PLANNING COMMISSION MEETING
Tuesday, May 22, 2018, 6:30 PM
Council Chambers, 2nd Floor City Hall
1300 NE Village Street

MEETING AGENDA

1. **CALL TO ORDER:** 6:30 p.m.

2. **CITIZENS WISHING TO SPEAK ON NON-AGENDA ITEMS**

3. **PUBLIC HEARING**

TYPE III QUASI –JUDICIAL

File Number 2018-22-DR

Summary: The applicant is seeking Site Design Review approval for a new commercial/residential mixed-use development at the northwest corner of Village Street and Market Drive. The commercial component includes 6,476 sq. ft. of ground floor commercial/retail space. The residential component includes 71 townhouse and apartment units.

The project has two buildings, one that stretches along Village Street and Market Drive with ground floor commercial and upper story residential, and one in the interior of the lot with residential units only. The proposed buildings are 3-4 stories in height. The project includes 107 on-site parking spaces in tuck-under and surface locations.

Applicable Fairview Municipal Code Criteria:

19.400: Administration of Land Use and Development Review
19.412: Description of Permit Procedures
19.413: Procedures
19.420: Development Review and Site Design Review
19.422: Applicability
19.424: Site Design Review – Application Review Procedure
19.425: Site Design Review – Application Submission Requirements
19.426: Site Design Review – Approval Criteria
19.110: Village General Provisions
19.135: Village Commercial (VC) and Mixed Use (VMU)
19.140: Village General Standards
19.150: Special Development Standards – VO, VC and VMU Zones
19.162: Access and Circulation
19.163: Landscaping, Street Trees, Fences and Walls
19.164: Vehicle and Bicycle Parking
19.165: Public Facilities Standards
19.170: Sign Regulations

4. **WORK SESSION**
   Review and provide feedback on accessory dwelling unit code amendment concepts for compliance with new State requirements.

5. **COMMISSION UPDATES**

6. **STAFF UPDATES**

7. **TENTATIVE AGENDA**

8. **ADJOURNMENT**

NEXT PLANNING COMMISSION MEETING TUESDAY, JUNE 12, 2018

Planning Commission hearings are broadcast live on Comcast Cable Channel 22 and Frontier Cable Channel 33. Replays of the hearing are shown on Comcast Channel 22 and Frontier Channel 33 Saturday at 12:00pm and Monday at 2:00pm, and Comcast Channel 30 and Frontier Channel 39 Wednesday at 7:00pm. Further information is available on our web page at www.fairvieworegon.gov or by calling Devree Leymaster, City Recorder, 503-674-6224.

The meeting location is wheelchair accessible. A request for an interpreter for the hearing impaired or for other accommodations for person with disabilities should be made at least 48 hours before the meeting to:
Devree Leymaster, 503-674-6224.

PLANNING COMMISSION STAFF REPORT – TYPE III SITE DESIGN REVIEW FINDINGS AND RECOMMENDATION

Date of Report:	May 15, 2018
Public Hearing Date:	May 22, 2018
Staff Contact:	Sarah Selden, Senior Planner Phone: 503-674-6242 E-mail: seldens@ci.fairview.or.us
Application Number:	2018-22-DR
Property Owner:	Village Development, LLC
Applicant:	Liz Edmonds - Village Development, LLC
Site Address:	Northwest corner of NE Village Street and NE Market Drive
Parcel Number/Tax ID:	TL 1N3E33AB -00302, -00303, -00304
Proposal:	Mixed-use commercial/residential development with 6,476 sq. ft. of ground floor commercial, 71 residential units, and 107 on-site parking spaces.
Recommendation:	**Approval of 2018-22-DR with conditions**
Exhibits:	**A. Applicant's Narrative and Written Materials** 1. Applicant's Narrative (73 pages) 2. Traffic Impact Study (89 pages) 3. Geotechnical Engineering Report (64 pages) 4. Sample Materials (52 pages) **B. Plans/Drawings** 1. Site Maps

2. Architectural Renderings
3. Project Summary Cover Sheet
4. Proposed Site Plan
5. Erosion + Sediment Control and Grading Plan
6. Utility Plan
7. Civil Details
8. Landscape Plan
9. Building Elevations (3 pages)
10. Floor Plans (4 pages)
11. Building Sections

C. Department Referral Comments

1. Fire Marshal Comments

I. BACKGROUND & EXISTING CONDITIONS

Address/Location: The site is located at the NW Corner of NE Village Street and NE Market Drive, adjacent to the VA Clinic and Post Office.

Acreage: 1.59 acres

Comprehensive Plan: Village

Zoning Designation: Village Mixed-Use (VMU)

Zoning Overlays: None

Surround Land Use/Zoning:

North: VA Clinic / Village Commercial zone
South: Vacant / Village Mixed-Use Zone
East: Vacant / Village Commercial/ Village Office zones
West: Post Office / Village Flex zone

Streets/Classification: Village Street and Market Drive are both local streets

Existing Site Conditions: The site is currently a vacant, graveled lot, absent of any trees or shrubs. The site has a rock retaining wall along the northwest corner abutting the post office access drive. The site is primarily flat, with the exception of the northeast corner, which slopes down to Village Street with a grade change of approximately 9 ft.

II. NOTICES & REFERRALS

Application Date:	March 22, 2018
Application Deemed Complete:	April 19, 2018
Public Hearing Date:	May 22, 2018
Public Notice Date/Type:	A public hearing notice was mailed on May 2, 2018 to property owners within 250 ft. of the site, and a newspaper notice was published in the Gresham Outlook on May 11, 2018. A sign was posted on the site on May 11, 2018.
Referrals:	This application was routed to Gresham Fire Fairview Public Works on April 27 and 20, 2018. Comments are included as Exhibit C.

III. APPLICABLE CRITERIA

This Type III application process requires a Planning Commission decision subject to the following requirements of the Fairview Municipal Code (FMC) Title 19:

A) Application Review Procedures

- 19.400 Administration of Land Use and Development Review
- 19.412 Description of Permit Procedures
- 19.413 Procedures
- 19.420 Development Review and Site Design Review
- 19.422 Applicability
- 19.424 Site Design Review – Application Review Procedure
- 19.425 Site Design Review – Application Submission Requirements
- 19.426 Site Design Review – Approval Criteria

B) Land Use Districts

- 19.110 Village General Provisions
- 19.135 Village Commercial (VC) and Mixed Use (VMU)
- 19.140 Village General Standards
- 19.150 Special Development Standards – VO, VC and VMU Zones

C) Design Standards

19.162 Access and Circulation
19.163 Landscaping, Street Trees, Fences and Walls
19.164 Vehicle and Bicycle Parking
19.165 Public Facilities Standards
19.170 Sign Regulations

IV. APPLICATION REVIEW PROCEDURE FINDINGS

19.400 Administration of Land Use and Development Review

This article specifies that land use approval expires two years from the date of decision application.

FINDINGS: If approved, this Site Design Review decision shall expire two (2) years from the date of final decision.

Condition of Approval: This approval for application 2018-22-DR shall become null and void after two (2) years if construction activities have not commenced.

19.412 Description of Permit Procedures

19.412.010 Preapplication conferences: establishes that a preapplication conference is required for Type II, III, and IV applications.

FINDINGS: A pre-application conference was held for this application on February 22, 2018. This standard is met.

19.412.020 Forms, applications, and filing fees: specifies what information must be included in applications and requests for action.

FINDINGS: The application met all of the specified submission requirements. This standard is met.

19.412.030: Concurrent review of multiple applications: states that applications for more than one land use review on the same property may be processed in a single hearing.

FINDINGS: This standard does not apply. The request involves a single land use application.

19.412.040 Consistency with state statutes: applies ORS 22.178 the 120 day timeline for final action to Fairview land use applications.

FINDINGS: This application is being processes in accordance with the required statutory procedures. This standard is met.

FMC 19.412.050 Determination of completeness: Requires that land use applications be reviewed for consistency with the submission requirements, and that notice of completeness or incompleteness be given to the applicant within 30 days of application receipt.

FINDINGS: The land use application was submitted on March 22, 2018. A notice of incompleteness was sent on April 13, 2018. Incomplete items were then submitted and a notice of completeness was sent to the applicant on April 19, 2018. This standard is met.

19.413 Procedures

19.413.030 Type III procedure (quasi-judicial): Establishes the planning commission as the decision make and outlines the procedures for a public hearing, notice of public hearing, and notice of decision.

FINDINGS: The land use application was submitted on March 22, 2018. A notice of incompleteness was sent on April 13, 2018. Incomplete items were then submitted and a notice of completeness was sent to the applicant on April 19, 2018. This standard is met.

19.420 Development Review and Site Design Review

19.422 Applicability

19.420.010 Purpose: describes the intent of the development and site design review standards. 19.422.010: describes the development types subject to the site design review procedure, which includes new commercial and mixed-use buildings.

FINDINGS: This application requires site design review. This standard is met.

19.424 Site Design Review – Application Review Procedure

FMC 19.424.010: Procedure and FMC 19.424.020: Determination of Type II and Type III applications: Establish that Commercial, industrial, public/semi-public, and institutional buildings with greater than 5,000 square feet of gross floor area and developments with more than one building, shall be reviewed as a Type III application.

FINDINGS: This application is for a development with over 5,000 sq. ft. of gross floor area and includes two buildings, which requires a Type III procedure. This standard is met.

19.425 Site Design Review – Application Submission Requirements

This article lists the information required to be submitted as part of a site design review application, with specific requirements to be included on a site analysis map, proposed site plan, architectural drawings, preliminary grading plan, and landscape plan.

> **FINDINGS:** All of the required information was submitted to be deemed a complete application. This standard is met.

19.426 Site Design Review – Approval Criteria

FMC 19.426.001: Site design review approval criteria
The review authority shall make written findings with respect to all of the following criteria when approving, approving with conditions, or denying an application.

FMC 19.426.010: Complete application
The application must be complete, as determined in accordance with FMC 19.412.050, on types of applications, and Chapter 19.425FMC.

FMC 19.426.020: Compliance with land use district provisions
The application complies with all of the applicable provisions of the underlying land use district, including: building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other special standards as may be required for certain land uses.

FMC 19.426.040: Compliance with design standards
The application complies with the design standards contained in Article III of this title. All of the following standards shall be met:

> *A. Chapter 19.162 FMC – Access and Circulation;*
>
> *B. Chapter 19.163 FMC – Landscaping, Street Trees, Fences and Walls;*
>
> *C. Chapter 19.164 FMC – Automobile and Bicycle Parking;*
>
> *D. Chapter 19.165 FMC – Public Facilities Standards;*
>
> *E. Other standards (telecommunications facilities, solid waste storage, environmental performance, signs), as applicable.*

FMC 19.426.050: Conditions
All conditions required as part of an approval shall be met.

FMC 19.426.060: Exceptions
Exceptions to criteria in FMC 19.426.040(A) through (E) may be granted only when approved as a variance.

FINDINGS: This application was determined to be complete on April 19, 2018. Per FMC 19.426.020 and 19.426.40, compliance with the underlying land use district and the design standards in FMC Article III are analyzed below. All conditions required as part of this approval must be met.

V. LAND USE DISTRICT FINDINGS

19.110 Village General Provisions

This section describes the intent of the standards to implement the Fairview Village community plan. 19.110.050 Conflict Clause, establishes code definitions, and establishes that when there is a conflict between the Village regulations and base zone, overlay zone, or other regulations of this code, the Village regulations control. All regulations of the base zone still apply where expressly written otherwise.

FINDINGS:
This application was reviewed against the Village-specific standards and the citywide Design Standards of Article III. Where the Village regulations and citywide regulations address the same standard, the Village-specific regulation controls.

19.135 Village Commercial (VC) and Mixed Use (VMU)

19.135.010: Permitted uses
This standard lists a wide range of commercial uses permitted in this district, including retail, office, personal services, clinics, and restaurants. The list includes:

7. Residential dwelling units in conjunction with permitted uses when developed in accordance with the VMU design standards of FMC 19.135.030(A)(2).

///

33. Multifamily dwelling units subject to the development standards of FMC 19.135.030(A)(1) (VC zone) and (A)(2) (VMU zone).

FINDING: The proposed use of residential dwelling units in conjunction with commercial is an outright permitted use in the VMU Zone. This standard is met.

19.135.030: Development standards

A. Setbacks and Design Elements.
1. Within the VC zone….

2. Within the VMU zone:

a. The VMU area shall be occupied by townhomes and commercial uses.

FINDINGS: The proposed use is located in the VMU zone, and includes townhomes and commercial uses. Apartments are also proposed, and listed as permitted 19.135.010, subject to certain design standards.

b. Parking lots shall occupy no more than 50 percent of the street frontage. One or more pedestrian accessways connecting parking lots to adjacent streets shall be provided at a minimum frequency of 250 feet along the street frontage.

FINDINGS: All proposed on-site parking is located on the interior of the lot, and does not occupy any street frontage. The Market Street frontage is 287 ft. in length, and requires a minimum of one pedestrian accessway connecting the interior parking lot to Market Drive. The proposed site plan shows one pedestrian connection along this street frontage, which is provided via an internal passageway through the building. The Village Street frontage is 226 ft. in length and does not require an additional pedestrian accessway connecting the street to the interior parking lot.

c. Retail structure facades must extend to the right-of-way along at least 75 percent of the lot line; or

Retail structure facades must extend to within 12 feet of the lot line for 75 percent of the lot line and the space between the building and the lot line must be designed as an extension of the sidewalk and committed to active uses such as sidewalk cafes, vendor's stands, or developed as "stopping places."

Such facades shall conform to the blank wall standard described in FMC 19.140.100.

FINDINGS: Both street-facing facades of the mixed-use commercial/residential building extend to within 5 ft. the lot line for the entire length of the building. The blank wall standard is met and addressed under 19.140.100 below. This standard is met.

d. All buildings shall be set back at least five feet from property lines abutting residential areas.

FINDINGS: This criterion does not apply. The site does not abut any residential zones.

e. Awnings may extend up to four feet into a public right-of-way. Awnings shall have a minimum clearance of 7.0 feet and a maximum height of 12.5 feet.

Awning covering material shall be metal, glass, canvas or any combination thereof.

FINDINGS: Awnings do not extend into the right-of-way, and provide between 7-12 ft. of clearance. The proposed awning material is metal. This standard is met.

f. Buildings in the "four corners area" of the VMU zone (delineated in Figure V-1, following Chapter 19.155 FMC) shall have a minimum front facade height of 18 feet as measured from the finished street grade with residential uses restricted to the second and/or third floor.

FINDINGS: A portion of the site, extending the full length along Market Drive, from the property line to approximately 50 ft. north of the property line into the site, falls within the "four corners area" of the VMU zone. The building fronting Village Street and Market Drive is three-four stories in height, exceeding the minimum facade height of 18 ft. All residential uses within this area are located on upper stories. This standard is met.

