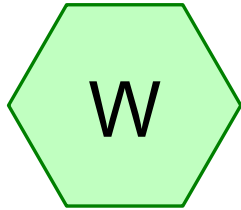
Primary OutFlow Max=0.79 cfs @ 8.44 hrs HW=102.78' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.39 cfs @ 8.03 fps)
- 2=Orifice/Grate (Orifice Controls 0.39 cfs @ 5.00 fps)
- 3=Overflow Riser (Controls 0.00 cfs)

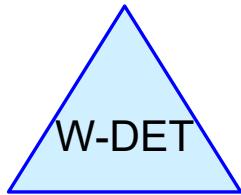
Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM



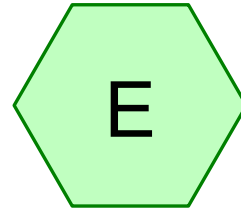
Appendix D: Emergency Overflow Calculations



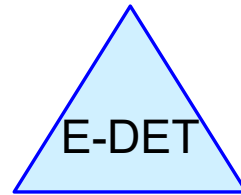
WEST
POST-DEVELOPED



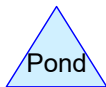
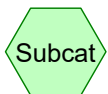
WEST
UNDERGROUND
DETENTION SYSTEM



EAST
POST-DEVELOPED



EAST UNDERGROUND
DETENTION SYSTEM



Routing Diagram for 7710-01 HydroCAD Overflow
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7710-01 HydroCAD Overflow

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
87,550	80	Grass - Good Condition (E, W)
209,200	98	Impervious (E, W)

7710-01 HydroCAD Overflow

Type IA 24-hr 100-YR Rainfall=4.50"

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

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

Subcatchment E: EAST

Runoff Area=202,740 sf 70.68% Impervious Runoff Depth>3.73"
Tc=5.0 min CN=80/98 Runoff=4.29 cfs 62,998 cf

Subcatchment W: WEST

Runoff Area=94,010 sf 70.10% Impervious Runoff Depth>3.72"
Tc=5.0 min CN=80/98 Runoff=1.98 cfs 29,130 cf

Pond E-DET: EAST UNDERGROUND

Peak Elev=103.33' Storage=8,482 cf Inflow=4.29 cfs 62,998 cf
Outflow=4.90 cfs 54,475 cf

Pond W-DET: WEST UNDERGROUND

Peak Elev=103.31' Storage=4,241 cf Inflow=1.98 cfs 29,130 cf
Outflow=2.10 cfs 24,857 cf

7710-01 HydroCAD Overflow

Type IA 24-hr 100-YR Rainfall=4.50"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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

Summary for Subcatchment E: EAST POST-DEVELOPED

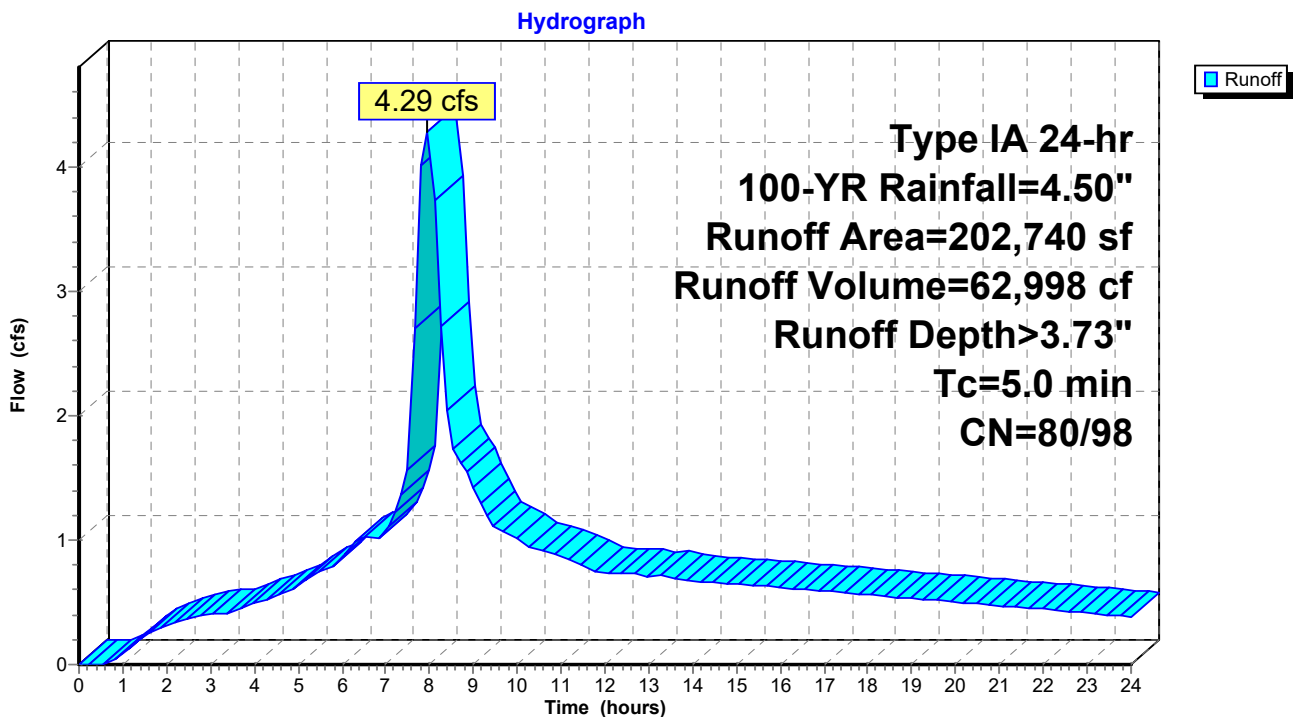
Runoff = 4.29 cfs @ 7.92 hrs, Volume= 62,998 cf, Depth> 3.73"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 100-YR Rainfall=4.50"

	Area (sf)	CN	Description
*	143,300	98	Impervious
*	59,440	80	Grass - Good Condition
	202,740	93	Weighted Average
	59,440		29.32% Pervious Area
	143,300		70.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment E: EAST POST-DEVELOPED



7710-01 HydroCAD Overflow

Type IA 24-hr 100-YR Rainfall=4.50"

Prepared by AKS Engineering & Forestry, LLC

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Summary for Subcatchment W: WEST POST-DEVELOPED

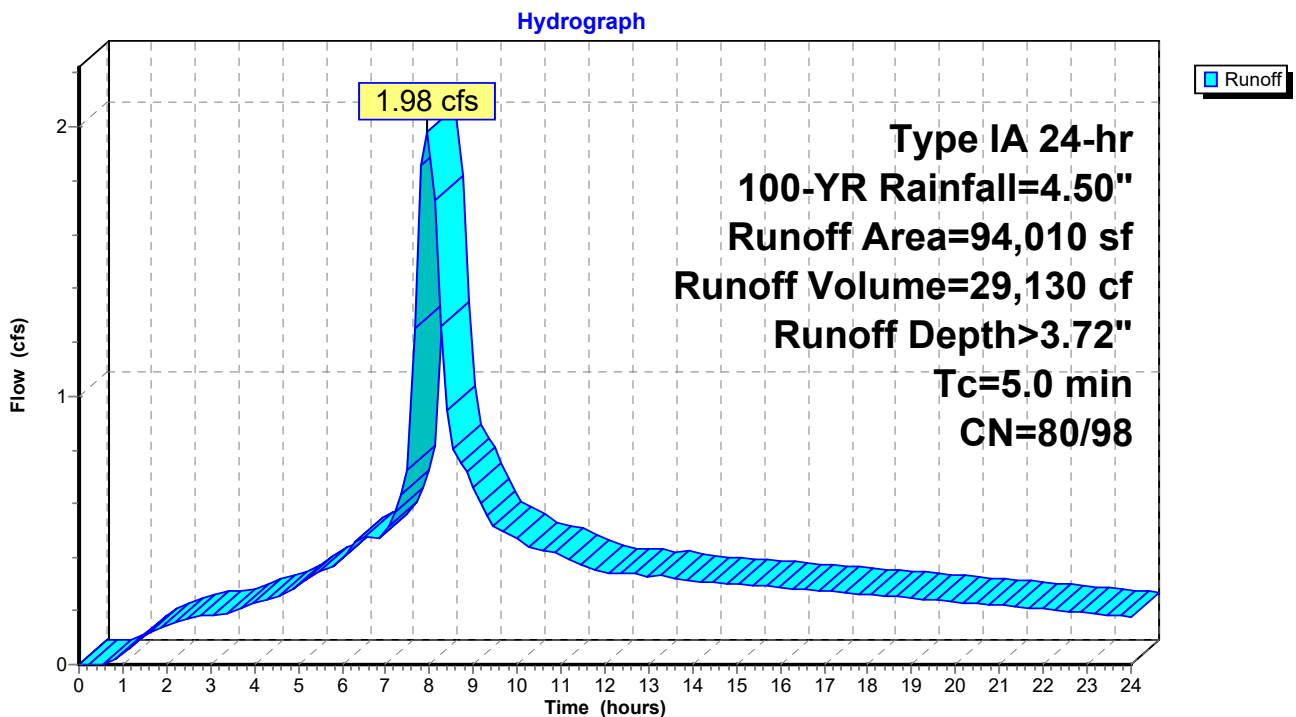
Runoff = 1.98 cfs @ 7.92 hrs, Volume= 29,130 cf, Depth> 3.72"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
Type IA 24-hr 100-YR Rainfall=4.50"

	Area (sf)	CN	Description
*	65,900	98	Impervious
*	28,110	80	Grass - Good Condition
	94,010	93	Weighted Average
	28,110		29.90% Pervious Area
	65,900		70.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment W: WEST POST-DEVELOPED



7710-01 HydroCAD Overflow

Type IA 24-hr 100-YR Rainfall=4.50"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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Summary for Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM

Inflow Area = 202,740 sf, 70.68% Impervious, Inflow Depth > 3.73" for 100-YR event
 Inflow = 4.29 cfs @ 7.92 hrs, Volume= 62,998 cf
 Outflow = 4.90 cfs @ 7.94 hrs, Volume= 54,475 cf, Atten= 0%, Lag= 1.2 min
 Primary = 4.90 cfs @ 7.94 hrs, Volume= 54,475 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 103.33' @ 7.94 hrs Surf.Area= 0 sf Storage= 8,482 cf

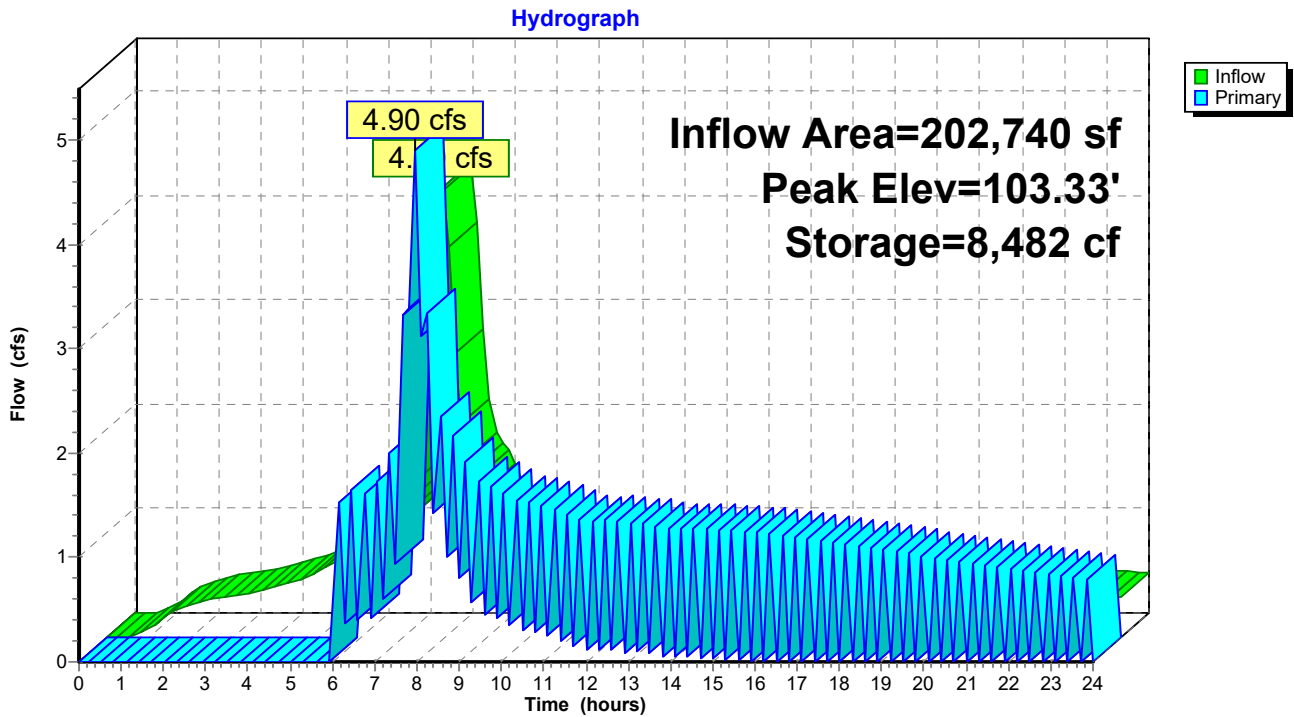
Plug-Flow detention time= 160.3 min calculated for 54,475 cf (86% of inflow)
 Center-of-Mass det. time= 68.0 min (752.6 - 684.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	8,482 cf	36.0" Round Pipe Storage L= 1,200.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	18.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=4.84 cfs @ 7.94 hrs HW=103.32' (Free Discharge)
 ←1=Overflow Riser (Orifice Controls 4.84 cfs @ 2.74 fps)

Pond E-DET: EAST UNDERGROUND DETENTION SYSTEM



7710-01 HydroCAD Overflow

Type IA 24-hr 100-YR Rainfall=4.50"

Prepared by AKS Engineering & Forestry, LLC

Printed 7/29/2021

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

Summary for Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM

Inflow Area = 94,010 sf, 70.10% Impervious, Inflow Depth > 3.72" for 100-YR event
 Inflow = 1.98 cfs @ 7.92 hrs, Volume= 29,130 cf
 Outflow = 2.10 cfs @ 7.94 hrs, Volume= 24,857 cf, Atten= 0%, Lag= 0.9 min
 Primary = 2.10 cfs @ 7.94 hrs, Volume= 24,857 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs
 Peak Elev= 103.31' @ 7.94 hrs Surf.Area= 0 sf Storage= 4,241 cf

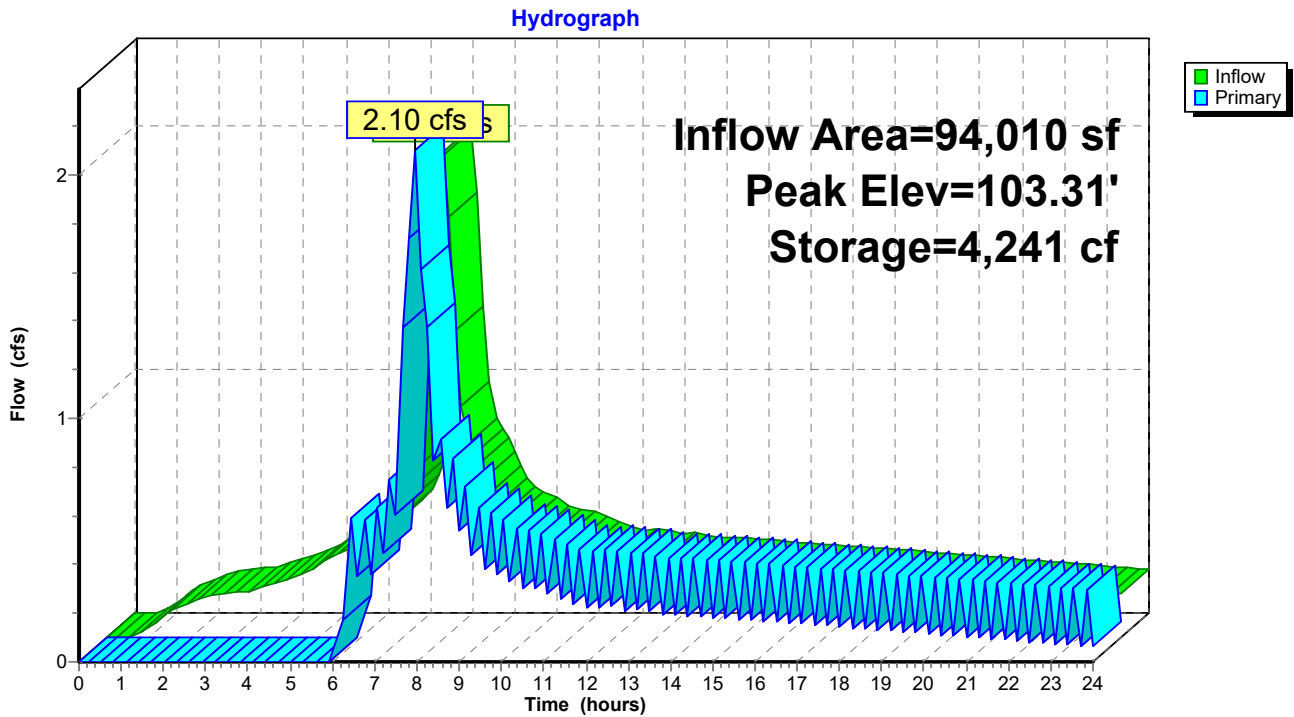
Plug-Flow detention time= 172.3 min calculated for 24,857 cf (85% of inflow)
 Center-of-Mass det. time= 72.8 min (758.1 - 685.2)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	4,241 cf	36.0" Round Pipe Storage L= 600.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	12.0" Horiz. Overflow Riser C= 0.600

Primary OutFlow Max=2.07 cfs @ 7.94 hrs HW=103.30' (Free Discharge)
 ↳1=Overflow Riser (Orifice Controls 2.07 cfs @ 2.64 fps)

Pond W-DET: WEST UNDERGROUND DETENTION SYSTEM



**Appendix E:
Soils Information from the USDA NRCS Soil
Survey of Clackamas County, Oregon**

Custom Soil Resource Report for **Clackamas County Area, Oregon**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

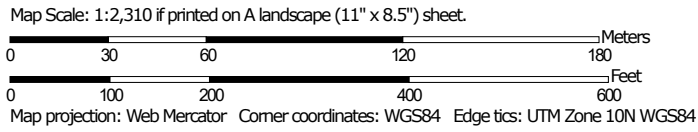
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
 Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2015—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17	Clackamas silt loam	5.5	80.6%
79B	Sawtell silt loam, 0 to 8 percent slopes	1.3	19.4%
Totals for Area of Interest		6.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

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onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Clackamas County Area, Oregon

17—Clackamas silt loam

Map Unit Setting

National map unit symbol: 223h
Elevation: 150 to 700 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Clackamas and similar soils: 85 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clackamas

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed gravelly alluvium

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 36 inches: silty clay loam
H3 - 36 to 60 inches: extremely gravelly silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Forage suitability group: Somewhat Poorly Drained (G002XY005OR)
Other vegetative classification: Somewhat Poorly Drained (G002XY005OR)
Hydric soil rating: No

Minor Components

Conser

Percent of map unit: 4 percent
Landform: Terraces
Landform position (three-dimensional): Tread

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Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

79B—Sawtell silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2275
Elevation: 150 to 500 feet
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sawtell and similar soils: 90 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sawtell

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old gravelly alluvium

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 20 inches: gravelly clay loam
H3 - 20 to 43 inches: very gravelly clay loam
H4 - 43 to 60 inches: very gravelly clay

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)

Custom Soil Resource Report

Other vegetative classification: Moderately Well Drained < 15% Slopes
(G002XY004OR)
Hydric soil rating: No

Minor Components

Dayton

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Concord

Percent of map unit: 1 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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.

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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.

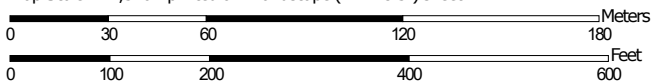
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over 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.

Custom Soil Resource Report
Map—Hydrologic Soil Group




Map Scale: 1:2,310 if printed on A landscape (11" x 8.5") sheet.