B. Density. Residential density shall not exceed 45 units per acre.

FINDINGS: The project site area is 1.586 acres, which multiplied by 45 units/acre, provides for a maximum density of 71 units. The development proposes 71 units. This standard is met.

C. Maximum Lot Coverage. Buildings shall cover no more than 75 percent of each lot in the zone.

FINDINGS: The proposed lot coverage is 40.34 percent. This standard is met.

D. Height Restrictions. Buildings within the Village commercial or Village mixed use zone shall not exceed 45 feet in height except that tower elements may be 60 feet in height with a footprint of no more than 400 square feet.

FINDINGS: The proposed buildings are 3 and 4 stories tall, and the maximum height is 44 ft. A clock tower element is proposed at the corner of Village Street and Market Drive. Its footprint is 400 ft., and its height is less than 55 ft. This standard is met.

E. Special Development Standards. All development in these zones shall comply with applicable development standards in Chapter 19.150 FMC.

FINDINGS: See findings for FMC Chapter 19.150 below.

F. Design Review. Design review is required for all uses in the VC and VMU zones.

FINDINGS: This land use application is being reviewed through a Site Design Review procedure. This standard is met.

19.140 Village General Standards

19.140.010: Pedestrian ways and trails

FINDINGS: This section applies to subdivisions and multifamily developments, and is not applicable to this development.

19.140.020: On-site pedestrian ways for commercial, multifamily (four or more units), institutional and office development.

A. Pedestrian ways shall provide direct connections to other portions of the site such as buildings, parking lots, child play areas and outdoor pedestrian-oriented activity areas such as plazas, resting areas and viewpoints.

FINDINGS: Pedestrian ways will connect the interior residential building to the mixed-use building and to the post office site, and connect parking areas to buildings. Pedestrian connectivity from the public sideway to interior of the site (parking area and residential building) is provided via an interior walkway through the building. This standard is met.

B. Pedestrian ways shall be constructed of concrete or paving bricks and be at least five feet in unobstructed width. ADA certified curb ramps shall be provided where pedestrian ways intersect with streets.

FINDINGS: All pedestrian ways will be constructed of concrete. On-site walkways will be scored in a 3 ft. grid pattern, and concrete between the building facade and right-of-way will be stained and stamped with a smaller grid pattern. The width of pedestrian ways varies from 5-9 ft., with the exception of three locations between parking areas and the south, east and west sides of the interior residential building. In these locations, sections of pathway are reduced to 4 ft. 6 in. width. 19.140.020.ADA certified curb ramps will be constructed in all required locations.

Condition of Approval: Prior to the issuance of building permits the applicant shall submit a right-of-way (row) improvement plan. The ROW improvement plan shall show the sidewalk installation along Market Drive and Village Street, and ADA ramp improvements at the corner of Market Drive and Village Street that meets current ADA specifications.

Condition of Approval: The applicant shall revise the site plan to provide pedestrian pathways that are a minimum of 5 ft. in width.

C. *Pedestrian ways shall be illuminated throughout the length with pedestrian scale lighting not to exceed 20 feet in height having a minimum of 0.5 foot-candle power average illumination and oriented so as not to shine directly upon adjacent residences.*

FINDINGS: All walkways are illuminated by wall lights, ceiling lights (for walkways in tuck-under parking areas), or light poles. The illumination levels and height will not exceed the maximum allowed. This standard is met.

Conditional of Approval: All onsite external lighting shall be designed and installed to have no off-site glare.

D. Pedestrian ways and pedestrian areas shall be separated from automobile and truck circulation, parking, and loading whenever possible.

E. Where a pedestrian way crosses driveways, parking areas, or similar vehicle maneuvering areas, the pedestrian way shall be readily identifiable through the use of elevation changes, speed bumps, different paving materials, or other similar methods.

F. Where the pedestrian way is parallel and adjacent to an auto travel lane, the safety of the pedestrian shall be assured through a raised path or shall be separated from the auto travel lane by a raised curb, bollards, landscaping or other physical barrier. If a raised path is used, the ends of the raised portions shall be equipped with ADA certified curb ramps.

FINDINGS: Walkways located in parking areas will be separated from vehicle areas by a raised curb. Wheel stops are provided for all parking spaces. Walkways will be identifiable by a change in paving material and treatment between the asphalt parking lot surface and scored concrete walkway surface.

Condition of Approval: Any portion of raised walkway shall comply with ADA requirements.

G. Pedestrian ways shall provide a direct connection between all new development and adjacent streets. Stub connections shall be required between developments and neighboring sites not yet developed or capable of being further subdivided or partitioned. The connections shall be completed when the neighboring site is developed.

FINDINGS: A sidewalk will be installed along Market Drive and the sidewalk along Village Street will be re-constructed to close the existing gap. This standard is met.

H. Pedestrian ways bordering parking spaces shall be at least seven feet in unobstructed width or a minimum of five feet in unobstructed width when concrete bumpers, bollards, curbing, landscaping, or other similar improvements are provided which prevent parked vehicles from obstructing the pedestrian way.

> **FINDINGS:** As noted above, there are three locations where pedestrian ways bordering parking spaces are 4 ft. 6 in. In these locations, the pathway is separated from the parking space by a concrete raised pathway and wheel stop, and in some locations by landscaping, to prevent vehicles from obstructing the pedestrian way.
>
> **Condition of Approval:** The applicant shall revise the site plan to provide pedestrian pathways that are a minimum of 5 ft. in width.

I. A reduction in the number of pedestrian connections may be granted by the review authority based on a determination that reducing the number of connections would not result in an increase in out of direction pedestrian travel from the street to any main building entrance.

> **FINDINGS:** This standard does not apply.

19.140.030: Streets

A. Cul-de-sacs are permitted only when topographic conditions or existing or planned street patterns preclude future extension of streets. The maximum cul-de-sac radius shall be 40 feet.

B. All alleys shall constitute public streets with a minimum right-of-way of 16 feet.

C. Intersection dimensions should be minimized to reduce pedestrian crossing distances and to reduce vehicle speeds. At intersections in all Fairview Village zones, curb radii shall be 15 feet with clear zone radii of 25 feet. (Figure V-4, following Chapter 19.155 FMC.)

> **FINDINGS:** These standards apply to new streets and alleys, and are not applicable because no new streets or alleys are proposed.

D. Vision Clearance Areas.

> *1. Structures or signs may not be located within a vision clearance area as defined in subsection (D)(2) of this section. Support structures for a sign may be located in a vision clearance area only if the combined total width is 12 inches or less and the combined total depth is 12 inches or less.*

2. Location of Vision Clearance Areas. Vision clearance areas are triangular-shaped areas located at the intersection of any combination of streets and/or alleys. The sides of the triangle extend 15 feet from the intersection of the vehicle travel areas. The height of the vision clearance area is from 42 inches above grade to 10 feet above grade (see Figure V-2, following Chapter 19.155FMC). This standard shall not apply to public safety signage and street identification signage.

FINDINGS: The intersection of Market Drive and Village Street was analyzed for compliance with the vision clearance standard, and all structures were found to be located outside of the vision clearance triangle. This standard is met.

19.140.040 Minimum required off-street parking requirements.

All base zone parking standards apply (see Chapter 19.164 FMC) except where expressly written otherwise.

A. Residential.

2. Attached dwellings containing four or more dwelling units including dwelling units above retail uses: one and one-half spaces per dwelling unit.

B. Commercial.

1. a. Supermarkets: one space per 250 square feet of floor area.
b. Banks, offices: one space per 330 square feet of floor area.
c. Barber shop/beauty parlor: one space per 250 square feet of floor area.
d. Eating or drinking establishment: one space per 100 square feet of floor area.
e. Retail trade: one space per 500 square feet of floor area.
f. General office: one space per 500 square feet of floor area.

Type of Use	Parking Ratio	Proposed Number of Units / Square Footage	Minimum Number of Required Parking Stalls
4+ Attached dwellings, including above commercial	1.5 spaces per unit	71 units	107 (106.5 rounded up)
Retail Trade General Office	1 space/500 sq. ft. of floor area	6,476 sq. ft.	13
		Total number of required stalls	***120 stalls***
		Total number of proposed stalls	***107 on-site*** ***+ 17 on-street*** ***124 total***

FINDINGS: Planning staff applied the FMC 19.140.040 parking standards of the VMU zoning district because it specifies specific parking requirements for the

uses proposed, and therefore supersedes FMC 19.164 per FMC 19.110.050, Conflict Clause. Based on the parking requirements outlined above, a minimum of 120 stalls are required for the proposed uses, and 124 stalls will be provided. This standard is met.

2. Parking Stall and Aisle Dimensions.

a. Parking lot aisles shall have a minimum width of 24 feet.

b. Standard parking lot stalls shall have a minimum width of nine feet and a minimum depth of 18 feet.

c. Compact-vehicle parking stalls shall have a minimum width of eight feet and a minimum depth of 16 feet.

FINDINGS: All parking lot aisles are 24 ft. wide. Standard parking space dimensions will be 9 ft. by 18 ft., and compact spaces will be 8 ft. by 16 ft. This standard is met.

C. Joint Use….

FINDINGS: This criterion does not apply, as no joint use of parking facilities is proposed.

D. On-Street Parking. In the VC, VMU, and VO zones, on-street parking which borders the property frontage shall apply toward satisfying the parking standards in this section.

FINDINGS: The Market Drive and Village Street frontage can accommodate 17 parking spaces. The proposed development will apply these spaces to meet their parking requirements. The 107 on-site parking spaces will be allocated to the residential units, making the on-street parking spaces available to the commercial uses.

E. In the event that a change in commercial use is proposed different than that in place as of March 9, 2004…

FINDINGS: This standard does not apply.

19.140.050: Street trees.

A. Location. Street trees are required along both sides of all collector streets and local streets within the Village adjacent to new development and on at least one side of streets with a higher classification. The spacing requirement shall be on average one tree per 30 linear feet unless the community development director approves a different distance due to constraints such as utilities, rights-of-way, etc. Along collector streets or streets with a higher classification, metal grating, nonmortared brick, grasscrete, or similar material shall be installed at grade over the planting area around street trees, or

raised planters shall be constructed to prevent soil compaction and damage to the trunk. Planting strips or tree wells are required along all remaining streets.

FINDINGS: The new sidewalks will include 4x6 ft. trees wells, where street trees will be planted and metal grates will be installed around the trees. The code allows for flexibility in the 30 ft. average spacing requirement if needed to accommodate constraints. Gresham Fire is currently requiring that two locations along the street frontage provide an opening of 60 ft. between street trees to provide aerial fire access to the roof of the building. This requires that flexibility to be applied.

Condition of Approval: Prior to finalizing the right-of-way improvement plan, the applicant shall coordinate with the City to finalize the location of the street trees.

B. Tree Types. The type of tree to be planted shall be in accordance with the approved street tree list in the city's sidewalk maintenance program handbook.

FINDINGS: As shown on the Landscape Plan (Exhibit B-8), Pink Flair Cherry trees of 2" diameter size will be planted along the street.

Condition of Approval: Prior to receiving certificate of occupancy the applicant shall be required to plant Pink Flair Cherry trees, at the proposed 2" caliper size, in every tree-well abutting the site.

19.140.060: Erosion control standards

The site must be contoured, planted, or developed to prevent erosion, pollution, and sedimentation into adjacent natural resource areas within six weeks of the issuance of the certificate of occupancy. Erosion control techniques must meet city of Fairview erosion control handbook standards.

FINDINGS: An erosion control and grading plan was submitted with the land use application (Exhibit B-5) and meets the City of Fairview's requirements. This standard is met.

Condition of Approval: The applicant shall obtain a DEQ 1200-C permit as a prerequisite to obtaining a grading and erosion control permit from the Fairview Public Works Department. The City of Fairview permit shall be obtained no more than 30 days before grading is commenced on site.

19.140.070: Landscape standards

Where the area to be landscaped is less than 30 feet deep, the requirement shall be on average one tree per 30 linear feet. Where the area is 30 feet deep or greater, the requirement is one tree per 800 square feet and either two high shrubs or three low

shrubs per 400 square feet of landscaped area. The shrubs and trees may be grouped; provided, that ground cover plants must fully cover the remainder of landscaped area. The landscaping details for the various, respective sectors of Fairview Village shall be presented in a landscape plan in design review or in a development permit application.

> **FINDINGS:** Landscaped area totals 3,873 sq. ft. of the site. This requires 5 trees, and 29 low shrubs. The Landscape Plan includes 27 trees (not counting street trees), 197 low shrubs, and 127 high scrubs, exceeding the minimum requirements. This standard is met.
>
> **Condition of Approval:** Prior to final occupancy, all vegetation shall be planted in the quantities, location, and sizes as shown on the Landscape Plan.

A. Trees may be deciduous or evergreen. Deciduous trees at the time of planting must be fully branched, have a minimum diameter of two inches, measured five feet above the ground, and have a minimum height of 10 feet. Evergreen trees at the time of planting must be fully branched and a minimum of six feet in height.

> **FINDINGS:** Deciduous trees will be Forest Pansy Redbud, Green Vase Zelkova, Magnifica Hackberry, and Princton Sentry Kinko. All will be 2 inch. Caliper at time of planting. Evergreen trees will be Virescens Cedar and will be 8-10 ft. at time of planting. All trees will be fully branched. This standard is met.

B. Low shrubs must form a continuous screen three feet high and 95 percent opaque year-round. High shrubs must form a screen six feet high and 95 percent opaque year-round.

> **FINDINGS:** Shrubs will be a mix of broadleaf evergreen and conifer to provide year-round screening. The landscape plan shows spacing that will provide a continuous screen.

C. Groundcover plants shall be installed on all areas where slopes are five to one or steeper and must be installed at a minimum of 18 inches on center and four-inch pots at time of planting.

> **FINDINGS:** Kinnikinnick groundcover will be planted in sloped areas abutting driveway aisles. One gallon size containers will be planted at 24 inches on center, which provides equivalent or greater coverage than the minimum size and spacing required. This standard is met.

D. All required groundcover plants and shrubs must be of sufficient size and quantity to meet the required standards within three years of planting. The use of mulch must be confined to areas underneath plants and shall not be considered a substitute for groundcover plants.

E. The required materials are shown in Figure V-6, following Chapter 19.155 *FMC.*

FINDINGS: All plant sizes meet or exceed the minimum size requirements. All landscaped areas will be covered with vegetation. The plant materials in Chapter 19.155 are specified for wetland, riparian, forest, forest slope, thicket, grass, and rocky habitat areas, and do not apply to a commercial mixed-use development. This standard is met.