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:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
 Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2015—Sep 13, 2016

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Clackamas silt loam	C/D	5.5	80.6%
79B	Sawtell silt loam, 0 to 8 percent slopes	C	1.3	19.4%
Totals for Area of Interest			6.8	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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**Appendix F:
Relevant Information from Technical Release
55 Urban Hydrology for Small Watersheds,
ODOT Hydraulics Manual, City of Molalla
Public Works Design Standard, and City of
Molalla Stormwater Master Plan**

United States
Department of
Agriculture

Soil
Conservation
Service

Engineering
Division

Technical
Release 55

June 1986



Urban Hydrology for Small Watersheds

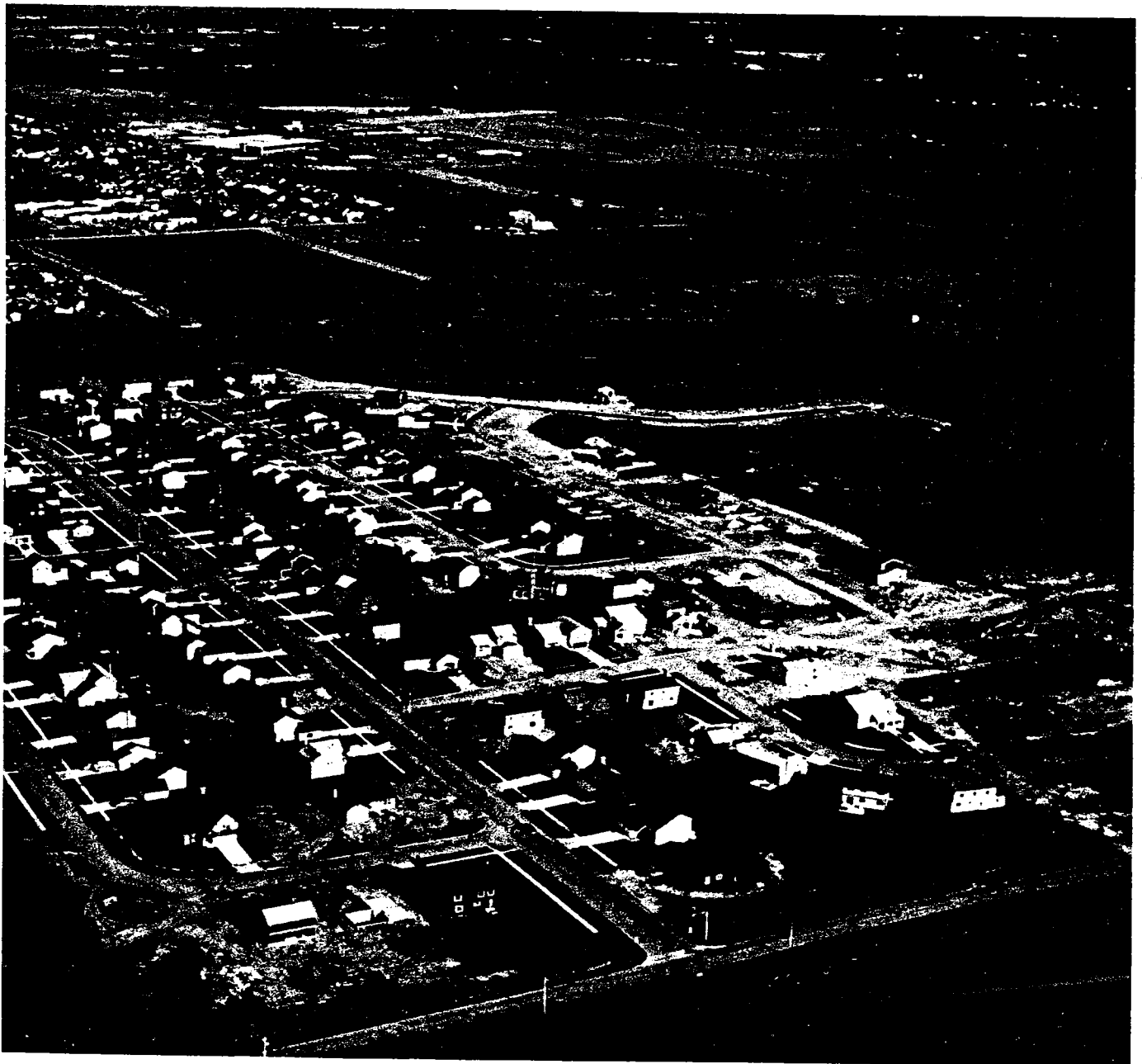


Table 2-2a.—Runoff curve numbers for urban areas¹

Cover description	Average percent impervious area ²	Curve numbers for hydrologic soil group—			
		A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ³ :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%).....		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ⁴ ...		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious areas only, no vegetation) ⁵		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

¹Average runoff condition, and $I_a = 0.2S$.

²The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

³CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

⁴Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

⁵Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b.—Runoff curve numbers for cultivated agricultural lands¹

Cover description			Curve numbers for hydrologic soil group—			
Cover type	Treatment ²	Hydrologic condition ³	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T + CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T + CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

¹Average runoff condition, and $I_n = 0.2S$.

²Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

³Hydrologic condition is based on combination of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes in rotations, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c.—Runoff curve numbers for other agricultural lands¹

Cover description		Curve numbers for hydrologic soil group—			
		A	B	C	D
Cover type	Hydrologic condition				
Pasture, grassland, or range—continuous forage for grazing. ²	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. ³	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30	48	65	73
Woods—grass combination (orchard or tree farm). ⁵	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. ⁶	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

¹Average runoff condition, and $I_a = 0.2S$.

²*Poor:* < 50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

³*Poor:* < 50% ground cover.
Fair: 50 to 75% ground cover.
Good: > 75% ground cover.

⁴Actual curve number is less than 30; use CN = 30 for runoff computations.

⁵CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

⁶*Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 2-2d.—Runoff curve numbers for arid and semiarid rangelands¹

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition ²	A ³	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

¹Average runoff condition, and $I_{a} = 0.2S$. For range in humid regions, use table 2-2c.

²*Poor*: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: >70% ground cover.

³Curve numbers for group A have been developed only for desert shrub.

These projects must treat all new ODOT impervious area and contiguous existing ODOT impervious area whose runoff flows over the new impervious surface (See Figure 14-4).

14.10.2 Water Quality Design Storm, Flow, and Volume

A stormwater treatment facility is sized based on a water quality design flow rate or water quality design volume. The hydrologic analysis needed to determine a design flow rate or volume is discussed in **Chapter 7**. The water quality design storm is discussed below.

Water Quality Design Storm

The water quality design storm is designated as a percentage of the 2-year 24-hour storm and is used to determine the water quality design flow rate or water quality design volume. The maximum design storm depth is 2.5 inches and the minimum water quality design storm depth is 0.7 inches.

The following steps outline how to select the design storm for a project:

- Step 1: Determine the 2-year, 24-hour storm for the project. Use the precipitation maps to determine the project's 2-year, 24-hour storm or the GIS project created for use to view Oregon's precipitation data. See **Chapter 7** for more information.
- Step 2: Determine the water quality design storm factor. Figure 14-5 outlines the storm factor to use for each climate zone in the state.
- Step 3: Determine the water quality design storm. It is determined by multiplying the project's 2-year, 24-hour storm (step 1) times the design storm factor (step 2).

Water Quality Design Flow

The water quality design flow rate is the predicted peak discharge for the proposed conditions using the water quality design storm determined from the steps noted above. The design flow rate is calculated using hydrology guidance in **Chapter 7**. Flow-through stormwater quality facilities discussed in this chapter, such as swales and filter strips, are sized using this flow rate.

Water Quality Design Volume

The water quality design volume is the predicted volume of runoff for the proposed conditions using the water quality design storm determined from the steps noted above. The design volume is calculated using hydrology guidance in **Chapter 7**. Stormwater quality facilities discussed in this chapter that temporarily store runoff, such as stormwater treatment wetlands, wet ponds, extended dry detention ponds, bioretention facilities, and infiltration facilities are sized using this design volume.

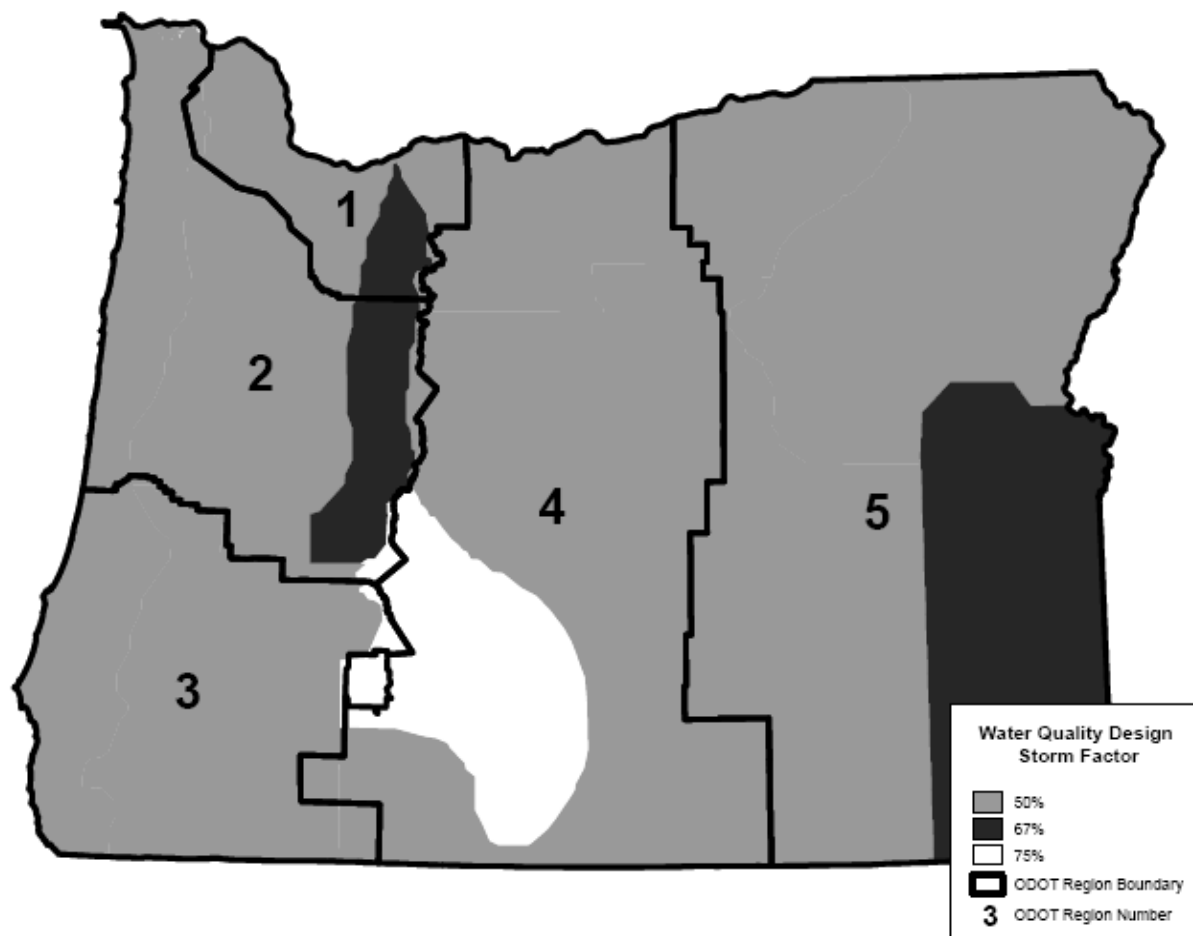


Figure 14-5 Design Storm Factors

Figure 14-6a illustrates an on-line treatment facility.

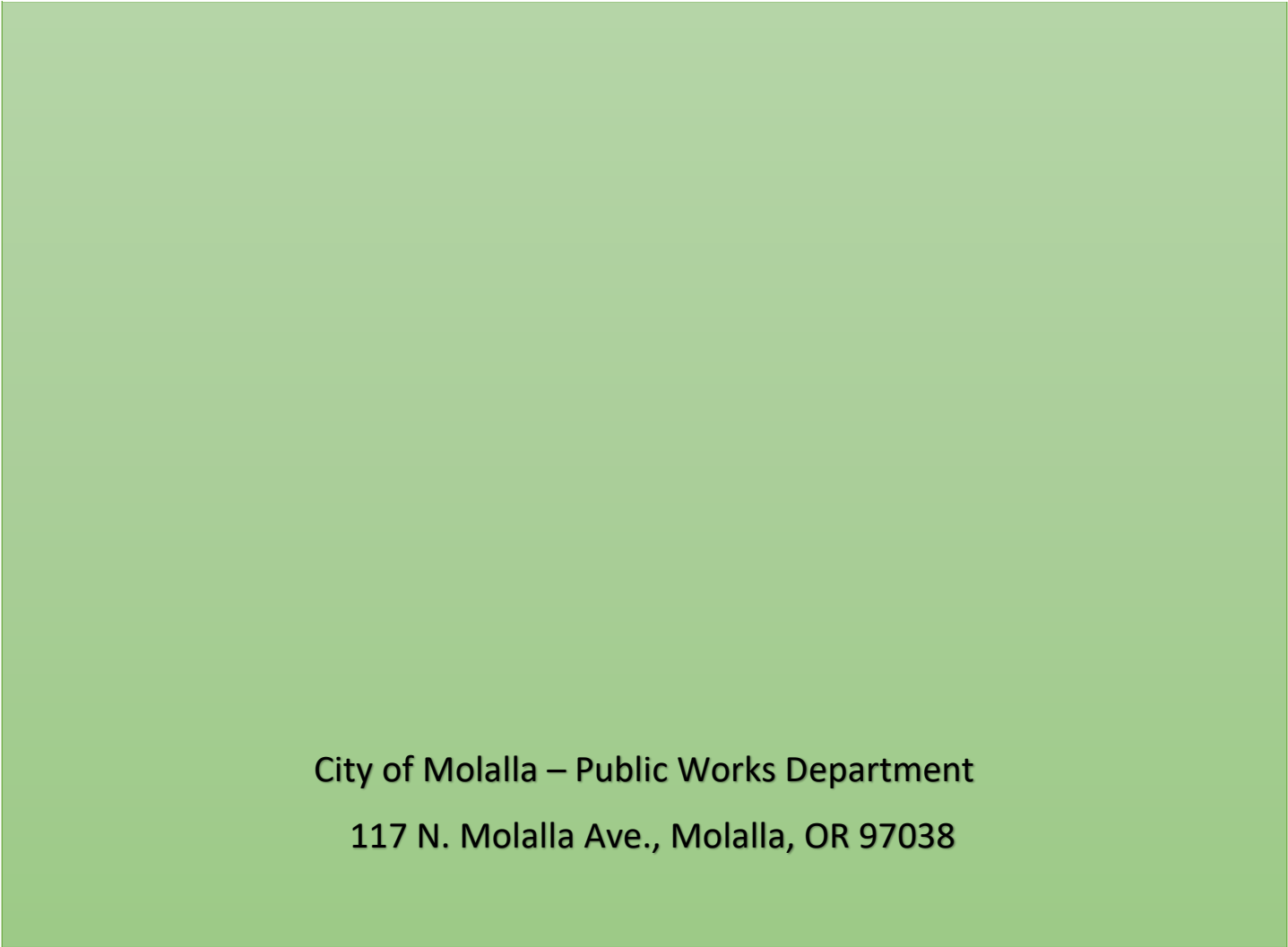
A single treatment and storage capacity facility is an option when both water quality and water quantity must be provided because of receiving water requirements. This application is considered to be an “on-line” facility and in many situations the most cost-effective stormwater management approach. Use the water quality design guidance in this chapter when designing combination facilities. Combination facilities are examples of units that can provide treatment and storage capacity in a single unit. Additional information on combination facilities is discussed in Section 14.10.7. Storage facility design guidance is discussed in **Chapter 12**.

A single treatment and high flow conveyance facility is an option when:

- Water quality must be provided because of receiving water requirements, and
- Regulating the quantity of stormwater is not required.



2020 MOLALLA STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION



City of Molalla – Public Works Department
117 N. Molalla Ave., Molalla, OR 97038

180 or more	0.35	0.40	0.50	0.60	0.70	0.85
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1. Data for east Washington County; data from Clean Water Services.

3.3.3 Unit Hydrograph Method

- a. **Hydrograph Analysis:** To obtain a realistic and consistent hydrologic analysis for each development site, all developments shall use the hydrograph analysis method for drainage planning and design unless otherwise approved in advance by the Public Works Department authorized representative. The physical characteristics of the site and the design storm shall be used to determine the magnitude, volume, and duration of the runoff hydrograph. The Santa Barbara Urban Hydrograph (SBUH) will be the primary acceptable unit hydrograph method.

The HYD computer program, developed by King County, Washington, in its “Surface Water Design Manual,” January 1990, uses these methods to generate, add, and route hydrographs. The Public Works Department authorized representative may check all hydrologic calculations using the King County HYD program. However, the City will allow the use of the rational method for analysis of drainage basins of 25 acres or less.

- b. **Design Storm:** Return frequency and duration specify the design storm event. The design storms shall be based on two parameters:
 1. Total rainfall (depth in inches).
 2. Rainfall distribution (dimensionless).
- c. **Design Storm Distribution:** The total depth of rainfall for storms of 24-hour duration is shown in **Table 3.2** The rainfall distribution to be used in the City is the design storm of 24-hour duration based on the standard National Resource Conservation Service (NRCS), formerly known as the Soil Conservation Service (SCS), type 1A rainfall distribution using **Table 3.3**.

Table 3.2. RAINFALL DISTRIBUTION

Recurrence Interval (years)	Total Precipitation Depth (inches)
2	2.50
5	3.10
10	3.45
25	3.90
50	4.20
100	4.50

n = Manning's effective roughness coefficient for sheet flow.
 L = flow length (feet).
 I = rainfall intensity (inches per hour).
 S = slope of hydraulic grade line (feet per foot [ft./ft.]

Sheet flow shall not be used for distances over 300 feet.

(2) **Shallow Concentrated Flow:** For slopes less than 0.005 ft./ft. (0.5%), the following equations can be used:

(a) For unpaved surfaces: $V=16.1345 (S)^{0.5}$

(b) For paved surfaces: $V=20.3282 (S)^{0.5}$

Where: V = velocity (feet per second).

S = slope (ft./ft.).

(3) **Channel Flow:** A commonly used method of computing average velocity of flow, once it has measurable depth, is the following equation:

$$V = (1.486 / n) \times R^{0.6} \times S^{0.5}$$

Where: V = velocity (ft./s).

n = Manning's roughness coefficient.

S = slope of flow path (ft./ft.).

R = area/perimeter.

3.3.4 Water Quality Volume and Flow

The water quality storm is the storm required by regulations to be treated. The storm defines both the volume and rate of runoff.

- a. Water Quality Storm: Total precipitation of 0.36 inches falling in four hours, with a storm return period of 96 hours.
- b. Water Quality Volume (WQV) is the volume of water that is produced by the water quality storm. WQV is equal to 0.36 inches of rainfall over 100% of the new impervious area:

$$\text{Water quality volume (cf)} = \frac{0.36(\text{in}) \times \text{area (sf)}}{12 (\text{in./ft.})}$$

- c. Water Quality Flow (WQF) is the average design flow anticipated from the water quality storm:

$$\text{Water quality flow (cfs)} = \frac{\text{Water quality volume (cf)}}{14,400 \text{ sec}}$$

or

$$\text{Water quality flow (cfs)} = \frac{0.36(\text{in}) \times \text{area (sf)}}{12(\text{in./ft.})(4 \text{ hr.})(60 \text{ min/hr.})(60 \text{ sec/min})}$$

3.3.5 Hydraulics

Catch Basins and inlets collect water from an adjacent ditch, gutter line, or pavement and convey the water to a storm sewer or culvert. The inlet systems are to be designed in accordance with the following criteria:

- a. Subsection 3.9.7, "Drain Inlet Design Standards."
- b. The following sources shall be used to locate catch basins and inlets:
 1. ODOT's "Hydraulics Manual."
 2. Hydraulic Engineering Circular 12 (Federal Highway Administration, FHWA-84-202), "Drainage of Highway Pavements."

3.3.6 Area Drains

The maximum acceptable intake flow rate for Type II area drains and ditch inlets is shown in **Table 3.4**.

3.4 WATER QUANTITY FACILITY DESIGN

3.4.1 Mitigation Requirement for Quantity

Each new development is responsible for mitigating its impacts on the public stormwater system. The Public Works Department authorized representative shall determine which of the following techniques may be used to satisfy this requirement. Mitigation requirements shall meet applicable federal, state, and local standards and regulations.

- a. Construction of permanent on-site stormwater quantity detention/retention facilities, designed in accordance with Subsection 3.5, "Water Quality Facility Design."
- b. Enlargement or improvement of the downstream conveyance system shall be done in accordance with Subsection 3.5, "Water Quality Facility Design."

3.4.2 Criteria for Requiring On-Site Detention/Retention

On-site facilities shall be constructed when any of the following conditions exist:

- a. The proposed development establishes or increases the impervious surface area by more than 5,000 square feet. Development includes new development, redevelopment, and/or partial redevelopment.
- b. There is an identified downstream deficiency, and detention/retention rather than conveyance system enlargement is determined to be the more effective solution.
- c. There is an identified regional detention/retention site within the boundary of the development.
- d. A site within the boundary of the development would qualify as a regional detention/retention site under the criteria or capital plan adopted by the City.
- e. Water quantity facilities are required by City-adopted stormwater master plans or adopted sub-basin master plans.