19.140.090 Bicycle Parking

A. Number Required.

1. Multifamily dwelling: one space per unit (.25 per unit if occupancy restricted to 55 years or older).

2. Commercial use classifications: five percent of the requirement for automobile parking spaces, except for the following classifications, which are exempt:

a. Animal sales and service.
b. Auto-related uses.
c. Warehousing – Wholesale and distribution.

FINDINGS: The number of required parking spaces is met as follows:

Type of Use	Bike Parking Ratio	Proposed Number of Units / Commercial Vehicle Spaces	Minimum Number of Required Bike Parking Stalls
Multifamily	1 space per unit	71 units	71
Commercial	5% of required vehicle parking spaces	13 vehicle parking spaces required. 13 x 5% = < 1	1
		Total number of required bike spaces	***72***
		Total number of proposed bike spaces	***72***

B. Bicycle Parking Space and Aisle Dimensions.

1. Uncovered spaces shall be at least six feet long and two feet wide.

2. Covered spaces shall be at least seven feet long and two feet wide.

3. A five-foot-wide aisle is required adjacent to each row of bicycle parking.

C. Required bicycle parking racks shall be located no further than the closest automobile parking space from the major building entrance.

D. When more than seven bicycle parking spaces are required, 50 percent of the spaces shall be covered.

E. When more than 15 covered bicycle parking spaces are required, 50 percent of the covered spaces shall be enclosed and offer a high level of security (i.e., bicycle lockers or a locked cage or room with locking facilities inside, to provide safe long-term parking).

FINDINGS: All residential bike parking will be covered. Fifty percent of the covered spaced will be located in secure rooms, in compliance with section (E). Short-term wall and ground-mounted racks will be located between the building facade and the sidewalk along Village Street and Market Drive. Long-term bike parking for residents will be located on wall racks in front of the tuck-under parking spaces, and in three secure bike rooms. Bike parking locations are distributed throughout the development site near building entrances. This standard is met.

Condition of Approval: All bike parking shall meeting the space and aisle dimensions in 19.140.090.B

19.140.100 Blank wall standard

Windows must occupy at least 50 percent of the length and 25 percent of the ground level wall area. Ground level wall areas include all exterior wall areas up to nine feet above the finished grade. The window requirement applies to the ground level of exterior building walls which abut sidewalks, plazas, or other public open spaces. Walls may be recessed three feet in maximum increments of 15 feet with landscaping in lieu of windows. Recess landscaping shall obscure the wall year-round.

FINDINGS: The blank wall standard applies to the Village Street and Market Street facades, which abut public spaces. The following analysis shows that the proposed design exceeds the minimum requirements. This standard is met.

Public Facing Facade	Facade Length	Minimum Window Length Req.	Facade Wall Area	Minimum Window Area Req.
Village Street facade	196 ft.	98 ft.	1,766 sq. ft.	441.5 sq. ft.
	Proposed Design	**114 ft.**		***742 sq. ft.***
Market Street facade	256 ft.	128 ft.	2,305 sq. ft.	576.25 sq. ft.
	Proposed Design	***138 ft.***		***1,040 sq. ft.***

19.150 Special Development Standards – VO, VC, and VMU Zones

19.150.010: Applicability

The special standards provided in this chapter apply in the Village office (VO), Village commercial (VC) and Village mixed use (VMU) zones unless otherwise provided. (Ord. 6-2001 § 1)

19.150.020: Access and on-site circulation
A. Pedestrians. Pedestrian ways shall connect the Village commercial zone with transit facilities and with NE Halsey Street.

> **FINDINGS:** The sidewalks to be completed along the Village Street and Market Drive frontages will fill gaps in the existing pedestrian system, and connect pedestrians to Halsey Street, a Trimet transit route. This standard is met.

B. Motor Vehicles. The location, design and development of access and on-site circulation shall comply with the following:

1. Shared driveway entrances, rear yard parking, shared parking and maneuvering areas, and interior driveways between parking lots shall be required for all nonresidential uses.

> **FINDINGS:** Shared driveways are provided between both abutting sides, the post office and the VA clinic, through shared access easements. Parking for all non-residential uses will be provided on-street, along the site's frontage, in compliance with the Village code provision in 19.140.040.D that "on-street parking which borders the property frontage shall apply toward satisfying the parking standards in this section." Interior parking areas are reserved for the residential uses. This standard is met.

2. The maximum width for a driveway shall be 35 feet.

> **FINDINGS:** All driveways are 24 ft. wide. This standard is met.

3. Within the Village commercial, mixed use, and Village office, a minimum of five percent, but not fewer than one space, of the employee parking spaces shall be marked and signed for exclusive use as carpool/vanpool spaces. Required carpool/vanpool spaces shall be located closer to the major building entrance than all other spaces except handicapped spaces.

> **FINDINGS:** All commercial parking will be provided on-street. The City is putting in place a 2-hour parking limit on Village Street and Market Drive, which makes a dedicated carpool/vanpool space impractical. This standard will not apply.

4. Village office parking lots shall be placed behind buildings or behind a five-foot landscaped buffer; provided, that such parking lots shall not front more than 50 percent of the block frontage of any public street.

FINDINGS: This criterion does not apply. The site is not located in the Village Office zone.

19.150.030: Entries

A. Primary entries shall face a public street or designated pedestrian way and shall be accessed from a public sidewalk. The entries shall be open to the public during all business hours. Secondary entries may face parking lots or loading areas.

FINDINGS: All primary entries for the Village Street/Market Drive mixed-use building face the street, with access from the sidewalk. Primary entries for the interior residential-only building face a pedestrian walkway. This standard is met.

B. VCM upper story residential uses shall have shared or individual entries every 70 feet on the first level only; no outside staircases are allowed.

FINDINGS: This criterion does not apply. The site is not located in the VCM zone.

19.150.040: VO, VC and VCM facade design

All VO and VC building facades shall conform to FMC 19.140.100, Blank wall standard.

FINDINGS: This criterion does not apply. The site is not located in the VCM zone.

19.150.050: Roofs in the mixed use zone (VMU)

Hipped, gambrel or gabled roofs are required. Flat roofs are not permitted except for mechanical equipment areas in VMU zones. Thirty-inch high parapets are required along all street facades where flat roofs are used.

FINDINGS: All roofs will be hipped gabled. This standard is met.

19.150.060: Materials

Exterior finishes of buildings shall be primarily of materials such as masonry, wood siding, shingles or stucco (or similar material). Sheet metal, cinder block, and T1-11 are prohibited as exterior wall material.

FINDINGS: Exterior finish materials will be brick veneer and lap siding. The proposed brick will match the brick color found elsewhere in the Village, and the siding will be painted to be similar and compatible with the color palette in the Village. This standard is met.

19.150.070: VO and VC landscaping and street furniture
A minimum of 15 percent of the developed VO and VC site areas must be used for landscaping….

> **FINDINGS:** This standard does not apply. The site is not located in the VO or VC zone.

19.150.080: Screening
A. All primary and accessory uses associated with Village office and Village commercial uses, including storage of materials, products, or waste, shall be wholly contained within an approved structure.

B. Parking and service areas shall be screened from pedestrian ways or public right-of-way by a three-foot-high hedge or sight-obscuring wall.

C. Loading areas and dumpsters shall be screened from public rights-of-way and pedestrian ways by walls, trellises, fences, or landscaping.

D. Mechanical equipment and satellite dishes over one meter in size shall be screened from view from any pedestrian way or public right-of-way.

> **FINDINGS:** Parking and service areas are located in the interior of the site, and are screened from the public right-of-way by buildings located along the south and east lot lines. Additional screening between the proposed development and the VA Clinic to the north is provided by a row of existing shrubs along the clinic's parking lot, and the proposed addition of a row of Laurel shrubs and Magnifica Hackberry trees. The proposed trash and recycling area is fully walled and attached to the tuck-under parking on the northeast corner of the interior residential building. All mechanical equipment is proposed to be mounted in equipment wells on the interior sides of the roof.
>
> **Condition of Approval:** All mechanical equipment and satellite dishes over one meter in size shall be screened from any pedestrian way or public right-of-way.

19.150.090 Trails
All trails will be built according to the Fairview Village trail master plan.

> **FINDINGS:** This standard does not apply. All trails abutting the site have been built according to the Fairview Village trail master plan.

19.150.100: Loading areas
A. Loading areas within a street right-of-way in the Fairview Village may be approved when all of the following conditions are met….

FINDINGS: No loading areas are proposed for the proposed use. Should a loading area be needed for tenants, the applicant must submit a plan for review and approval by the City.

VI. DESIGN STANDARDS FINDINGS

19.162: Access and Circulation

19.162.020 Vehicular access and circulation

A. Intent and Purpose. The intent of this section is to manage vehicle access to development through a connected street system, while preserving the flow of traffic in terms of safety, roadway capacity, and efficiency. …

B. Applicability. This section shall apply to all public streets within the city and to all properties that abut these streets.

C. Access Permit Required. Access to a public street requires an access permit in accordance with the following procedures:

1. Permits for access to city streets shall be subject to review and approval by the city engineer…

FINDINGS: Access is already provided through existing driveways and shared access easements. No new access permit is required. A right-of-way permit will be required for construction work in the public right-of-way.

D. Traffic Study Requirements. The city may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements.

A traffic study must be provided for any proposed development that includes more than 10 dwellings or generates at least 100 vehicle trips per day. The traffic study shall include those adjacent intersections that will receive more than 50 vehicle trips per day.

FINDINGS: A traffic impact study was prepared by the applicant based on a scope approved by the City. The study estimates that 466 net site trips (including both in and out of site) will be generated daily from the proposed development, 35 of which will be during the morning peak and 46 during the evening peak. It is estimated that 85% of trips will come and go to the site from Halsey to the north. The study looked at projected traffic volumes and service levels through 2020 at both of the site's driveways and the intersections of Village/Market, Market/Halsey, and Village/Halsey. This analysis found that the proposed

development will not change the level of service at these intersections; all of the study intersections are projected to continue operating at 22% or less of their maximum capacity by 2020. Intersection sight distance and crash data were also analyzed. In summary, the traffic impact analysis found that no mitigation was necessary to address trip generation, sight distance, or safety.

E. Conditions of Approval. The city may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street. When obtaining access to off-street parking areas (both to and from), backing onto a public street shall not be permitted, except for single-family dwellings.

FINDINGS: Shared access and reciprocal easements are already provided. No additional access changes are required.

F. Access Options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods. These methods are "options" to the developer/subdivider, unless one method is specifically required by "Special Standards for Certain Uses." A minimum of 10 feet per lane is required.

1. Option 1. Access is from an existing or proposed alley or mid-block lane. If a property has access to an alley or lane, direct access to a public street is not permitted.

2. Option 2. Access is from a private street or driveway connected to an adjoining property that has direct access to a public street (i.e., "shared driveway"). A public access easement covering the driveway shall be recorded in this case to assure access to the closest public street for all users of the private street/drive.

F.3-F.5: Do not apply to this development.

FINDINGS: Access to the site is provided directly from Village Street and Market Drive, and to the interior of the site through private shared driveways.

I. Shared Driveways. Shared driveways serve to reduce impermeable surfaces, reduce visual blight associated with large expanses of pavement, and provide more linear curb space for on-street parking. The number of driveway and private street intersections with public streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The city shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes in accordance with the following standards:

1. Shared driveways and frontage streets may be required to consolidate access onto a collector or arterial street…

2. Access easements (i.e., for the benefit of affected properties) shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

3. Exception...

FINDINGS: The development site is served by two existing, shared access points. One access is located on Village Street and is shared with the VA Clinic, and another is located on Market Drive and is shared with the post office. Reciprocal access easements have been previously recorded for both access drives. No additional access is needed to serve the development. This standard is met.

J. Figure 19.162.020.J provides examples of street layout and connectivity.
K. Street Connectivity and Formation of Blocks Required.
L. Driveway Openings.

FINDINGS: These standards do not apply to this development site.

M. Fire Access and Parking Area Turnarounds. A fire equipment access drive shall be provided for any portion of an exterior wall of the first story of a building that is located more than 150 feet from an existing public street or approved fire equipment access drive. Parking areas shall provide adequate aisles or turnaround areas for service and delivery vehicles so that all vehicles may enter the street in a forward manner. For requirements related to cul-de-sacs, please refer to Chapter 19.165 FMC.

N. Vertical Clearances. Driveways, private streets, aisles, turnaround areas and ramps shall have a minimum vertical clearance of 13 feet 6 inches for their entire length and width.

FINDINGS: All portions of both buildings are within 150 ft. of a public street or private access drive that meets fire access requirements. The on-site parking areas are served by driveways that circulation throughout the site, and provides access through the site between Market Drive and Village Street. The private access drives meet fire requirements with a 24 ft. width, 28 ft. inside turning radii and 48 ft. outside turning radii. None of the vehicle circulation areas have vertical obstructions. This standard is met.

Condition of Approval: Prior to the issuance of building permits the applicant shall prepare a final Fire Access and Water Supply Plans to be reviewed and approved by Gresham Fire. The Plans shall address all of the Oregon Fire Code standards as stated in the Gresham Fire comments in Exhibit B.

O. Vision Clearance.

FINDINGS: Superseded by 19.140.030.D.

P. Construction. The following development and maintenance standards shall apply to all driveways and private streets, except that the standards do not apply to driveways serving one single-family detached dwelling:

1. Surface Options. Driveways, parking areas, aisles, and turnarounds may be paved with asphalt, concrete or comparable surfacing, or a durable nonpaving material may be used to reduce surface water runoff and protect water quality. Paving surfaces shall be subject to review and approval by the city engineer.

2. Surface Water Management. When a paved surface is used, all driveways, parking areas, aisles and turnarounds shall have on-site collection or infiltration of surface waters to eliminate sheet flow of such waters onto public rights-of-way and abutting property. Surface water facilities shall be constructed in conformance with city standards.

3. Driveway Aprons. When driveway approaches or "aprons" are required to connect driveways to the public right-of-way, they shall be paved with concrete surfacing (see also subsection L of this section).

19.162.030 Pedestrian access and circulation.

FINDINGS: Superseded by Village-specific standards in 19.140.020 and 19.150.020.

19.163 – Landscaping, Street Trees, Fences and Walls

19.163.020: Landscape conservation
19.163.025: Existing landscaping

FINDINGS: This standard does not apply. There is no vegetation onsite.

19.163.030: New landscaping

A. Applicability. This section shall apply to all developments requiring site design review, and other developments with required landscaping.

B. Landscaping Plan Required. A landscape plan is required at the time of design review or other pertinent applications. All landscape plans shall conform to the requirements in FMC 19.420.020 (E), Landscape plans.

FINDINGS: A landscape plan was submitted with the Site Design Review application, and can be found as Exhibit B-8. This standard is met.

C. Landscape Area Standards. The minimum percentage of required landscaping equals…..
D. Landscape Materials….

FINDINGS: These standards are superseded by Village-specific standards in 19.140.070: Landscape Standards.