3.4.3 Water Quantity Facility Design Standards

- a. When required, stormwater quantity on-site detention/retention facilities shall be designed to capture runoff so the post-development runoff rates from the site do not exceed the predevelopment runoff rates, based on a 2- through 25-year, 24-hour return storm. Specifically, the 2-, 10-, and 25-year post-development runoff rates shall not exceed their respective 2-, 10-, and 25-year predevelopment runoff rates; unless other criteria are identified in an adopted stormwater master plan or sub-basin master plan.
- b. Water quantity facilities shall be designed to include inlet energy dissipation and a sediment forebay. The sediment forebay shall consist of an area in which heavier sediments can accumulate and receive periodic maintenance to remove these sediments. The forebay size shall be engineered with respect to the anticipated flow rate, and have a durable surface, such as concrete or rock, suitable for periodic maintenance. A minimum size of 20 square feet of water area is anticipated. Some type of barrier shall separate the forebay area from the main area of the water quantity facility. The invert of the incoming storm drain pipe shall be set at or above the top of the forebay barrier elevation and shall consider the pipe wall thickness. Pond inlets with a drainage area of less than one third-acre ($\frac{1}{3}$ AC) may not require a sediment forebay.
- c. Water quantity facilities shall be designed to allow for proper functioning with full sediment accumulation as allowed in Subsection 3.6.6, "Sediment Management/Pollutant Control"
- d. When required because of an identified downstream deficiency, stormwater quantity on-site detention/retention facilities shall be designed so the peak runoff rates will not exceed predevelopment rates for the range of storms that cause the downstream deficiency.
- e. The average, wet-season groundwater elevation shall be determined for the proposed stormwater quantity facility. Groundwater elevation may be established through

Exhibit F: Clackamas County Assessor's Map

Exhibit G: Property Ownership Information

Exhibit H: Cascade Center Wetland Delineation Report



Oregon

Kate Brown, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

(503) 986-5200

FAX (503) 378-4844

www.oregon.gov/dsl

State Land Board

November 26, 2019

I & E Construction

Attn: Karl Ivanov

9550 SE Clackamas Road

Clackamas, OR 97015

Kate Brown

Governor

Bev Clarno

Secretary of State

Re: WD # 2019-0559 **Approved**

Wetland Delineation Report for Cascade Center

Clackamas County; T5S R2E S8BC TLs 400, 500, 600, 700, 801, 900
and Portion of TL 800 and the Highway 211 ROW

Tobias Read

State Treasurer

Dear Mr. Ivanov:

The Department of State Lands has reviewed the wetland determination report prepared by AKS Engineering & Forestry LLC for the site referenced above. Please note that the study area includes only a portion of the tax lots described above (see the attached map). Based on information presented in the report, a site visit on November 21, 2019, and additional information submitted upon request, we concur with the report's findings as indicated on attached revised Figure 6. Please replace all copies of the preliminary wetland map with this final Department-approved map.

Within the study area, one roadside ditch was identified. Normally, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined). However, the identified roadside ditch is exempt per OAR 141-085-0515(10). Therefore, it is not subject to these state permit requirements. In addition, a previous report (WD # 2019-0463) indicates that there is a jurisdictional wetland on the portion of TL 800 located outside the study area boundary for this report.

This concurrence is based on information provided to the agency and is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The U.S. Army Corps of Engineers will determine jurisdiction under the Clean Water Act, which may require submittal of a complete Wetland Delineation Report.

The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by

the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. If you have any questions, please contact Chris Stevenson, the Jurisdictional Coordinator for Clackamas County at (503) 986-5246.

Sincerely,

Peter Ryan, PWS
Aquatic Resource Specialist

Enclosures

ec: Stacey Reed, PWS, AKS Engineering & Forestry, LLC
Alice Cannon, City of Molalla Planning Department
Jessica Menichino, Corps of Engineers
Anita Huffman, DSL

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at: <https://apps.oregon.gov/DSL/EPS/program?key=4>.

Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279**. A single PDF of the completed cover form and report may be e-mailed to: **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

RECEIVED

OCT 09 2019

RECEIVED \$ 454.00
DEPARTMENT OF STATE LANDS
33070

Contact and Authorization Information	
<input checked="" type="checkbox"/> Applicant <input type="checkbox"/> Owner Name, Firm and Address: Karl Ivanov / I&E Construction 9550 SE Clackamas Road Clackamas, OR 97015	Business phone # Mobile phone # (optional) E-mail: Karl@iecon.us
<input checked="" type="checkbox"/> Authorized Legal Agent, Name and Address (if different): Same as Applicant	Business phone # Mobile phone # (optional) E-mail:
I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact. Typed/Printed Name: <u>KIRIL IVANOV</u> Signature: _____ Date: <u>10/6/19</u> Special instructions regarding site access: _____	

Project and Site Information	
Project Name: Cascade Center	Latitude: 45.148599 Longitude: -122.591732 decimal degree - centroid of site or start & end points of linear project
Proposed Use: Commerical	Tax Map # 5 2E 8C Tax Lot(s) 400, 500, 600, 700, 801, 900 and portion of 800
Project Street Address (or other descriptive location): 121 S Hezzie Lane	Tax Map # Tax Lot(s)
City: Molalla County: Clackamas	Township 5S Range 2E Section 8 QQ Use separate sheet for additional tax and location information
	Waterway: N/A River Mile: N/A

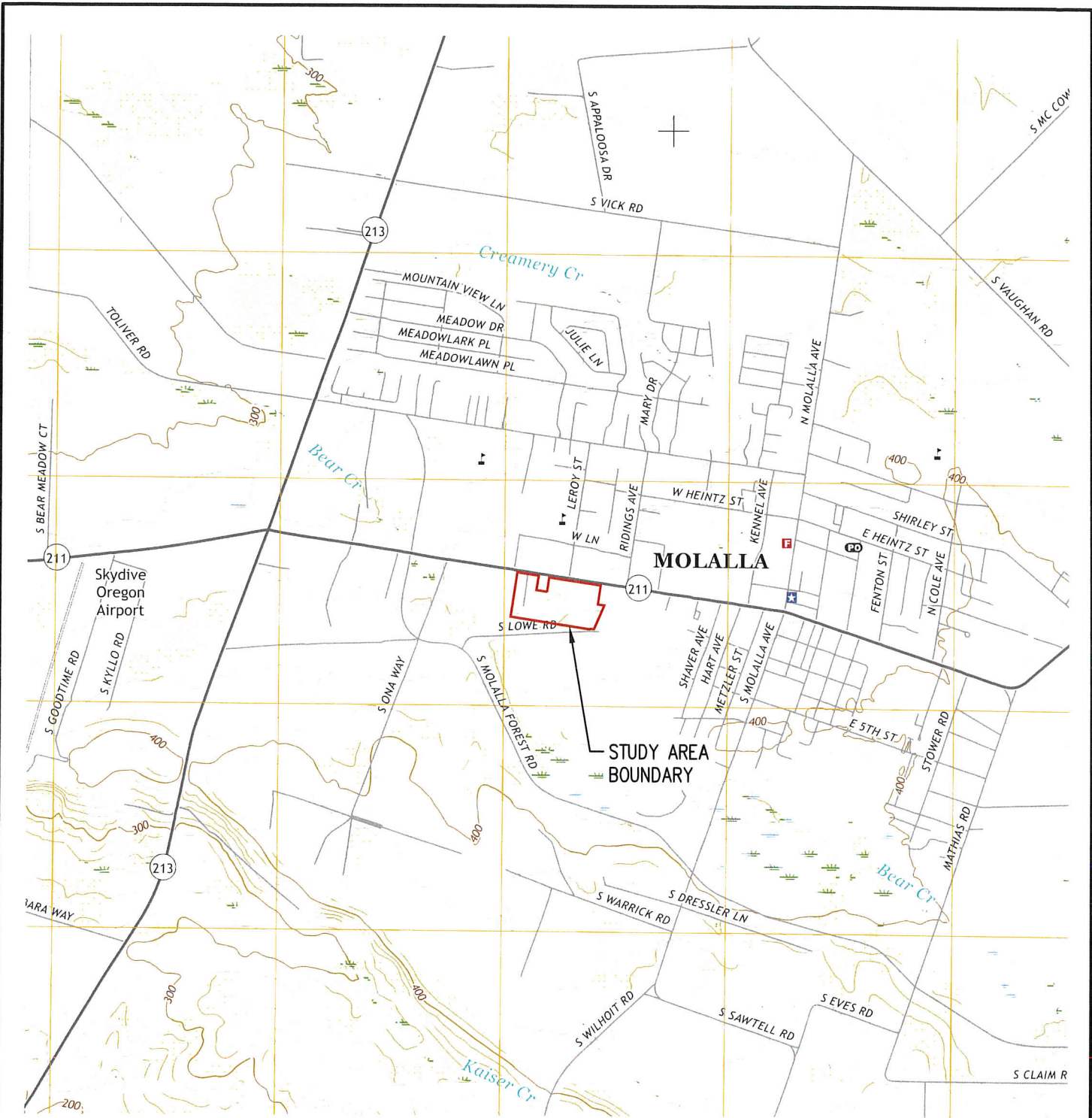
Wetland Delineation Information	
Wetland Consultant Name, Firm and Address: Stacey Reed, PWS AKS Engineering & Forestry, LLC 12965 SW Herman Road, Ste 100 Tualatin, OR 97062	Phone # (503) 563-6151 Mobile phone # (if applicable) E-mail: staceyr@aks-eng.com
The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge. Consultant Signature: <u>Stacey Reed</u> Date: <u>10/6/19</u>	

Primary Contact for report review and site access is Consultant Applicant/Owner Authorized Agent

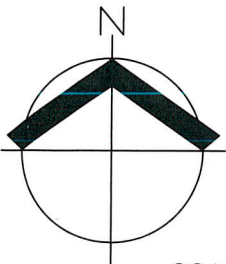
Wetland/Waters Present? Yes No Study Area size: 18.24 AC Total Wetland Acreage: 0.0000

Check Applicable Boxes Below	
<input type="checkbox"/> R-F permit application submitted <input type="checkbox"/> Mitigation bank site <input type="checkbox"/> Industrial Land Certification Program Site <input type="checkbox"/> Wetland restoration/enhancement project (not mitigation) <input type="checkbox"/> Previous delineation/application on parcel If known, previous DSL # <u>2019-0463</u>	<input checked="" type="checkbox"/> Fee payment submitted \$ <u>454</u> <input type="checkbox"/> Fee (\$100) for resubmittal of rejected report <input type="checkbox"/> Request for Reissuance. See eligibility criteria. (no fee) DSL # _____ Expiration date _____ <input checked="" type="checkbox"/> LWI shows wetlands or waters on parcel Wetland ID code <u>BC-18</u>

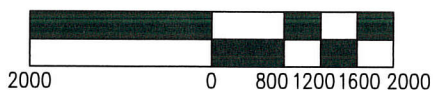
For Office Use Only		
DSL Reviewer: <u>CS</u>	Fee Paid Date: <u>10 / 9 / 19</u>	DSL WD # <u>2019-0559</u>
Date Delineation Received: <u>10 / 9 / 19</u>	Scanned: <input type="checkbox"/>	Electronic: <input type="checkbox"/>
		DSL App.# _____



USGS 7.5' TOPOGRAPHIC SERIES
 QUADRANGLE: MOLALLA, OR (2017)



SCALE: 1" = 2000 FEET



DATE: 10/01/2019

USGS VICINITY MAP
CASCADE CENTER - MOLALLA WETLAND DETERMINATION REPORT

FIGURE
1

AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 503.563.6151 WWW.AKS-ENG.COM