E. Landscape Design Standards. The landscape design standards provide guidelines within setback areas, parking areas, etc.

All yards, parking lots and required street tree planter strips shall be landscaped in accordance with the provisions of this chapter. Landscaping shall be installed with development to provide erosion control, visual interest, buffering, privacy, open space and pathway identification, shading and wind buffering, based on the following standards:

1. *Yard Setback Landscaping. Landscaping shall satisfy the following criteria…*

FINDINGS: This standard does not apply. There are no required yard setbacks in the VMU zone.

2. Parking Areas. A minimum of five percent of the combined 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 an evenly distributed mix of shade trees with shrubs and/or ground cover plants. "Evenly distributed" means that the trees and other plants are distributed around the parking lot perimeter and between parking bays to provide a partial canopy. At a minimum, one tree per five parking spaces total shall be planted to create a partial tree canopy over and around the parking area. All parking areas with more than 20 spaces shall include landscape islands with trees to break up the parking area into rows of not more than 12 contiguous parking spaces. All landscaped areas shall have minimum dimensions of four feet by four feet to ensure adequate soil, water, and space for healthy plant growth.

FINDINGS: The landscaping standard requires a minimum of 5% to be landscaped, and 11.7% is provided in the landscape plan. The tree planting requirement is applied to surface parking spaces. The site includes 65 surface parking spaces (remaining are tuck-under), which equates to a minimum requirement 11 trees. The landscape plan exceeds this requirement with 23 parking lot trees. There are two rows of parking that include at least 12 vehicle spaces. One row is broken up with a landscape island that includes 4 shrubs and one tree. The other row is not broken up with a landscape island, but is designed with a landscape island along the entire row that includes four Magnifica Hackberry trees and 24 Zabel Laurel shrubs. All landscape areas meet the minimum size requirement of 4x4 ft.

Condition of Approval: Provide landscape islands to break up the parking area into rows of not more than 12 contiguous parking spaces.

3. Buffering and Screening Required. Buffering and screening are required under the following conditions:

a. Parking/Maneuvering Area Adjacent to Streets and Drives. Where a parking or maneuvering area is adjacent and parallel to a street or driveway, a decorative wall (masonry or similar quality material), arcade, trellis, evergreen hedge, or similar screen shall be established parallel to the street or driveway. The required wall or screening shall provide breaks, as necessary, to allow for access to the site and sidewalk by pedestrians via pathways. The design of the wall or screening shall also allow for visual surveillance of the site for security. Evergreen hedges used to comply with this standard shall be a minimum of 36 inches in height at maturity, and shall be of such species, number and spacing to provide the required screening within one year after planting. Any areas between the wall/hedge and the street/driveway line shall be landscaped with plants or other ground cover. All walls shall be maintained in good condition, or otherwise replaced by the owner.

FINDINGS: The site includes three rows of surface parking (remainder is tuck-under). Each row of parking is bordered by a row of evergreen Zabel Laurel, David Vibernum, or Double Play Gold Spirea, interspersed with trees. This standard is met.

b. Parking/Maneuvering Area Adjacent to Building. Where a parking or maneuvering area, or driveway, is adjacent to a building, the area shall be separated from the building by a raised pathway, plaza, or landscaped buffer no less than four feet in width. Raised curbs, bollards, wheel stops, or other design features shall be used to protect buildings from being damaged by vehicles. When parking areas are located adjacent to residential ground-floor living space, a landscape buffer is required to fulfill this requirement.

FINDINGS: One of the three rows of surface parking is located adjacent to building. This row of parking is located adjacent to ground floor residential uses, and is buffered with landscaping in two locations. Trees and shrubs are provided between angled parking spaces, and an additional row of evergreen shrubs is provided between the facade and pedestrian pathway that separates the building and parking. Wheel stops are also provided. This standard is met.

c. Screening of Mechanical Equipment, Outdoor Storage, Service and Delivery Areas, and Automobile-Oriented …

FINDINGS: This standard is superseded by and complies with the Village-specific standard in 19.150.080: Screening.

19.163.040 Street trees

A. Soil Preparation, Planting and Care. The developer shall be responsible for planting street trees, including soil preparation, ground cover material, staking, and temporary irrigation for two years after planting. The developer shall also be responsible for tree care (pruning, watering, fertilization, and replacement as necessary) during the first two years after planting.

B. Assurances. The city shall require the developer to provide a performance and maintenance bond in an amount determined by the city engineer, to ensure the planting of the tree(s) and care during the first two years after planting.

FINDINGS: The landscape plan notes that installation must fully comply with all city requirements and any conditions of approval, and that topsoil will be imported and amended per soil lab analysis recommendations.

Condition of Approval: All trees planted in the right-of-way shall include the installation of an approved root barrier adjacent to sidewalks and curbs for each tree, unless otherwise approved by the City.

Condition of Approval: Prior to final occupancy the street trees must be installed and inspected or a performance and maintenance bond shall be posted in an amount determined by the city engineer to ensure planting of the trees and care during the first two years.

C. Growth Characteristics. Trees shall be selected based on…

FINDING: This standard is superseded by the Village-specific standard in 19.140.050 Street trees.

D. Caliper Size. The minimum caliper size at planting shall be 1.5 inches, based on the American Association of Nurserymen Standards.

FINDINGS: The landscape plan calls for 2” caliper trees. This standard is met.

E. Spacing and Location. Street trees shall be planted…

FINDINGS: This standard is superseded by the Village-specific standard in 19.140.050 Street trees.

F. Maintenance and Irrigation. The use of drought-tolerant plant species is encouraged, and may be required when irrigation is not available. Irrigation shall be provided for plants that are not drought-tolerant. If the plantings fail to survive, the property owner

shall replace them with an equivalent specimen (i.e., evergreen shrub replaces evergreen shrub, deciduous tree replaces deciduous tree, etc.). All other landscape features required by this code shall be maintained in good condition, or otherwise replaced by the owner.

> **FINDINGS:** The landscape plan specifies that irrigation will be provided for planting areas. The developer will water the trees until established and provide ongoing maintenance.
>
> **Condition of Approval:** The property owner shall maintain all landscaped areas in perpetuity upon completion and they shall be kept free from weeds and debris and maintained in a healthy, growing condition and shall receive regular pruning, fertilizing, mowing and trimming. Any damaged, dead, diseased, or decaying plant material shall be replaced within 30 days.

G. Additional Requirements. Additional buffering and screening may be required for specific land uses, as identified by Article II of this title, and the city may require additional landscaping through the conditional use permit process.

> **FINDINGS:** No additional buffering or screening is required.

19.163.050 Fences and walls.

The fences and walls section provides height limits for construction of new walls. The guidelines prevent walls that reduce pedestrian connectivity and sight clearance. The standards also provide guidelines relating to maintenance.

The following standards shall apply to all fences and walls:

A. General Requirements. All fences and walls shall comply with the standards of this section. The city may require installation of walls and/or fences as a condition of development approval, in accordance with conditional use permits or site design review. Walls built for required landscape buffers shall comply with FMC 19.163.030.

B. Dimensions.

> *1. The maximum allowable height of fences and walls is six feet, as measured from the lowest grade at the base of the wall or fence, except that retaining walls and terraced walls may exceed six feet when permitted as part of a site development approval, or as necessary to construct streets and sidewalks. A building permit is required for walls exceeding six feet in height, in conformance with the Uniform Building Code.*
>
> **FINDING:** An existing retaining wall is located at the northwest corner of the site, along the post office driveway. This will be rebuilt as part of site development and will not exceed six feet in height.

2. The height of fences and walls within a front yard setback…

3. Walls and fences to be built for required buffers…

4. Fences and walls shall comply with the vision clearance…

FINDINGS: These standards do not apply. The retaining wall is not located in the front setback or within a right-of-way vision clearance triangle, and is not built as a required buffer.

C. Maintenance. For safety and for compliance with the purpose of this chapter, walls and fences required as a condition of development approval shall be maintained in good condition, or otherwise replaced by the owner.

FINDINGS: The retaining wall is not required as a condition of approval.

D-H: Address fences for specific uses.

FINDINGS: These standards do not apply to this development.

19.164: Vehicle and Bicycle Parking

FINDINGS: These standards are superseded by the Village-specific standards in *19.140.030: Vehicle Parking, and 19.140.090 Bicycle Parking.*

19.165: Public Facilities Standards

19.165.010: Purpose and applicability

A. Purpose. The purpose of this chapter is to provide planning and design standards for public and private transportation facilities and utilities. Streets are the most common public spaces, touching virtually every parcel of land….

B. When Standards Apply. Unless otherwise provided, the standard specifications for construction, reconstruction or repair of transportation facilities, utilities and other public improvements within the city shall occur in accordance with the standards of this chapter….

C. Standard Specifications. The city engineer shall establish standard construction specifications consistent with the design standards of this chapter and application of engineering principles. They are incorporated in this code by reference.

D. Conditions of Development Approval No development may occur unless required public facilities are in place or guaranteed, in conformance with the provisions of this code. Improvements required as a condition of development approval that require a

dedication of property for a public use, when not voluntarily accepted by the applicant, shall be roughly proportional to the impact of development. Findings in the development approval shall indicate how the required improvements are roughly proportional to the impact of the proposed development on public facilities.

FINDINGS: The applicant's narrative states that the development will meet all requirements for public facilities. No additional public right-of way must be dedicated to meet City transportation standards.

E. Rough Proportionality Report. Where the applicant objects to the imposition of any applicable development standard…

FINDINGS: This standard does not apply. The applicant's narrative states that the development will meet all requirements for public facilities, and does not object.

19.165.025 Transportation improvements.

A. Development Standards. No development shall occur unless the development has frontage or approved access to a public street, in conformance with the provisions of Chapter 19.162 FMC, Access and Circulation, and the following standards are met:

1. Streets within or adjacent to a development shall be improved in accordance with the transportation system plan and the provisions of this chapter;

2. Development of new streets…

3. New streets and….

4. The city may accept a future improvement…

FINDINGS: These standards do not apply. No new streets or street improvements are required, and the developer will construct all public facility improvements at the time of development.

B. Variances. Variances to the transportation design standards…

FINDINGS: No variances are requested.

C. Creation of Rights-of-Way for Streets and Related Purposes.

FINDINGS: No new street right-of-way is proposed.

D. Creation of Access Easements. The city may approve an access easement established by deed when the easement is necessary to provide for access and circulation in conformance with Chapter 19.162 FMC, Access and Circulation. Setback standards do not permit conflicting structures to be built in public easements.

FINDINGS: No additional easements are required.

E. Street Location, Width and Grade.
F. Minimum Rights-of-Way and Street Sections. Street rights-of-way and improvements shall be the widths as required in the "Standards" section of the Fairview transportation system plan…

FINDINGS: The sidewalks on Village Street and Market Drive shall be installed/reconstructed to meet the required cross section of 15 feet wide with tree wells.

G. Traffic Signals and Neighborhood Traffic Management.

FINDINGS: No new traffic signals or traffic calming features are warranted by the Traffic Impact Study conducted for this land use application (Exhibit A-2).

H. Future Street Plan and Extension of Streets.
I. Street Alignment and Connections.

FINDINGS: These sections do not apply. No new or extended streets are required.

J. Sidewalks, Planter Strips, Bicycle Lanes. Sidewalks, planter strips, and bicycle lanes shall be installed in conformance with applicable provisions of the transportation system plan, the Comprehensive Plan, and adopted street plans. Maintenance of sidewalks, curbs, and planter strips is the continuing obligation of the adjacent property owner. All work must comply with the city of Fairview public works construction standards.

K. Internal Pathways. Pathways shall be at least five feet in unobstructed width and shall be constructed to sidewalk standards found in Standard Specifications for Public Works Construction, or according to Multnomah County or ODOT standards as applicable. The property owner shall keep a minimum of five feet of the pathway width clear of both permanent and temporary obstructions (e.g., utility poles, sandwich signs). Maintenance of internal pathways is the continuing obligation of the property owner or adjacent property owner. All work must comply with the city of Fairview public works construction standards.

Condition of Approval: Prior to issuance of building permits, the applicant shall revise the site plan to provide pedestrian pathways that are a minimum of 5 ft. in width.

Condition of Approval: Sidewalks, planter strips, shall be installed in conformance with City standards FMC 19.165.025(F)(1) to (6). Maintenance of

sidewalks, curbs and planter strips is the obligation of the adjacent property owner.

Condition of Approval: Concrete curbs, curb cuts, wheelchair, bicycle ramps and driveway approaches shall be constructed in accordance with standards specified in Chapter 19.162 FMC, Access and Circulation.

Standards L-O, and Q-V, and Z:

FINDINGS: These standards do not apply. They address the creation of new streets and alleys, none of which are proposed.

P. Curbs, Curb Cuts, Ramps, and Driveway Approaches. Concrete curbs, curb cuts, wheelchair, bicycle ramps and driveway approaches shall be constructed in accordance with standards specified in Chapter 19.162 FMC, Access and Circulation.

W. 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.

X. Mail Boxes. Plans for mail boxes to be used shall be approved by the United States Postal Service.

Y. Streetlight Standards. Streetlights shall be installed in accordance with city standards.

Condition of Approval: Prior to the issuance of building permits applicant shall submit a right-of-way (ROW) improvement plan. The ROW improvement plan shall show the new sidewalk and street trees along Market Drive and Village Street, street trees wells with metal grates, and ADA ramp improvements at the corner of Market and Village that meet current ADA specifications.

Condition of Approval: The applicant shall contact the Mid-County Lighting District to determine the required street lighting along Village Street and Market Drive. The required lighting shall be shown on the ROW improvement plan.

Condition of Approval: Prior to final occupancy all mail boxes shall be installed in accordance with approved plan from USPS.

19.165.030 Public use areas.
Public use areas implement Comprehensive Plan policies that may require a developer to reserve a piece of land for future park and open space to serve the residents of the new development…

FINDINGS: This section does not apply. No public park or open space land is required of this development.

19.165.040 Sanitary sewer and water service improvements.
The sanitary sewer and water service improvements ensure adequate sanitary sewer services to new developments.

FINDINGS (water): The site is currently served from 10" diameter City water mains on Market Drive and Village Street, and an 8" lateral was installed to this site on Village Street, approximately mid-way between Halsey Street and Market Drive. Domestic water services were installed with the Fairview Village commercial center improvements. A 2" service is located on Village Street about halfway between Halsey Street and Market Drive, and a 2" service is located on Market Drive just west of the intersection with Village Street.

Condition of Approval: Prior to receiving a building permit the applicant shall submit a water connection application and pay all applicable fees.

Condition of Approval: Prior to receiving a building permit the development will need to meet fire flow verification standards set by Gresham Fire and Emergency Services.