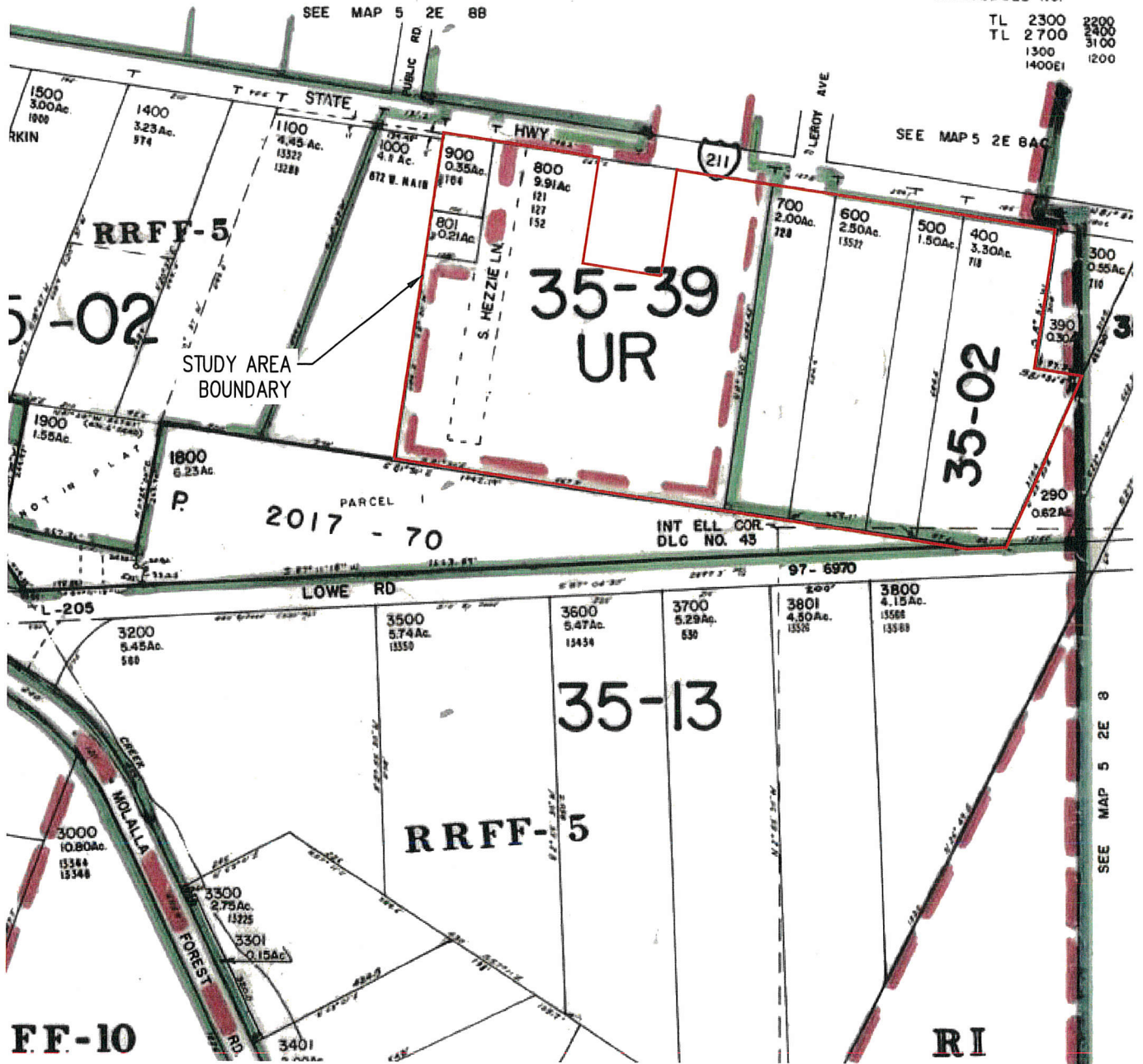
DRWN: SAS
 CHKD: SAR
 AKS JOB:
 7710

CANCELLED NO.

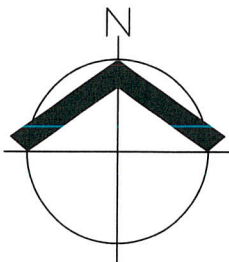
TL 2300 2200
TL 2700 3100
1300 3100
1400E1 1200

SEE MAP 5 2E 88

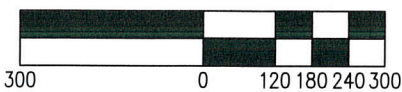
SEE MAP 5 2E 8A



CLACKAMAS COUNTY
TAX LOTS 400, 500, 600,
700, 801, 900, & A
PORTION OF TAX LOT 800
TAX MAP 5S 2E 8



SCALE: 1" = 300 FEET



DATE: 10/01/2019

TAX MAP (MAP 5S 2E 8)
CASCADE CENTER - MOLALLA WETLAND DETERMINATION REPORT

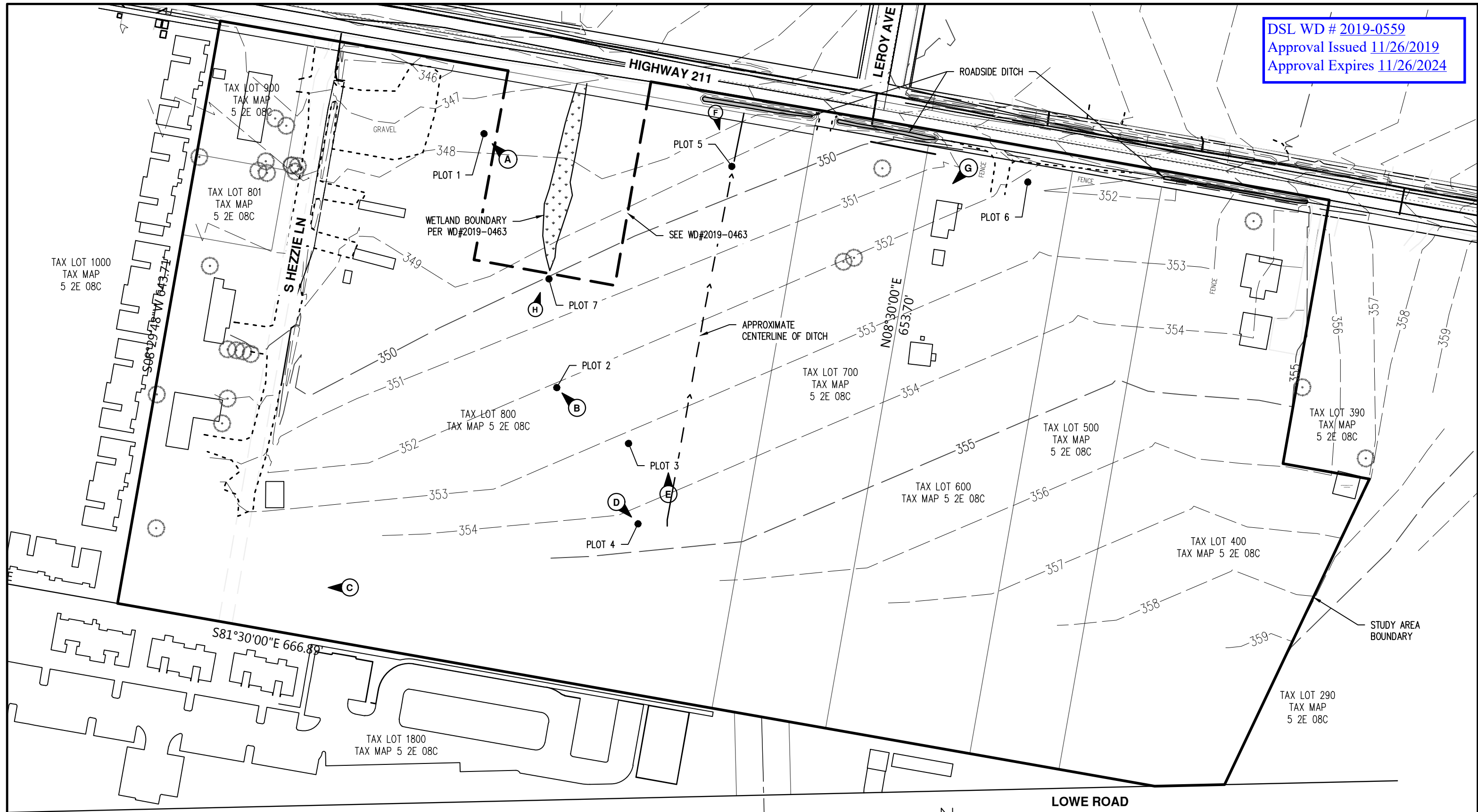
FIGURE
2

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM



DRWN: SAS
CHKD: SAR
AKS JOB:
7710

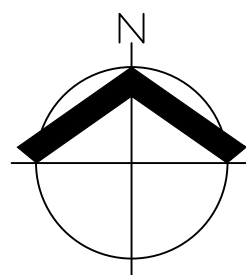
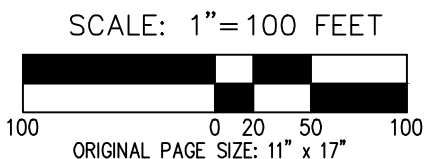
DSL WD # 2019-0559
 Approval Issued 11/26/2019
 Approval Expires 11/26/2024



- PHOTO LOCATIONS & ORIENTATION
- PLOT 1 PLOT LOCATIONS

PLOT LOCATIONS SHOWN WERE DOCUMENTED BY AKS ENGINEERING & FORESTRY, LLC ON SEPTEMBER 25, 2019 AND WERE LOCATED USING A TRIMBLE GEO 7X HANDHELD GPS RECEIVER WITH SUB-METER ACCURACY.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM MULTITECH LAND SURVEY.



DATE: 11/20/2019

WETLAND DETERMINATION MAP		FIGURE
CASCADE CENTER - MOLALLA WETLAND DETERMINATION REPORT		5
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JRI CHKD: SAR AKS JOB: 7710

Exhibit I: Planning Process Summary



Planning Department
117 N Molalla Avenue
PO Box 248
Molalla, Oregon 97038
Phone: (503) 759-0205
communityplanner@cityofmolalla.com

Planning Process Summary: Pre11-2021

Applicant: Stoneplace Apartments LLC

Site Address (or TLNO): 200-201 S Leroy Ave

Site Zoning: General Commercial (C-2)

Proposed Use: 173 Unit Apartment Complex

Pre-App Conference Date: July 7, 2021

Site Design Review

Process

- Per Molalla Municipal Code (MMC) Section 17-4.2.020 site design review is required.
- Per Molalla Municipal Code Section 17-4.2.030 the proposed project meets thresholds for Type III Review: Quasi-Judicial Review with a Public Hearing.
- Type III Review processes are explained in Molalla Municipal Code Section 17-4.1.040

Timeline

- Upon application submittal, the City has **30 days** for “Completeness Review” to determine whether the project meets submission requirements of 17-4.2.040 Application Submission Requirements
- If the project is deemed complete the City has **120 days** from that Completeness determination to bring the project to hearing and render a decision
- If the submission is not complete the Applicant has **180 days** from the incompleteness determination to resubmit a complete application
- If the project is not appealed, the Decision becomes final **10 days** after issuance of a notice of decision
- If *approved*, the Applicant may submit plans for Public Works Civil Review and building permit authorization, integrating all conditions of approval, upon the decision becoming final. This authorization releases Clackamas County to review building permits.