Condition of Approval: Public Works shall approve backflow assembly devices to be installed at appropriate service locations.

FINDINGS (sewer): Sanitary sewer is available to this site from an existing lateral stub-out located on Village Street halfway between Halsey Street and Market Drive. In addition, 8" City sewer mains are located in Village Street and Market Drive.

19.165.050 Storm drainage.
The storm drainage section requires developers to accommodate and treat stormwater runoff from buildings and parking lots.

FINDINGS: The site is currently served with stormwater infrastructure. The existing public stormwater system was engineered and installed during the development of Fairview Village. This system is designed to receive the additional stormwater from the undeveloped lots within the Village. Storm sewer is available to this site from a 12-inch lateral on Village Street halfway between Halsey and Market Drive. There is also an 18-inch storm main on Market Drive. Stormwater detention and treatment is provided by the Chinook Detention Pond. This standard is met.

Condition of Approval: Prior to the issuance of building permits the applicant shall provide the city with calculations on the stormwater discharge, for verification with the Fairview Village Stormwater Master Plan.

19.165.060 Utilities.
The utilities section provides standards regarding electric lines and cable. Many types of utilities now must be installed underground for safety and aesthetic purposes.

A. Underground Utilities. All utility lines including, but not limited to, those required for electric, communication, lighting and cable television services and related facilities shall be placed underground, except for surface-mounted transformers, surface-mounted connection boxes and meter cabinets which may be placed above ground, temporary utility service facilities during construction, and high capacity electric lines operating at 50,000 volts or above.

FINDINGS: All utilities have already been placed underground. This standard is met.

19.165.070 Easements.
The easements section provisions reserve adequate space for utilities.

Easements for sewers, storm drainage and water quality facilities, water mains, electric lines or other public utilities shall be dedicated on a final plat, or provided for in the deed restrictions.

19.165.080 Construction plan approval and assurances.
The construction plan approval portion ensures the completion of a development by a builder.

No public improvements, including sanitary sewers, storm sewers, streets, sidewalks, curbs, lighting, parks, or other requirements, shall be undertaken except after the plans have been approved by the city, permit fee paid, and permit issued. The permit fee is required to defray the cost and expenses incurred by the city for construction and other services in connection with the improvement. The permit fee shall be set by the city council. The city may require the developer or subdivider to provide bonding or other performance guarantees to ensure completion of required public improvements.

Condition of Approval: Prior to beginning construction, all construction plans must be approved by the City, development permit fees paid, and permits issued.

19.165.090 Installation.
A. Conformance Required. Improvements installed by the developer either as a requirement of these regulations or at his/her own option, shall conform to the

requirements of this chapter, approved construction plans, and to improvement standards and specifications adopted by the city.

B. Adopted Installation Standards. The Standard Specifications for Public Works Construction, Oregon Chapter APWA shall be a part of the city's adopted installation standard(s); other standards may also be required upon recommendation of the city engineer.

C. Commencement. Work shall not begin until the city has been notified in advance.

D. Resumption. If work is discontinued for more than one month, it shall not be resumed until the city is notified.

E. City Inspection. Improvements shall be constructed under the inspection and to the satisfaction of the city. The city may require minor changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest. Modifications requested by the developer shall be subject to land use review under Chapter 19.415 FMC, Modifications to Approved Plans and Conditions of Approval. Any monuments that are disturbed before all improvements are completed by the subdivider shall be replaced prior to final acceptance of the improvements.

F. Engineer's Certification and As-Built Plans. A registered civil engineer shall provide written certification in a form required by the city that all improvements, workmanship and materials are in accord with current and standard engineering and construction practices, conform to approved plans and conditions of approval, and are of high grade, prior to city acceptance of the public improvements, or any portion thereof, for operation and maintenance. The developer's engineer shall also provide three sets (one mylar, one electronic, one paper copy) of "as-built" plans, in conformance with the city engineer's specifications, for permanent filing with the city.

> **Condition of Approval:** The applicant agrees to comply with all regulations and requirements of the Fairview City Code which are current on this date, except where variance or deviation from such regulation and requirements have been specifically approved by formal Planning Commission action as documented by the records of this decision and/or the associated Conditions of Approval.

VII. CONCLUSION AND RECOMMENDATIONS

PLANNING COMMISSION ALTERNATIVES

1. Approve the application based on the findings of compliance with City regulations and conditions of approval.
2. Modify the findings, reasons, or conditions, and approve the request as modified.

3. Deny the application based on the Commission's findings
4. Continue the Public Hearing to a date certain if more information is needed.

STAFF RECOMMENDATION
Staff finds that the proposed application will meet the requirements of the City Code as conditioned, and recommends approval of the site design review subject to the following:

CONDITIONS OF APPROVAL
The application, as presented, meets or can meet applicable City codes and requirements, provided that the following conditions of approval are met. The site shall be developed in accordance with the applicant's approved plans, as attached and modified below.

A. General Requirements

1. Approval for application shall be shown on Exhibits A-C.

2. Any modifications to the approved plans or changes of use, except those changes relating to the Building Codes, will require approval by the Planning Director or Planning Commission.

3. Regardless of the content of material presented for this Planning Commission, including application text and exhibits, staff reports, testimony and/or discussions, the applicant agrees to comply with all regulations and requirements of the Fairview City Code which are current on this date, EXCEPT where variance or deviation from such regulation and requirements have been specifically approved by formal Planning Commission action as documented by the records of this decision and/or the associated Conditions of Approval.

4. This approval for application 2018-22 DR shall become null and void after two (2) years if construction activities has not commenced.

5. Prior to receiving permits all plans must be approved by the City, applicable fees paid, and permits issued.

6. No signs shall be installed without a sign permit issued by the City of Fairview. Sign area, size and location shall be in accordance with the City's Development Code Title 19.170.

B. Prior to grading/site disturbance

1. Prior to the issuance of any development permit or construction activity on the site, the applicant shall submit a construction management plan for review and approval by the Public Works Department. The plan shall include but is not limited to, a tentative development timeline, any significant impacts (noise/vibrations, street closures, etc.), a construction vehicle parking plan, names of persons who can be contacted to correct problems, hours of construction activity, and any work that may occur within a public right-of-way.

2. The applicant shall obtain a DEQ 1200-C permit as a prerequisite to obtaining a grading and erosion control permit from the Fairview Public Works Department. The City of Fairview permit shall be obtained no more than 30 days before grading is commenced on site.

3. Prior to the submittal for development permits (grading, erosion, building, etc.) the applicant shall submit all necessary information to the City's building official to be reviewed for compliance with FMC Chapter 16.05.

C. Plan Check Review/Prior to Construction

1. Sidewalks, planter strips, shall be installed in conformance with City standards FMC 19.165.025(F)(1) to (6). Maintenance of sidewalks, curbs and planter strips is the obligation of the adjacent property owner.

2. Concrete curbs, curb cuts, wheelchair, bicycle ramps and driveway approaches shall be constructed in accordance with standards specified in Chapter 19.162 FMC, Access and Circulation.

3. All onsite external lighting shall be designed and installed to have no off-site glare.

4. Prior to the issuance of building permits the applicant shall prepare a final Fire Access and Water Supply Plans to be reviewed and approved by Gresham Fire. The Plans shall address all of the Oregon Fire Code standards as stated in the Gresham Fire comments in Exhibit B.

5. Prior to the issuance of building permits applicant shall submit a right-of-way (ROW) improvement plan. The ROW improvement plan shall show the new sidewalk and street trees along Market Drive and Village Street, street trees wells with metal grates, and ADA ramp improvements at the corner of Market and Village that meet current ADA specifications.

6. The applicant shall contact the Mid-County Lighting District to determine the required street lighting along Village Street and Market Drive. The required lighting shall be shown on the ROW improvement plan.

7. Prior to the issuance of building permits the applicant shall provide the city with calculations on the stormwater discharge, for verification with the Fairview Village Stormwater Master Plan.

8. Prior to the issuance of building permits the applicant shall prepare a final Fire Access and Water Supply Plans to be reviewed and approved by Gresham Fire. The Plans shall address all of the Oregon Fire Code standards as stated in the Gresham Fire comments in Exhibit B.

D. Landscaping/Street Trees

1. Prior to issuance of building permits, the landscape plan shall be revised to provide landscape islands to break up the parking area into rows of not more than 12 contiguous parking spaces.

2. Street trees shall be planted at rate of one for every 30 ft. of the frontage along Village Street and Market Drive, except where approved otherwise by Fairview Planning and Gresham Fire to provide aerial access. Prior to finalizing the right-of-way improvement plan, the applicant shall coordinate with the City to finalize the location of the street trees.

3. Prior to receiving certificate of occupancy the applicant shall be required to plant Pink Flair Cherry trees, at the proposed 2" caliper size, in every tree-well abutting the site.

4. All trees planted in the right-of-way shall include the installation of an approved root barrier adjacent to sidewalks and curbs for each tree, unless otherwise approved by the City.

5. Prior to final occupancy the street trees must be installed and inspected or a performance and maintenance bond shall be posted in an amount determined by the city engineer to ensure planting of the trees and care during the first two years.

6. Prior to final occupancy, all vegetation shall be planted in the quantities, location, and sizes as shown on the Landscape Plan.

7. The property owner shall maintain all landscaped areas in perpetuity upon completion and they shall be kept free from weeds and debris and maintained in a healthy, growing condition and shall receive regular pruning,

fertilizing, mowing and trimming. Any damaged, dead, diseased, or decaying plant material shall be replaced within 30 days.

E. Vehicle/Bike Parking and Pedestrian Access

1. Prior to issuance of building permits, the applicant shall revise the site plan to provide pedestrian pathways that are a minimum of 5 ft. in width.
2. All pedestrian access and circulation including any portion of raised walkway shall comply with ADA requirements.

3. All parking shall meet city dimensional standards and be striped according to city standards.

4. All bike parking shall meeting the space and aisle dimensions in 19.140.090.B.

5. Five (5) ADA parking spaces shall be marked and signed, per FMC 19.164.030.H.

F. Prior to Final Occupancy

1. Copies of any applicable CC&R's and Operations and Maintenance Agreements must be recorded and provided to the city.

2. All mail boxes shall be installed in accordance with approved plan from USPS.

3. Public Works shall approve backflow assembly devices to be installed at appropriate service locations.

4. All mechanical equipment and satellite dishes over one meter in size shall be screened from any pedestrian way or public right-of-way.

Exhibit A-1

Chapter 19.110 VILLAGE GENERAL PROVISIONS

Sections:

19.110.010 Purpose.

19.110.020 Village concept.

19.110.030 Area of application.

19.110.035 Signs and development standards.

19.110.040 Definitions.

19.110.050 Conflict clause.

19.110.060 Phased subdivision.

19.110.010 Purpose.

This section implements the policies of the Fairview Village community plan by providing a mixture of single-family, townhouse, and multifamily residential uses as well as retail/office, commercial and business park uses. These uses are located in the areas where suitable services and facilities are currently provided or can be provided as development occurs. In addition, this plan area allows for pedestrian-oriented development with good connections via the sidewalks, trails and street system from residential areas to parks, schools, open spaces, retail and office uses. (Ord. 6-2001 § 1)

19.110.020 Village concept.

This section describes the desired feel and texture of a mixed use community development. Fairview Village is designed to be a functioning mixed use neighborhood with a range of housing types and commercial stores. Chapters 19.110 through 19.155 FMC are intended to implement this objective and to ensure a successful, livable neighborhood.

The Village will provide a commercial core or downtown area to provide the daily necessities of nearby residents. The Village main street should be architecturally unified with wide, landscaped, pedestrian-friendly sidewalks. Retail and office buildings are brought to or near the sidewalks with parking located to the rear of the site. The design of the streets should slow the flow of automobile traffic and allow pedestrians to easily cross at intersections. Principal retail uses such as grocery anchors and hardware stores will have adequate parking and walkways that encourage pedestrian travel to the branch bank, dry cleaners, video store and other retail stores and residences. This commercial core will be located south of NE Halsey, a major bus route.

The commercial core is immediately surrounded by high density housing. Apartments and townhouses are located to ensure a two- to five-minute walk for basic necessities. This segment of the Village, which will

provide the fabric and feel of urban living, is intended to encourage a diminished reliance on the automobile for transport to basic services.

As the streets move away from the grid of the commercial core they begin to meld with the topography of the land and Fairview Creek. The housing becomes less dense with small and larger lot single-family homes, all still within walking distance of the Village center. A network of pedestrian ways and trails will provide easy access for everyone in the community. (Ord. 6-2001 § 1)

Response: The goal of the project is to comply fully with the intent of the village concept and to become an important contributing element of the overall village character.

19.110.030 Area of application.

The Fairview Village community plan is applied to the area located generally east of the NE 207th Connector, south of NE Halsey Street, north of NE Glisan Street, and west of NE 223rd Avenue as illustrated in Figure V-1, following Chapter 19.155 FMC. (Ord. 6-2001 § 1)

Response: The project is in the area of application.

19. 110.035 Signs and development standards.

A. Signs.

1. All signs located in Fairview Village shall be in conformance with sign regulations in Chapter 19.170 FMC.

2. Freestanding Monument Entry Signs. These signs are intended to identify the village entrances. The number and location of these signs is shown in Figure V-8, following Chapter 19.155 FMC.

a. Area. Maximum face area of 75 square feet.

b. Height shall be a maximum of 12 feet above grade.

c. Width shall be limited to a maximum of 15 feet.

d. Placement. Sign base shall be set on a foundation at finished grade level, anchored to the ground.

e. Location. Sign locations shall be located at four designated entrances into the village (Figure V-8, following Chapter 19.155 FMC).

f. Base Dimension. The base/foundation dimensions shall not exceed 36 inches in depth or 15 feet in width and shall be no less than 18 inches or more than 24 inches in height.

Response: The project intends to use blade signs both hanging and wall mounted similar to those already in use in the village and appropriately scaled building mounted signs where needed. All signs will be in conformance with the City sign code. No monument signs are proposed.

B. Development Standards. Development standards specific to each zoning district in Fairview Village are located in each of the corresponding sections: Chapter 19.115 FMC, Village Single-Family, Chapter 19.120 FMC, Village Townhouse Residential, Chapter 19.125 FMC, Village Apartment, Chapter 19.130 FMC, Village Office, and Chapter 19.135 FMC, Village Commercial and Mixed Use. Additional development standards are located in Chapters 19.140, 19.145, and 19.150 FMC. (Ord. 2-2010 § 4)

Response: The project will comply with all applicable development standards of the zoning district.

19.110.040 Definitions.

The following definitions shall be utilized in the implementation of this chapter:

A. "Block frontage" means all of the property fronting on one side of a street that is between intersecting or intercepting streets, or that is between a street and a water feature, or end of a dead end street. An intercepting street determines only the boundary of the block frontage on the side of the street which it intercepts.

B. "Common line setback" means the combined setback distance between two structures on abutting lots.

C. "Curb radius" means the curved edge of the street at intersections, measured at the edge of the travel lanes. Curbs at intersections shall not intrude into the intersection beyond the specified maximum curb radius. Where streets of different use categories intersect, the requirements of the higher intensity use shall govern. The curb radius shall be handicapped accessible.

D. "Front porch" means an open roofed structure attached to the front of the dwelling unit. A front porch shall have a minimum depth of six feet and a minimum width of 12 feet and, except for insect screening, shall only have supporting columns visible above 42 inches from the finished porch floor level. Side and rear porches are not subject to these requirements. All or a portion of the front porch may encompass a ramp providing handicap access.

E. "Jurisdictional wetlands" means areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, wet meadows, and similar areas.

F. "Net acre" means all area within a private development zone excluding public rights-of-way.

G. “Pedestrian way” means any off-street public accessway which is dedicated for the primary use of pedestrians and/or bicycles.

H. “Riparian area” means a terrestrial zone influenced by annual and intermittent water, a highwater table, or wet soils. The riparian area is found adjacent to a body of water, such as a stream, lake, or estuary. Riparian vegetation includes native herbaceous plants, shrubs, understory trees, and canopy trees. The riparian area contributes shade, leaves, woody debris, and insects to a body of water.

I. “Tower element” means an inhabitable structure typically higher than its diameter and high relative to its surroundings that may be attached to a larger structure, and that may be fully enclosed or of skeleton framework.

J. “Visual clearance zone” means those areas near intersections of roadways and motor vehicle access points where a clear field of vision is necessary for traffic safety. See diagram in Figure V-2, following Chapter 19.155 FMC. (Ord. 6-2001 § 1)

19.110.050 Conflict clause.

Within the Village when there is a conflict between the Village regulations and base zone, overlay zone, or other regulations of this code, the Village regulations control. All regulations of the base zone still apply except where expressly written otherwise. (Ord. 6-2001 § 1)

19.110.060 Phased subdivision.

The Village development will be phased. When an applicant desires to record and develop subdivision plats covering portions of an approved tentative plan in phases, the approval authority may authorize a time schedule for platting the various phases. Each phase may be for a period of time in excess of one year, but in no case shall the total time period for all phases be greater than seven years without resubmission of the tentative plan. Each phase so platted and developed shall conform to the applicable requirements of this code and the subdivision code. Portions platted after the passage of one year may be required to have modifications to avoid conflicts with a change in the Comprehensive Plan, Village district zoning code, or subdivision code. (Ord. 6-2001 § 1)

Chapter 19.135
VILLAGE COMMERCIAL (VC) AND MIXED USE (VMU)

Sections:

19.135.010 Permitted uses.

19.135.020 Conditional uses.

19.135.030 Development standards.

19.135.010 Permitted uses.

The following uses and their accessory uses are permitted in the Village commercial and mixed use zones:

1. Retail store or business.
2. Banks and similar financial service uses.
3. Health and recreational facilities.
4. Locksmith.
5. Public offices.
6. Printing and copying services, telecommuting center.
7. Residential dwelling units in conjunction with permitted uses when developed in accordance with the VMU design standards of FMC 19.135.030(A)(2).
8. Tanning salon.
9. Theater (VC only).
10. Travel agent.
11. Video rental.
12. Bakery.
13. Blueprint or photostat shop.
14. Business school or private school operated as a commercial enterprise.
15. Catering establishment.
16. Cleaning establishment, other than commercial dry cleaning.

17. Department or furniture store (VC only).

18. Frozen food locker, excluding wholesale storage.

19. Interior decorating store.

20. Medical or dental clinic or laboratory.

21. Hotel, motel (VC only); bed and breakfast (VMU and VC).

22. Music instruction establishment.

23. Martial arts or dance instruction establishment.

24. Newsstand.

25. Flower or plant store.

26. Pet shop (VC only).

27. Restaurant or tavern.

28. Supermarkets over 5,000 square feet (VC only); food markets less than 5,000 square feet(VMU and VC).

29. Art studio/supply.

30. Hardware store (VC only).

31. Meat market.

32. Pharmacy.

33. Multifamily dwelling units subject to the development standards of FMC 19.135.030(A)(1) (VC zone) and (A)(2) (VMU zone).

34. Day care.

35. Barber/beauty shop.

36. Photography studio/supply store.

37. Sporting goods shop.

38. Shoe repair.

39. Dressmaking or tailoring shop.

40. Telecommunications facilities: antennas pursuant to Chapter 19.245 FMC. (Ord. 4-2004 § 1;Ord. 6-2001 § 1)

19.135.020 Conditional uses.
The following uses and their accessory uses are permitted as conditional uses in the VC and VMU zones:

A. Multifamily dwellings or commercial or office space not more than two stories in height as redevelopment of surface parking.

B. Attached single-family dwelling units.

C. Similar uses to those listed above as determined by the planning director. (Ord. 6-2001 § 1)

Response: The proposed uses of this project are multi-family dwelling units and commercial as identified in Permitted Uses Category. No Conditional Uses are proposed.

19.135.030 Development standards. A.
Setbacks and Design Elements.

1. Within the VC zone:

    a. This area shall be occupied by no less than one anchor store prior to occupancy of 50percent of the minimum buildable square footage in the zone.

    b. Structure facades shall conform to the blank wall standard described in FMC 19.140.100.

    c. All buildings shall be set back at least 15 feet from property lines abutting residential zones.

    d. All building facades (front, rear, sides of unit) shall be set back from the NE Halsey Street right-of-way a minimum distance of 20 feet.

    e. All buildings shall have their first floors occupied exclusively by commercial/office uses, except for the special "VC flex" area located on the extreme western portion of the VC zone, as depicted in Figure V-1, following Chapter 19.155 FMC, where residential uses are allowed on the first floors.

Response: The project is not within the VC Zone.

2. Within the VMU zone:

    a. The VMU area shall be occupied by townhomes and commercial uses.

Response: All of the ground floor area along Village Street and Market Drive is occupied by townhomes and leasable commercial space. One of the leasable spaces along Market Drive is

designated as management offices serving the multi-family use and one of the leasable spaces along Market Drive is designated as a fitness facility serving the multi-family use and potentially surrounding residences. Three leasable spaces located at the intersection of Village and Market are constructed as shell spaces for future tenants. The management offices and fitness facility can be converted to additional tenant space to meet additional commercial demand if it develops. Until then, the offices and fitness facility serve to provide active uses along the street frontage. Four single story ground floor multi-family dwelling units are provided on the interior of the project. These provide the opportunity to accommodate accessible housing options for people with disabilities.

b. Parking lots shall occupy no more than 50 percent of the street frontage. One or more pedestrian accessways connecting parking lots to adjacent streets shall be provided at a minimum frequency of 250 feet along the street frontage.

Response: The proposed parking lot does not occupy any of the street frontage. Two pedestrian access ways connect the parking area to the street.

c. Retail structure facades must extend to the right-of-way along at least 75 percent of the lot line; or

Retail structure facades must extend to within 12 feet of the lot line for 75 percent of the lot line and the space between the building and the lot line must be designed as an extension of the sidewalk and committed to active uses such as sidewalk cafes, vendor's stands, or developed as "stopping places."

Such facades shall conform to the blank wall standard described in FMC 19.140.100.

Response: The retail / commercial facades of the building occupy the entire ground floor frontage of the building except where townhouses occur and at a small portion of the building along Market where there is tuck under parking. The facades are 5' or less from the lot line and the space between serves as the entry to the retail / commercial space and short term bicycle parking.

d. All buildings shall be set back at least five feet from property lines abutting residential areas.

Response: The project does not abut a residential area.

e. Awnings may extend up to four feet into a public right-of-way. Awnings shall have a minimum clearance of 7.0 feet and a maximum height of 12.5 feet. Awning covering material shall be metal, glass, canvas or any combination thereof.

Response: The proposed entry canopies and decks over entries do not extend into the right of way. They are less than 12' height at all locations. The entry canopies will have metal roofing.

f. Buildings in the "four corners area" of the VMU zone (delineated in Figure V-1, following Chapter 19.155 FMC) shall have a minimum front facade height of 18 feet as measured from the finished street grade with residential uses restricted to the second and/or third floor.

Response: The portions of the building within the "four corners area" are three and four stories tall and all residential units are on the upper floors.

B. Density. Residential density shall not exceed 45 units per acre.

Response: The project proposes the maximum density of 45 units per acre. Site area = 1.586 acres x 45 = 71 units.

C. Maximum Lot Coverage. Buildings shall cover no more than 75 percent of each lot in the zone.

Response: Proposed building coverage is 40.34 percent.

D. Height Restrictions. Buildings within the Village commercial or Village mixed use zone shall not exceed 45 feet in height except that tower elements may be 60 feet in height with a footprint of no more than 400 square feet.

Building front facade height, as measured from the street grade, shall be no less than 18 feet.

Response: The building is 3 and 4 stories tall. The height of the building varies but in no case exceeds 44'. A clock tower element with a foot print of 400 square feet is less than 55' in height. The site slopes down at the northeast corner. A Reference Datum of 197' is used to determine the height of the building as selected by 19.30.080 (1) highest adjoining sidewalk within 5' of an exterior wall. The lowest point in the northwest corner is 188' or 9' lower than the Reference Datum.

E. Special Development Standards. All development in these zones shall comply with applicable development standards in Chapter 19.150 FMC.

F. Design Review. Design review is required for all uses in the VC and VMU zones. (Ord. 4-2004 § 2; Ord. 6-2001 § 1)

Chapter 19.140 VILLAGE GENERAL STANDARDS

Sections:

19.140.010 Pedestrian ways and trails.
19.140.020 On-site pedestrian ways for commercial, multifamily (four or more units), institutional and office development.
19.140.030 Streets.
19.140.040 Minimum required off-street parking requirements.
19.140.050 Street trees.
19.140.060 Erosion control standards.
19.140.070 Landscape standards.
19.140.080 Repealed.
19.140.090 Bicycle parking.
19.140.100 Blank wall standard.
19.140.110 Repealed.

19.140.010 Pedestrian ways and trails.

A. Pedestrian ways shall be provided from subdivisions and multifamily developments to:

1. Commercial facilities and public amenities such as existing or planned transit stops or facilities, school, park, church, day care center, children's play area, outdoor activity areas, plazas, library, or similar facility;

2. A dead-end street, loop, or mid-block where the block is longer than 600 feet; and 3. Streets or pedestrian ways which abut the site.

B. Except as provided in FMC 19.140.020(B) and (H), pedestrian ways shall include at least a 10-foot right-of-way with a minimum five-foot wide paved surface and shall have a maximum slope of five percent wherever practical.

C. Pedestrian ways shall be illuminated so that they may be safely used at night and shall be direct with at least one end of the pedestrian way always visible from any point along the pedestrian way.

D. The maximum height of a fence along such a facility shall not exceed four feet.

E. Bollards or other similar treatments may be required in order to prevent cars from entering the pedestrian way.

F. All pedestrian ways shall be landscaped in conformance with FMC 19.140.070.

G. Pedestrian ways depicted on the Fairview Village trail system plan shall be constructed in conjunction with development of the same lot orparcel consistent with the provisions of Chapter 19.155 FMC. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: The project fronts on Village Street and Market Drive and provides multiple connection points accessing the sidewalk along these streets. The pedestrian sidewalks along these streets will be newly constructed per the Village standards for their entire frontage of the property.

19.140.020 On-site pedestrian ways for commercial, multifamily (four or more units), institutional and office development.

A. Pedestrian ways shall provide direct connections to other portions of the site such as buildings, parking lots, child play areas and outdoor pedestrian-oriented activity areas such as plazas, resting areas and viewpoints.

B. Pedestrian ways shall be constructed of concrete or paving bricks and be at least five feet in unobstructed width. ADA certified curb ramps shall be provided where pedestrian ways intersect with streets.

C. Pedestrian ways shall be illuminated throughout the length with pedestrian scale lighting not to exceed 20 feet in height having a minimum of 0.5 foot-candle power average illumination and oriented so as not to shine directly upon adjacent residences.

D. Pedestrian ways and pedestrian areas shall be separated from automobile and truck circulation, parking, and loading whenever possible.

E. Where a pedestrian way crosses driveways, parking areas, or similar vehicle maneuvering areas, the pedestrian way shall be readily identifiable through the use of elevation changes, speed bumps, different paving materials, or other similar methods.

F. Where the pedestrian way is parallel and adjacent to an auto travel lane, the safety of the pedestrian shall be assured through a raised path or shall be separated from the auto travel lane by a raised curb, bollards, landscaping or other physical barrier. If a raised path is used, the ends of the raised portions shall be equipped with ADA certified curb ramps.

G. Pedestrian ways shall provide a direct connection between all new development and adjacent streets. Stub connections shall be required between developments and neighboring sites not yet developed or capable of being further subdivided or partitioned.

   The connections shall be completed when the neighboring site is developed.

H. Pedestrian ways bordering parking spaces shall be at least seven feet in unobstructed width or a minimum of five feet in unobstructed width when concrete bumpers, bollards, curbing, landscaping, or other similar improvements are provided which prevent parked vehicles from obstructing the pedestrian way.

I. A reduction in the number of pedestrian connections may be granted by the review authority based on a determination that reducing the number of connections would not result in an increase in out of direction pedestrian travel from the street to any main building entrance. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: The project provides multiple pedestrian ways within the site which connect the residential and commercial uses to the parking areas, trash area, and the adjacent streets. All pedestrian ways are concrete walks and ADA accessible with curb ramps were required. They vary in width from 5' wide to 9' wide. The walk is 4' wide at two short locations where site constraints do not permit a wider walk. The walkways are either outside, inside or undercover and illuminated to 0.5 fc by wall or ceiling lights or light poles less than 20' in height depending on the condition. The parking lot will be asphalt paved and pedestrian crossings will be scored concrete. The walkways are separated from the parking by a raised curb and wheel stops are provided to keep vehicles from encroaching on the walkway. A primary pedestrian walkway connects the interior building to the street and to the pedestrian walkway of the property to the west. This walkway also connects the retail / commercial uses to the onsite parking area.

19.140.030 Streets.

Streets within Fairview Village shall comply with the design standards outlined in Figure V-3, following Chapter 19.155 FMC.

A. Cul-de-sacs are permitted only when topographic conditions or existing or planned street patterns preclude future extension of streets. The maximum cul-de-sac radius shall be 40 feet.

B. All alleys shall constitute public streets with a minimum right-of-way of 16 feet.

C. Intersection dimensions should be minimized to reduce pedestrian crossing distances and to reduce vehicle speeds. At intersections in all Fairview Village zones, curb radii shall be 15 feet with clear zone radii of 25 feet. (Figure V-4, following Chapter 19.155 FMC.) D. Vision Clearance Areas.