Applicable Approval Criteria (Section 17-4.2.050 Approval Criteria)

Staff has determined that narrative responses to each criterion from the sections below are required:

Chapter 17, Division 2

Section 17-2.2.030 Allowed Uses

Section 17-2.2.040 Lot and Development Standards – Non-Residential Standards Apply

Section 17-2.3.080 Multifamily Development

Section 17-2.3.090 Dwellings in Commercial and Industrial Zones

Chapter 17, Division 3

Section 17-3.2.030 Residential Buildings

Section 17-3.2.040 Non-Residential Buildings

Section 17-3.2.050 Civic Space and Pedestrian Amenities*

* depending on total floor area of commercial

Chapter 17-3.3 Access and Circulation

Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting,

Chapter 17-3.5 Parking and Loading

Chapter 17-3.6 Public Facilities

Chapter 17, Division 4

17-4.2.050 Approval Criteria

Reference Sections:

Review all portions of Chapter 17-4.2 Site Design Review

Type III procedures are outlined in Section 17-4.1.040

Property Line Adjustment (PLA)

Process

- PLAs are governed through MMC Section 17-4.3.120 Property Line Adjustments
- PLAs are Type I procedures governed by 17-4.1.020 Type I Procedure (Staff Review and Zoning Checklist)
- City Approval of a final partition plat survey is required prior to submission to Clackamas County Surveying
- Proof of recording is required prior to submission of building permits

Molalla Planning Department Fees

- Type III Site Design Review: \$3000
- Property Line Adjustment: \$500 per PLA, \$1000 total.
- Multifamily Building Permit Authorization: \$575 + \$75 per unit up to 20 units; \$15 per additional unit over 20 units
- Commercial Building Permit Authorization: \$400-\$1000 per building depending on size

Questions From Applicant

Land Use

1. Please confirm the City's review procedure type and the land use applications required to facilitate multi-family residential units on the subject site. Additionally, please discuss City application, permit, SDC's, and other agency fees.

See above for planning processes, permits, and fees. Each of the PLAs and the SDR can be processed through separate Land Use Action application forms.

2. This project involves two property line adjustments. One between Tax Lot 4500 and 4600 and a second one between tax Lots 4700 and 5000. Can these be accomplished through the property line adjustment process? Or is a replat required?

Processing as two PLAs is fine from the City's perspective. Recording of replat surveys will be required through the County and we require that document prior to building permit.

3. Please discuss the required building setbacks and any applicable building separation requirements as they relate to this site. Do the build-to-line setback requirements apply to residential buildings within the General Commercial (C-2) zone?

Refer to non-residential buildings code from Table 17-2.2.040. Build-to-Line will be the PUE boundary.

4. Please discuss additional multi-family residential standards, if any, which apply to this Special Use in the C-2 zone?

Section 17-2.3.080 Multifamily Development
Section 17-2.3.090 Dwellings in Commercial and Industrial Zones

Nothing particularly applies to the C-2 zone.

5. Please discuss short term rentals and any special requirements for short term rental units within this project.

Our development code does not have that distinction.

6. Please discuss required density for this site. It is not clear if there are density standards that apply for a residential use in the C-2 zone. If there are standards, what are they?

The City does not have residential density standards in commercial zones. Residential projects in commercial zones do have to meet communal and private open space requirements of multi-family and other provisions of the development code (height, parking, etc.)

7. We would like to confirm that the layout shown is acceptable, given the requirements of the C-2 zone and the City of Molalla Development Code.

Ultimately, we'll have to reconsider a design that incorporates commercial elements.

The main issues with the design at hand are building orientation per MMC 17-3.2.030 Residential Buildings – primary entrances need to face streetside and adhere to build-to-line (aka PUE) standards. Primary entrance would need connecting walkways as well. Generally, crosswalks for ped connection throughout site would be helpful.

8. Please discuss the minimum landscaping requirements including common open space landscaping, private open space landscaping, parking area landscaping and required buffering and/or screening.

Minimum LS in C-2 – 5% total... this is circumvented by additional standards below -
Parking lot landscaping 10% of lot.

Multifamily – 15% common space with qualifying areas having dimensions of at least 20'x20'. As the property will be developed as mixed use, staff will support a finding that open space calculations will be based on the % of floor area dedicated to residential uses.

Any parking areas that would put glare onto adjacent residential lots or the ROW needs to be screened.

9. Please confirm that the civic space requirements found in Section 17-3.2.050 are not applicable because this is residential project not commercial.

Civic space applies to commercial and mixed use sites with 10000+ sqft of leasable floor area. Civic space requirement (3%) will apply statewide.

10. Please discuss elements required within the open space areas (picnic benches, walking trails, etc.)

Per MMC 17-2.3.080 Multifamily Development: *The common area or open space shall contain one or more of the following: outdoor recreation area, tree grove (e.g., existing mature trees), turf play fields or playgrounds, sports courts, swim pool, walking fitness course, natural area with picnic benches, or similar open space amenities as appropriate for the intended residents.*

11. Please discuss the minimum vehicle and bicycle parking requirements.

Per MMC 17-3.5.030 Auto min:

1.5 spaces for a 1-bedroom unit

2 spaces for a 2-bedroom unit

2.5 spaces for 3 bedrooms or more

Max = 1.5x min.

Note: shared parking potential (Subsection E of 17-3.5.030) is a possibility for mixed use development

Per MMC 17-3.5.040 Bike Min: 2 bike spaces per 4 dwelling units

No Max

12. Please discuss other applicable development standards required for multi-family residential developments.

Section 17-2.3.080 Multifamily Development

Section 17-2.3.090 Dwellings in Commercial and Industrial Zones

Nothing particularly applies to the C-2 zone.

13. Please confirm that site requirements (landscaping, lot coverage, parking stalls, etc.) will apply to both properties as a whole rather than two individual sites.

Each property will need to meet lot standards individually. The city is open to allowing shared common open space between the lots through easement/dedication. A bigger/better open space area on one property might be worth a reduction on another. Each lot should have some allotment of 20x20 common open space.

14. Please discuss applicable requirements with regards to trash and recycling facilities.

Per MMC 17-2.3.080 Multifamily Development: *Trash Storage. Trash receptacles, recycling, and storage facilities shall be oriented away from building entrances, set back at least 10 feet from any public right-of-way and adjacent residences, and shall be screened with an evergreen hedge or solid fence or wall of not less than six feet in height. Receptacles must be accessible to trash pick-up trucks. (Ord. 2017-08 §1)*

15. Please discuss the timing of building permit applications as they relate to the site design review and property line adjustments/replat applications. At what point in the land use and subsequent recordation of property line adjustment/replat surveys process can a building permit be submitted?

Building permits may be submitted after recording of PLAs and approval by Planning Commission. The PLAs do not require oversight from PC and can be processed at any time.

16. Please discuss any future Development Code changes and what impact those Code changes may have on this project.

The City has a current proposal out to restrict ground floor residential development in commercial zones. It is scheduled to go before City Council on Weds, August 11th. This is intended as a stopgap as we develop mixed-use standards and, potentially, zones.

17. Please confirm the timing of SDC payment as it relates to project milestones. Specifically, please confirm SDC amounts, the dates that SDC fees are planned to increase, and when SDC's can be paid, and if SDC's can be paid early.

SDCs are determined at the time of building permit submission. Payment is required prior to City issuance of a release letter to the Clackamas County building department.

Street/Transportation/Circulation

18. The site is planned to have two accesses on S Leroy Avenue. Please discuss access spacing requirements and how they apply to this site.

Leroy Ave is classified as a major collector in the Molalla TSP. Our standards for intersection spacing are as follows:

Table 10: Minimum Intersection Spacing Standards

Functional Classification	Public Street (Feet)	Private Access Drive (Feet)
Local Street	150	50
Neighborhood Collector	300	100
Major Collector/Arterial ¹	600	150
Molalla Forest Road	800	N/A ²

¹ ODOT standards supersede these values on ODOT facilities

Current proposed W access does not meet standard with the southern access on Lot 1 (120 Leroy). Will need to be pushed further south. The east access should either align with the Lot 1 rear access (if that doesn't conflict with the L turn pocket) or push back to align with the west access.

19. Please discuss any required right-of-way improvements to S Leroy Avenue. Is any additional right-of-way required to be dedicated?

ROW dedications will be required for the southern portion of Leroy Ave to S Lowe RD. Driveway approaches and sidewalks as necessary.

20. Please discuss any special circulation requirements (vehicular, pedestrian, bicycle, etc.), both internally and including the adjacent commercial properties.

Internal circulation shall meet access and circulation requirements of MMC Chapter 17-3.3

Immediately jumping out is the need for more ped crosswalks in the proposed design.

21. This property was included in the Cascade Center land use approval (Local File No. DRW01-2019), which included a full transportation impact study. Please confirm if an additional traffic analysis is required and the scope of the study.

The original TIA is outdated and referred to a different land use and lot orientation. This project will require a new TIA.

22. Please confirm that conditions of approval from Local File No. DRW01-2019 related to public improvements to the OR-211/Leroy Avenue intersection have been or will be met by the approved Cascade Center improvements currently under construction.

23. Please discuss any improvements to OR-211 that may be triggered by this project.

24. Please discuss the timing of improvements discussed in Cooperative Improvement Agreement (CIA) No 34035 as they relate to this project.

The intersection and OR-211 improvements are in ODOT's hands. All CIA improvements must be complete prior to building permit application. This project will likely trigger the OR-211/Leroy Ave signal, which will be required prior to occupancy.

25. Please discuss the City's proposed modifications to Cooperative Improvement Agreement (CIA) No 34035 and how it relates to this project.

It does not relate to this project. Just the Grocery Outlet project.

26. Please discuss any secondary emergency access requirements.

Aside from location concerns mentioned above, the proposed secondary accesses are workable.

27. Please confirm public improvement requirements for this project.

Please confer with Public Works Director Gerald Fisher regarding any outstanding questions about public facilities.

28. Does the fire district have any comments regarding the site plan?

Will have to check onsite hydrant locations on design.

Public Services/Utilities

29. Please discuss stormwater quality and detention requirements for the site. Are there any downstream regional facilities with available capacity? Are there any known downstream stormwater deficiencies?