1. Structures or signs may not be located within a vision clearance area as defined in subsection (D)(2) of this section. Support structures fora sign may be located in a vision clearance area only if the combined total width is 12 inches or less and the combined total depth is 12 inches or less.

2. Location of Vision Clearance Areas. Vision clearance areas are triangular-shaped areas located at the intersection of any combination of streets and/or alleys. The sides of the triangle extend 15 feet from the intersection of the vehicle travel areas. The height of the vision clearance area is from 42 inches above grade to 10 feet above grade (see Figure V-2, following Chapter 19.155 FMC). This standard shall not apply to public safety signage and street identification signage. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: No new streets are created.

19.140.040 Minimum required off-street parking requirements.

All base zone parking standards apply (see Chapter 19.164 FMC) except where expressly written otherwise.

A. Residential.

1. One-, two- and three-unit dwelling structures: two spaces per dwelling unit.

2. Attached dwellings containing four or more dwelling units including dwelling units above retail uses: one and one-half spaces per dwelling unit.

Response: 71 units x 1.5 = 106.5. 107 On site parking spaces are provided for residential use.

B. Commercial.

1. a. Supermarkets: one space per 250 square feet of floor area.

b. Banks, offices: one space per 330 square feet of floor area.

c. Barber shop/beauty parlor: one space per 250 square feet of floor area.

d. Eating or drinking establishment: one space per 100 square feet of floor area.

e. Retail trade: one space per 500 square feet of floor area.

f. General office: one space per 500 square feet of floor area.

Response: This project provides parking at the rate of one space per 500 square feet of floor area for e) Retail trade and f) General office. The total commercial space available is 6,476 square feet including the management offices and fitness facility. This requires 12.952 or 13 parking spaces. It is anticipated that there will be 17 on street parking spaces available to meet this requirement.

2. Parking Stall and Aisle Dimensions.

a. Parking lot aisles shall have a minimum width of 24 feet.

b. Standard parking lot stalls shall have a minimum width of nine feet and a minimum depth of 18 feet.

c. Compact-vehicle parking stalls shall have a minimum width of eight feet and a minimum depth of 16 feet.

Response: All drive aisles are 24' wide. Standard parking spaces are 9' x 18' and compact spaces are 8' x 16'.

C. Joint Use. Off-street parking required by this code for any use shall not be considered as providing parking spaces for any other use except where a joint use facility exists. Such a facility, defined by legal instrument such as an easement, shall contain no less than the total number of spaces as determined individually by user, except that fewer spaces may be permitted where uses on adjoining sites have different hours of operation and the same parking spaces or loading berths can serve both without conflict. A determination of the extent, if any, to which joint use will achieve the purposes of this chapter shall be made by the planning director, who may require submission of a site development plan and a parking demand study or other data necessary to reach a decision.

Response: Joint use parking is not used.

D. On-Street Parking. In the VC, VMU, and VO zones, on-street parking which borders the property frontage shall apply toward satisfying the parking standards in this section.

Response: The on street parking along the Market and Village frontages will be used to meet the commercial parking requirements for the project.

E. In the event that a change in commercial use is proposed different than that in place as of March 9, 2004, a Type II modification of conditions permit shall be required. The permit will be granted upon demonstration that the requirements of subsection B of this section are met by the proposed use. (Ord. 11-2014 § 2 (Exh. 2); Ord. 4-2004 § 3; Ord. 6-2001 § 1)

19.140.050 Street trees.

A. Location. Street trees are required along both sides of all collector streets and local streets within the Village adjacent to new development and on at least one side of streets with a higher classification. The spacing requirement shall be on average one tree per 30 linear feet unless the community development director approves a different distance due to constraints such as utilities, rights-of-way, etc. Along collector streets or streets with a higher classification, metal grating, non mortared brick, grasscrete, or similar material shall be installed at grade over the planting area around street trees, or raised planters shall be constructed to prevent soil compaction and damage to the trunk. Planting strips or tree wells are required along all remaining streets.

Response: Street trees will be planted in 4'x6' tree wells spaced at 30' on center. Metal tree grates will be installed around the trees. At two locations along Market Drive the street trees will be spaced at a distance greater than 30' as required by Gresham Fire Department.

B. Tree Types. The type of tree to be planted shall be in accordance with the approved street tree list in the city's sidewalk maintenance program handbook. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: Pink Flair Cherry trees are the approved street tree and will be planted on both Market Drive and Village Street.

19.140.060 Erosion control standards.

The site must be contoured, planted, or developed to prevent erosion, pollution, and sedimentation into adjacent natural resource areas within six weeks of the issuance of the certificate of occupancy. Erosion control techniques must meet city of Fairview erosion control handbook standards. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: The project will be fully landscaped with trees, shrubs and groundcover prior to certificate of occupancy. A 2 inch layer of bark mulch will be installed in all landscape planting beds.

19.140.070 Landscape standards.

Where the area to be landscaped is less than 30 feet deep, the requirement shall be on average one tree per 30 linear feet. Where the area is 30 feet deep or greater, the requirement is one tree per 800 square feet and either two high shrubs or three low shrubs per 400 square feet of landscaped area. The shrubs and trees may be grouped; provided, that ground cover plants must fully cover the remainder of landscaped area. The landscaping details for the various, respective sectors of Fairview Village shall be presented in a landscape plan in design review or in a development permit application.

Response: Both shrub and tree plantings exceed the quantity of plants per square footage requirement. 3,873 sq.ft. of landscape area is provided requiring 5 trees, 27 trees are provided not including street trees. 29 low shrubs are required, 197 low shrubs and 127 high shrubs are provided. Refer to the detailed landscape plan.

A. Trees may be deciduous or evergreen. Deciduous trees at the time of planting must be fully branched, have a minimum diameter of two inches, measured five feet above the ground, and have a minimum height of 10 feet. Evergreen trees at the time of planting must be fully branched and a minimum of six feet in height.

Response: Deciduous trees will be planted at a minimum of 2 inch caliper and conifer trees will be planted at a minimum of 6 feet in height.

B. Low shrubs must form a continuous screen three feet high and 95 percent opaque year-round. High shrubs must form a screen six feet high and 95 percent opaque year-round.

Response: Shrub plantings are of a density that will provide a continuous screen a minimum of 3 feet high. Plant material used is both broadleaf evergreen and conifer.

C. Groundcover plants shall be installed on all areas where slopes are five to one or steeper and must be installed at a minimum of 18 inches on center and four-inch pots at time of planting.

Response: Groundcover plants will be installed in all area not be planted in shrubs at 1 gallon size at 24 inches on center.

D. All required groundcover plants and shrubs must be of sufficient size and quantity to meet the required standards within three years of planting. The use of mulch must be confined to areas underneath plants and shall not be considered a substitute for groundcover plants. E. The required materials are shown in Figure V-6, following Chapter 19.155 FMC. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: Both shrubs and groundcover sizes exceed the minimum installation sizes required by the city. Plant material will cover all landscape beds.

19.140.080 Fairview Creek and Clear Creek conservation easements. Repealed by Ord. 3-2012. (Ord. 6-2001 § 1)

19.140.090 Bicycle parking.

A. Number Required.

1. Multifamily dwelling: one space per unit (.25 per unit if occupancy restricted to 55 years or older).
2. Commercial use classifications: five percent of the requirement for automobile parking spaces, except for the following classifications,which are exempt:
    a. Animal sales and service.
    b. Auto-related uses.
    c. Warehousing – Wholesale and distribution.

B. Bicycle Parking Space and Aisle Dimensions.

1. Uncovered spaces shall be at least six feet long and two feet wide.
2. Covered spaces shall be at least seven feet long and two feet wide.
3. A five-foot-wide aisle is required adjacent to each row of bicycle parking.

C. Required bicycle parking racks shall be located no further than the closest automobile parking space from the major building entrance.

D. When more than seven bicycle parking spaces are required, 50 percent of the spaces shall be covered.

E. When more than 15 covered bicycle parking spaces are required, 50 percent of the covered spaces shall be enclosed and offer a high level of security (i.e., bicycle lockers or a locked cage or room with locking facilities inside, to provide safe long-term parking). (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: 71 Residential bike parking spaces are provided, one for each unit. 36 are required to be covered. All residential bike parking spaces are covered. 50 percent of the required covered spaces (18) are in a secured bike room. Two types of bike parking are provided, standard rack and wall hung rack. Parking for the standard rack is 2' x 7'. For the wall hung rack 2' x 3'-10". Access and maneuvering clearance is provided by each rack. Cut sheets of proposed rack types are provided with this application. 13 commercial vehicle spaces are required. 13 x 5 per cent = 1 commercial bike parking space. 72 total spaces provided.

19.140.100 Blank wall standard.

Windows must occupy at least 50 percent of the length and 25 percent of the ground level wall area. Ground level wall areas include all exterior wall areas up to nine feet above the finished grade. The window requirement applies to the ground level of exterior building walls which abut sidewalks, plazas, or other public open spaces. Walls may be recessed three feet in maximum increments of 15 feet with landscaping in lieu of windows. Recess landscaping shall obscure the wall year-round. (Ord. 11-2014 § 2 (Exh. 2); Ord. 6-2001 § 1)

Response: The ground level wall area along Village Street is 1,766 sf and the length is 196'. The proposed opening area is 742 sf (42.0%) and the length is 114' (58.2%). The ground level wall area along Market Drive is 2,305 sf and the length is 256'. The proposed opening area is 1040 sf (45.1%) and the length is 138' (53.9%).

19.140.110 Signs.

Repealed by 2-2010. (Ord. 8-2009 § 2; Ord. 6-2001 § 1)

Mobile Version

Chapter 19.150
SPECIAL DEVELOPMENT STANDARDS – VO, VC AND VMU ZONES

Sections:

19.150.010 Applicability.

19.150.020 Access and on-site circulation.

19.150.030 Entries.

19.150.040 VO, VC and VCM facade design.

19.150.050 Roofs in the mixed use zone (VMU).

19.150.060 Materials.

19.150.070 VO and VC landscaping and street furniture.

19.150.080 Screening.

19.150.090 Trails.

19.150.100 Loading areas.

19.150.010 Applicability.

The special standards provided in this chapter apply in the Village office (VO), Village commercial (VC) and Village mixed use (VMU) zones unless otherwise provided. (Ord. 6-2001 § 1)

19.150.020 Access and on-site circulation.

A. Pedestrians. Pedestrian ways shall connect the Village commercial zone with transit facilities and with NE Halsey Street.

Response: The public right of way at the project frontages along Village Street and Market Drive will be improved to City standards as part of this project's contribution to the completion of the pedestrian ways that connect to transit facilities and Halsey.

B. Motor Vehicles. The location, design and development of access and on-site circulation shall comply with the following:

1. Shared driveway entrances, rear yard parking, shared parking and maneuvering areas, and interior driveways between parking lots shall be required for all nonresidential uses.

2. The maximum width for a driveway shall be 35 feet.

3. Within the Village commercial, mixed use, and Village office, a minimum of five percent, but not fewer than one space, of the employee parking spaces shall be marked and signed for exclusive use as carpool/vanpool spaces. Required carpool/vanpool spaces shall be located closer to the major building entrance than all other spaces except handicapped spaces.

4. Village office parking lots shall be placed behind buildings or behind a five-foot landscaped buffer; provided, that such parking lots shall not front more than 50 percent of the block frontage of any public street. (Ord. 6-2001 § 1)

Response: Through an existing easement at the west property line there is an existing driveway shared between this project and the property to the west accessing Market Drive. There is also an existing connection to Village Street from the property to the north that is shared with this project. No new connections to the streets are proposed. All driveways are 24' wide. All of the commercial parking is located on the street frontage which is available to all commercial tenants and all on site parking is reserved for residential parking.

19.150.030 Entries.

A. Primary entries shall face a public street or designated pedestrian way and shall be accessed from a public sidewalk. The entries shall be open to the public during all business hours. Secondary entries may face parking lots or loading areas.

B. VCM upper story residential uses shall have shared or individual entries every 70 feet on the first level only; no outside staircases are allowed. (Ord. 6-2001 § 1)

Response: All commercial spaces have primary entries directly facing the public sidewalk. Residential uses have shared entries facing the public sidewalk at a distance apart of no more than 60 feet. The entries to the interior building are connected to a shared entry via a pedestrian walkway. There are no outside staircases.

19.150.040 VO, VC and VCM facade design.

All VO and VC building facades shall conform to FMC 19.140.100, Blank wall standard. (Ord. 62001 § 1)

Response: The project complies with the blank wall standard as described in other sections of this narrative.

19.150.050 Roofs in the mixed use zone (VMU).

Hipped, gambrel or gabled roofs are required. Flat roofs are not permitted except for mechanical equipment areas in VMU zones. Thirty-inch high parapets are required along all street facades where flat roofs are used. (Ord. 6-2001 § 1)

Response: All roofs will be gabled or hipped.

19.150.060 Materials.

Exterior finishes of buildings shall be primarily of materials such as masonry, wood siding, shingles or stucco (or similar material). Sheet metal, cinder block, and T1-11 are prohibited as exterior wall material. (Ord. 6-2001 § 1)

Response: Exterior finishes consist of brick veneer and lap siding and trim. Sheet metal, cinder block, an T1-11 are not used. The color of the brick veneer will match and be compatible with the brick veneer used along Village Street to the City Hall. The colors of the siding and trim will be of a similar palette and compatible with the other buildings along Village Street.

19.150.070 VO and VC landscaping and street furniture.

A minimum of 15 percent of the developed VO and VC site areas must be used for landscaping.

A. Parking and service areas shall be screened from adjacent residential zones. This requirement may be modified during development design review to accommodate required pedestrian access to the site, but in no case shall pedestrian access be eliminated.

B. Parking lots shall have at least one tree on average for every six parking spaces, distributed throughout the interior of the parking area to provide maximum shading.

C. Parking lots shall be placed behind buildings or a 10-foot buffer landscaped in conformance with FMC 19.140.070. (See also Setbacks and Configuration.) (Ord. 6-2001 § 1)

Response: This project is in the VMU zone and this section is not applicable.

19.150.080 Screening.

A. All primary and accessory uses associated with Village office and Village commercial uses, including storage of materials, products, or waste, shall be wholly contained within an approved structure.

B. Parking and service areas shall be screened from pedestrian ways or public right-of-way by a three-foot-high hedge or sight-obscuring wall.

C. Loading areas and dumpsters shall be screened from public rights-of-way and pedestrian ways by walls, trellises, fences, or landscaping.