30. Please discuss the different options for private onsite/underground/mechanical/planter box stormwater treatment options for water quality and water quantity (detention).
31. Please discuss any upcoming changes to stormwater management requirements.
32. Please confirm there is sufficient sanitary sewer capacity to serve this project and where the connection to the existing sanitary sewer system will likely be.
33. Please confirm sufficient water system capacity and pressure exists for domestic and fire suppression service, and where the connection point(s) should be.

Exhibit C:

Molalla Public Works Comments



Public Works Department

117 N Molalla Avenue

PO Box 248

Molalla, Oregon 97038

Phone: (503) 829-6855

Fax: (503) 829-3676

November 08, 2021

TO: Mac Corthell, Planning Director
Dan Zinder, Assistant Planner
Julie Larson, Planning Specialist

FROM: Sam Miller, Sr. Engineer Tech.

RE: 200 & 201 S Leroy Ave. (SDR04-2021 – Molalla – Cascade Place)

Based on a review of the materials submitted, Staff has prepared the following comments. These comments are applicable to the subject application; any subsequent modifications may require amendments and/or additions. These conditions do not include requirements already set forth in the municipal code.

CONDITIONS

1. Specific Requirements To This Site:

A. Street:

1. The 2-lot Multifamily Housing Development proposal will not require a traffic impact analysis update.
2. S. Leroy Avenue (East side): Leroy Avenue is a major collector street under City of Molalla jurisdiction. Current right-of-way width is 60 feet and pavement width is 46 feet. Cascade Center constructed Leroy Avenue with curb and gutter on the east side of the roadway. Applicant will be required to construct 6-foot-wide sidewalks, and a commercial driveway along the site frontage on the east side of Leroy Ave. Driveway centerline shall align with centerline of driveway on the west side of Leroy Avenue as proposed. Per exhibit 4: Major Collector Cross Section in accordance with TSP.
3. S. Leroy Avenue (West side): Leroy Avenue is a major collector street under City of Molalla jurisdiction. Current right-of-way width is 60 feet and pavement width is 46 feet. Cascade Center constructed Leroy Avenue with curb, gutter, and 6-foot-wide sidewalks on the west side of the roadway fronting Lot 8. Applicant will be required to construct a commercial driveway to complete the frontage improvements on the west side of the roadway. Per exhibit 4: Major Collector Cross Section in accordance with TSP.
4. Right-of-way Dedications/Donations: If right of way dedication fronts streets under the jurisdiction of the City of Molalla, Applicant shall submit dedication on formats approved by the Public Works Department. Applicant is advised that donation must be completed and recorded prior to submission of final subdivision plat or final partition plat in order for Public Works to process plat documents. The most recent plat and

survey shows 60 feet of right-of-way, no dedication is required.

5. Applicant shall dedicate a 10-foot wide Public Utility Easement along all public rights of way if not already provided in the Cascade Center subdivision plat.
 6. Access to public streets shall be limited to Leroy Ave and all accesses shall be constructed in such a manner as to eliminate turning conflicts. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.
 7. Transportation SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from transportation SDC charges. SDC's shall be calculated in accordance with the SDC methodology.
- B. Storm:
1. Leroy Avenue – There are no storm improvements available for connection of onsite storm improvements. See ODOT Streets and Cascade Center below.
 2. ODOT Streets: A 15-inch storm main exists approximately 280 feet to the north of address 201 S Leroy Ave. on W Main Street (OR 211) East Access Utility Extension. Storm main is approximately 7 feet in depth and will serve Lot 9 of the Multifamily Housing Development. Storm connection shall meet ODOT requirements.
 3. Cascade Center Development: A 24-inch Storm main exists on the north side of Lot 8 and will serve this portion of the Multifamily Housing Development.
 4. Onsite Improvements: Applicant will be required to provide water quality and detention for lots 8 and 9 in accordance with the Molalla Standard Specifications for Public Works Construction.
 5. Stormwater SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from stormwater SDC charges. SDC's shall be calculated in accordance with the SDC methodology.
- C. Sanitary:
1. Leroy Avenue: There are no sewer improvements available for connection of onsite sewer improvements. See ODOT Street below.
 2. ODOT Street: An 8-inch sanitary main exists on W Main Street (OR. 211). Sanitary main is approx. 9 feet deep at East Access Utility Extension and will serve 201 S Leroy Ave. lot 9 of Multifamily Housing Development by gravity system. Applicant will be required to dedicate a 15-foot-wide sewer line easement per City requirements.
 3. 200 S Leroy Ave. An 8-inch sanitary main and Manhole exists through the site. Applicant

will be required to connect to existing Sanitary MH that are 10 and 12 feet deep in proposed Lot and will serve lot 8 of Multifamily Housing Development by gravity system.

4. Sanitary SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from sanitary SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

D. Water:

1. Lot 8 can be served from existing 8-inch line within Cascade Center Development and connect to 12-inch main in S. Leroy Ave. creating circulation. Applicant shall dedicate a 15-foot-wide waterline easement per City requirements.
2. Lot 9 can be served from existing 8-inch line on W Main Street (Hwy 211). Project will be required to connect to 8-inch main from the East Access Utility Extension off W. Main Street. Extend 8-inch line to the south and loop through Lot 10. Applicant shall dedicate a 15-foot-wide waterline easement per City requirements.
3. Should Fire Department regulations require additional fire flow that results in looping the water line through the site, then applicants engineer shall coordinate with Public Works for the extension of a public water line, and dedication of easements.
4. Water SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from water SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

E. Parks:

1. Parks SDC's – In accordance with SMC 13.70.110 this residential development is not exempt from parks SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

F. Franchise Utility Services:

1. All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city.

DESIGN REQUIREMENTS & POLICIES

1. General Requirements:

- A. For residential development projects, all public improvements shall be completed and accepted by the Public Works Department, or otherwise bonded in accordance with MMC 17-3.6.010 and the City of Molalla Public Works Design Standards prior to issuance of building permits. No connections to City services shall be allowed until improvements to the public system to which connection is sought are completed and accepted by City of Molalla Public Works.
- B. For commercial projects, all public improvements shall be completed and accepted by the Public Works Department prior to issuance of final occupancy.

- C. From the materials submitted, it appears that the storm drain, domestic water, and sanitary sewer facilities will be obtained from main line connections and/or extensions. Separate engineering drawings reflecting the installation of these public utilities will be required.
- D. No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way, and easements have been obtained and approved by staff, and Staff is notified a minimum of 24 hours in advance.
- E. Staff reserves the right to require revisions/modifications to the public improvement construction plans and completed street improvements, if additional modifications or expansion of the sight distance onto adjacent streets is required.
- F. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.
- G. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated, or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff.
- H. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction.
- I. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document.
- J. Sanitary sewer designs require review by Oregon Department of Environmental Quality. Applicant shall be responsible for submission of plans to state agency and all associated fees. Applicant's Engineer will be required to submit final report to DEQ and provide a copy of the report to the City.
- K. All utilities will be stubbed out to the far end of each street for future extension. The project shall utilize existing water, sewer, and storm water 'stub-outs' wherever possible. Water for domestic and fire protection shall be looped through the proposed site. Any 'stub-outs' determined to be not needed for the proposed development or any future development of the subject property shall be abandoned in accordance with the Molalla Standard Specifications for Public Works Construction.
- L. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director.

- M. General Easements – A 10-foot-wide public utility easement shall be dedicated to the City adjacent to all public right-of-way and no structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder’s Office and return the original document to the City prior to final occupancy.
- N. General Wetland Requirements – The applicant will be required to provide Public Works with a letter of concurrence from the Department of State Lands regarding any wetlands on the subject property.
- O. General Erosion Control – The applicant shall install, operate, and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant’s Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.
- P. System Development Charges shall be paid prior to release of Building Permit Authorization from the City of Molalla.

Exhibit D:

Molalla Fire Department Comments



Molalla Rural Fire Protection District #73

P.O. Box 655 • Molalla, OR 97038
320 N Molalla Ave. Molalla, OR 97038

Telephone: 503-829-2200
Fax: 503-829-5794

Preliminary Comments for 200 Leroy Cascade Place Apartments
November 2021

- 1) Please confirm how high will the apartments be at the sidewall roof connection. My best guess is 29'3". However, if over 30 feet see Section D105 of the 2019 Oregon Fire Code
- 2) Please remember, FDC's and Hydrants must be on the same side of the access road and within 50 feet of each other.
- 3) Please submit hydrant location map and FDC map for location approval. I did not see one with the preliminary submittal package.
- 4) Address singe for the buildings shall be consistent with the other buildings in the Stone Place Project.
- 5) It is not uncommon for the car port cover to extend out past the parking space. On sheet P-08, it appears that the turning radius shown for the fire truck may extend in to the car port cover. Please verify that it does not. I have attached Mutual Aid Truck Companies measurements as we will rely on Mutual Aid at this complex for roof operations and access to the third floor. Please use these measurements for turning radius and not the standard fire apparatus you have on the sheet. I will need to see the turning radius sheet after the new measurements are plugged in.
- 6) It appears that the drive isle is 26 feet in width. Is this to the end of the parking spot or to the roof covering?
- 7) Please provide a striping/no parking signage/curb paint detail for approval as I did not see one with the preliminary submittal package.

The above comments are based solely on the site plan provided. Molalla Fire reserves the right to review and comment on the plans that are to be submitted for full review or revisions to plans that have already been reviewed.

Review of submitted plans is not an approval of omissions, oversights or authorization of non-compliance with any regulations of this agency or of the regulations of any other agency. This decision should not be considered a precedent setting recommendation, as we will review each project on a case by case basis.



Exhibit E:
ODOT Comments



Oregon

Kate Brown, Governor

Department of Transportation

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

11/16/21

ODOT #12325

ODOT Response

Project Name: Cascade Place Multifamily	Applicant:
Jurisdiction: City of Molalla	Jurisdiction Case #: SDR04-2021
Site Address: 121 S Hezzie Lane, Molalla, OR 97038	Legal Description: 05S 02E 08C Tax Lot(s): 00900
State Highway: OR 211	Mileposts: 12.1

The site of this proposed land use action is in the vicinity of OR 211. ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation. **Please direct the applicant to the District Contact indicated below to determine permit requirements and obtain application information.**

COMMENTS/FINDINGS

Traffic Impacts

- The applicant submitted a traffic impact analysis to assess the impacts of the proposed use on the State highway system. The analysis shows that a signal at the OR 211/Leroy Ave intersection does not meet signal warrants with the proposed developmetn. While a signal is not warranted at this time, ODOT recommends that the City require the applicant to contribute a proportionate share towards the future project based on the amount of traffic they are predicted to generate that will access their site through this intersection.

Please send a copy of the Notice of Decision including conditions of approval to:

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

ODOT_R1_DevRev@odot.state.or.us

Development Review Planner: Seth Brumley	503.731.8234, Seth.A.Brumley@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 Abraham.TAYAR@odot.oregon.gov