D. Mechanical equipment and satellite dishes over one meter in size shall be screened from view from any pedestrian way or public right-of-way. (Ord. 6-2001 § 1)

Response: All parking areas are either inside of the buildings or screened from the public right of way by the buildings with additional landscaping provided where required. The trash area is in an enclosed area and screened from the public right of way by buildings. Any mechanical equipment required to serve the residential or commercial uses will be mounted on the roof on the parking lot side in equipment wells that screen them from view.

19.150.090 Trails.

All trails will be built according to the Fairview Village trail master plan. (Ord. 6-2001 § 1)

Response: Trails are not proposed.

19.150.100 Loading areas.

A. Loading areas within a street right-of-way in the Fairview Village may be approved when all of the following conditions are met:

1. Area is signed for short duration only (i.e., less than one hour);
2. Expected visits are infrequent (less than three operations occur daily between 7:00 a.m. and 6:00 p.m. or all operations occur between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);
3. Area does not unreasonably obstruct traffic;
4. Area does not obstruct a primary emergency response route; and
5. Designation is acceptable to the applicable roadway authority. (Ord. 2-2017 § 1 (Exh. A))

Response: Designated loading areas are not required or proposed for this project.

Chapter 19.162 ACCESS AND CIRCULATION

Sections:

19.162.010 Purpose.

19.162.020 Vehicular access and circulation.

19.162.030 Pedestrian access and circulation.

19.162.010 Purpose.

The purpose of this chapter is to ensure that developments provide safe and efficient access and circulation, for pedestrians and vehicles. FMC 19.162.020 provides standards for vehicular access and circulation. FMC 19.162.030 provides standards for pedestrian access and circulation. Standards for transportation improvements are provided in Chapter 19.165 FMC. (Ord. 6-2001 § 1)

19.162.020 Vehicular access and circulation.

A. Intent and Purpose. The intent of this section is to manage vehicle access to development through a connected street system, while preserving the flow of traffic in terms of safety, roadway capacity, and efficiency. Access shall be managed to maintain an adequate "level of service" and to maintain the "functional classification" of roadways as required by the city's transportation system plan. Major roadways, including highways, arterials, and collectors, serve as the primary system for moving people and goods. "Access management" is a primary concern on these roads. Local streets and alleys provide access to individual properties. If vehicular access and circulation are not properly designed, these roadways will be unable to accommodate the needs of development and serve their transportation function. This section attempts to balance the right of reasonable access to private property with the right of the citizens of the city and the state of Oregon to safe and efficient travel. It also requires all developments to construct planned streets (arterials and collectors) and to extend local streets.

To achieve this policy intent, state and local roadways have been categorized in the transportation system plan by function and classified for access purposes based upon their level of importance and function (see Chapter 19.165 FMC). Regulations have been applied to these roadways for the purpose of reducing traffic accidents, personal injury, and property damage attributable to access systems, and to thereby improve the safety and operation of the roadway network. This will protect the substantial public investment in the existing transportation system and reduce the need for expensive remedial measures. These regulations also further the orderly layout and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems and discouraging the unplanned subdivision of land.

B. Applicability. This section shall apply to all public streets within the city and to all properties that abut these streets.

C. Access Permit Required. Access to a public street requires an access permit in accordance with the following procedures:

1. Permits for access to city streets shall be subject to review and approval by the city engineer based on the standards contained in this chapter, and the provisions of the transportation standards. An access permit may be in the form of a letter to the applicant, or it may be attached to a land use decision notice as a condition of approval. In either case, an access permit will be reviewed consistent with the procedures required for the complementary development permit. If no development permit is requested, the access permit shall be reviewed consistent with a Type III process.

2. Permits for access to state highways shall be subject to review and approval by the Oregon Department of Transportation (ODOT), except when ODOT has delegated this responsibility to the city or Multnomah County. In that case, the city or county shall determine whether access is granted based on its adopted standards.

3. Permits for access to county highways shall be subject to review and approval by Multnomah County, except where the county has delegated this responsibility to the city, in which case the city shall determine whether access is granted based on adopted county standards.

Response: All applicable permits will be obtained as required by the project developer.

D. Traffic Study Requirements. The city may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements.

A traffic study must be provided for any proposed development that includes more than 10 dwellings or generates at least 100 vehicle trips per day. The traffic study shall include those adjacent intersections that will receive more than 50 vehicle trips per day.

Response: A traffic study has been completed and is included in this submittal.

A freight network impact statement is to be included in all traffic studies for proposed developments on properties identified as industrial lands in Title 4 of the Metro Urban Growth Management Functional Plan. The purpose of this statement is to analyze potential adverse effects of the proposed development on the regional freight system as identified in the regional transportation plan
(RTP) and the Fairview transportation system plan. Freight routes located in Fairview include
Interstate 84, Marine Drive, 223rd Avenue, Fairview Parkway, Sandy Boulevard, and Glisan Street.

E. Conditions of Approval. The city may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street. When obtaining access to off-street parking areas (both to and from), backing onto a public street shall not be permitted, except for single-family dwellings.

Response: Reciprocal access easements are already in place for the shared driveway access requirements of the project.

F. Access Options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods. These methods are "options" to the developer/subdivider, unless one method is specifically required by "Special Standards for Certain Uses." A minimum of 10 feet per lane is required.

1. Option 1. Access is from an existing or proposed alley or mid-block lane. If a property has access to an alley or lane, direct access to a public street is not permitted.

2. Option 2. Access is from a private street or driveway connected to an adjoining property that has direct access to a public street (i.e., "shared driveway"). A public access easement covering the driveway shall be recorded in this case to assure access to the closest public street for all users of the private street/drive.

3. Option 3. Access is from a public street adjacent to the development parcel. If practicable, the owner/developer may be required to close or consolidate an existing access point as a condition of approving a new access. Street accesses shall comply with the access spacing.

4. Subdivisions Fronting onto an Arterial Street. New residential subdivisions fronting onto an arterial street shall be required to provide alleys or secondary (local or collector) streets for access to individual lots. When alleys or secondary streets cannot be constructed due to topographic or other physical constraints, access may be provided by consolidating driveways for clusters of two or more lots (e.g., includes flag lots and mid-block lanes).

5. Double-Frontage Lots. When a lot has frontage onto two or more streets, access shall be provided first from the street with the lowest classification. For example, access shall be provided from a local street before a collector or arterial street. Except for corner lots, the creation of new double-frontage lots shall be prohibited in the residential district, unless topographic or physical constraints require the formation of such lots. When double-frontage lots are permitted in the residential district, a landscape buffer with trees and/or shrubs and ground cover not less than 20 feet wide shall be provided between the back yard fence/wall and the sidewalk or street; maintenance shall be assured by the owner (i.e., through homeowners association, etc.).

Important cross-references to other code sections: Provisions in Articles II and III of this title may require buildings placed at or near the front property line and driveways and parking areas oriented to the side or rear yard. The city may require the dedication of public right-of-way and construction of a street (e.g., frontage road, alley or other street) when the development impact is proportionate to the need for such a street, and the street is identified by the Comprehensive Plan or an adopted local streets plan. (Please refer to the transportation standards in Chapter 19.165 FMC.)

G. Access Spacing. Access spacing ensures safe connections to local and arterial streets.

Driveway accesses shall be separated from other driveways and street intersections in accordance with the following standards and procedures:

1. Local Streets. A minimum of 50 feet separation (as measured from the sides of the driveway/street) shall be required on local streets (i.e., streets not designated as collectors or arterials), except as provided in subsection (G)(3) of this section.

2. Arterial and Collector Streets. Access spacing on collector and arterial streets, and at controlled intersections (i.e., with four-way stop sign or traffic signal) shall be determined based on the policies and standards contained in the city's transportation system plan.

Access to Interstate 84 is subject to the jurisdiction of ODOT.

3. Special Provisions for All Streets. Direct street access may be restricted for some land uses, in conformance with the provisions of Chapters 19.20 through 19.155 – Land Use Districts. For example, access consolidation, shared access, and/or access separation greater than that specified by subsections (G)(1) and (G)(2) of this section may be required by the city, county or ODOT for the purpose of protecting the function, safety and operation of the street for all users. (See subsection I of this section.) Where no other alternatives exist, the permitting agency may allow construction of an access connection along the property line farthest from an intersection. In such cases, directional connections (i.e., right in/out, right in only, or right out only) may be required.

Response: No new access points are proposed.

H. Number of Access Points. Reducing the number of access points on a street provides pedestrians fewer obstructions, fewer points at which automobile traffic crosses the sidewalk, and fewer opportunities for conflicts between through traffic and vehicles using access points.

For single-family (detached and attached), two-family, and three-family housing types, one street access point is permitted per lot, when alley access cannot otherwise be provided; except that two access points may be permitted for two-family and three-family housing on corner lots (i.e., no more than one access per street), subject to the access spacing standards in subsection G of this section. The number of street access points for multiple-family, commercial, industrial, and public/institutional developments shall be minimized to protect the function, safety and operation of the street(s) and sidewalk(s) for all users. Shared access may be required, in conformance with subsection I of this section in order to maintain the required access spacing, and minimize the number of access points.

Response: The project proposes using existing access points that are shared with adjacent properties. Both are needed by this project and the projects on the adjacent properties. No additional consolidation of access points is proposed.

I. Shared Driveways. Shared driveways serve to reduce impermeable surfaces, reduce visual blight associated with large expanses of pavement, and provide more linear curb space for on-street parking.

The number of driveway and private street intersections with public streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The city shall require shared driveways as a condition of

land division or site design review, as applicable, for traffic safety and access management purposes in accordance with the following standards:

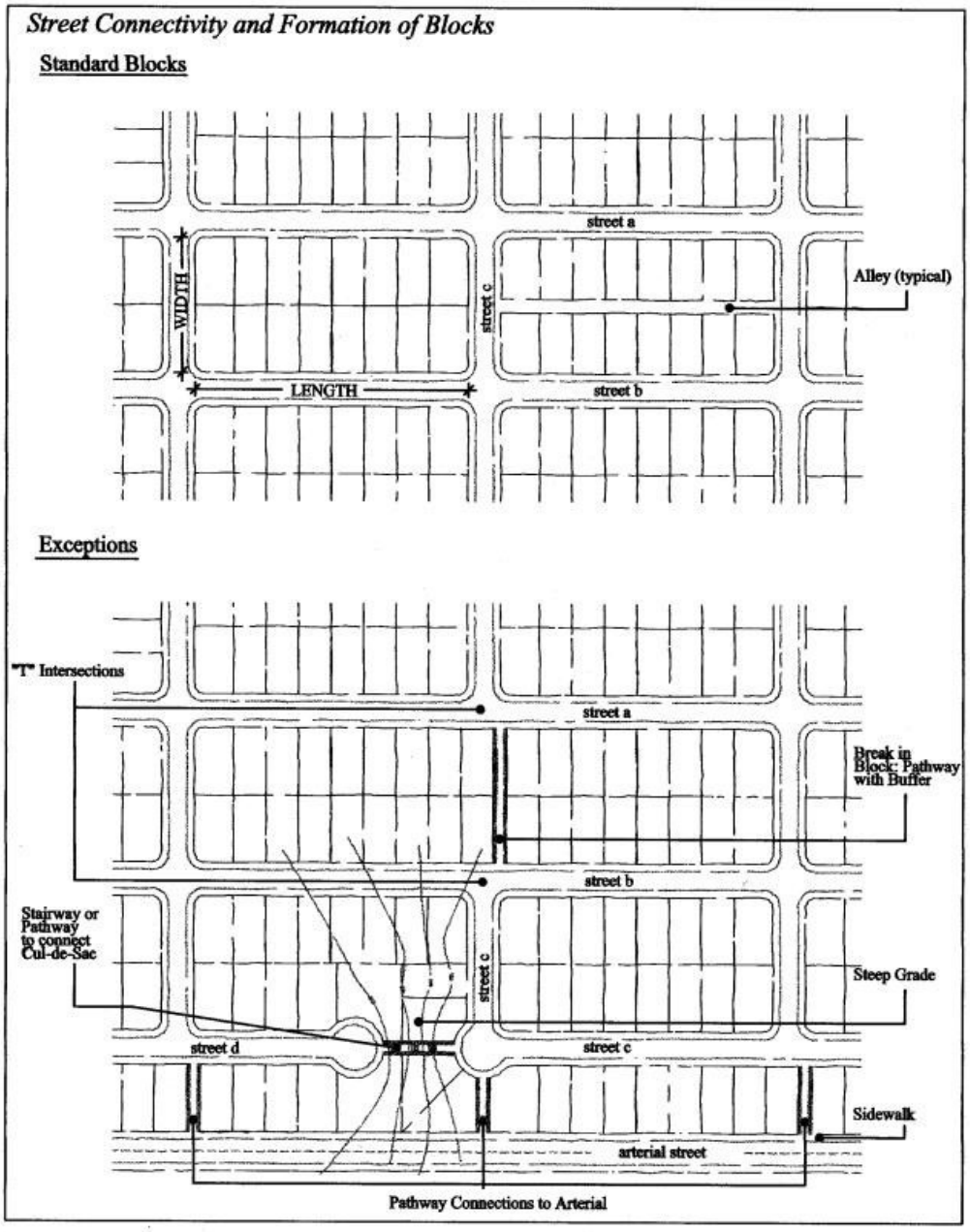
1. Shared driveways and frontage streets may be required to consolidate access onto a collector or arterial street. When shared driveways or frontage streets are required, they shall be stubbed to adjacent developable parcels to indicate future extension. “Stub” means that a driveway or street temporarily ends at the property line, but may be extended in the future as the adjacent parcel develops. “Developable” means that a parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).

2. Access easements (i.e., for the benefit of affected properties) shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

3. Exception. Shared driveways are not required when existing development patterns or physical constraints (e.g., topography, parcel configuration, and similar conditions) prevent extending the street/driveway in the future.

Response: No new street access points will be created. The project utilizes existing shared access driveways with existing properties to the north and west. Driveway improvements will be made as required.

J. Figure 19.162.020.J provides examples of street layout and connectivity. **Figure 19.162.020.J – Street Connectivity and Formation of Blocks**



K. Street Connectivity and Formation of Blocks Required. In order to promote efficient vehicular and pedestrian circulation throughout the city, land divisions and large site developments shall produce complete blocks bounded by a connecting network of public and/or private streets, in accordance with the following standards:

1. Mixed-use and residential development proposed on sites five acres or greater must submit a site plan that identifies conceptual street connections that are consistent with the transportation system plan.

2. Block Length and Perimeter. The maximum block length and perimeter shall not exceed:

    a. Five hundred thirty feet length and 1,600 feet perimeter in the residential district;

    b. Two hundred feet length and 1,200 feet perimeter in the town center commercial district, except as provided by FMC 19.65.050, Block layout and building orientation;

    c. Three hundred feet length and 1,200 feet perimeter in the corridor commercial district and neighborhood commercial;

    d. Not applicable to the general industrial district; and

    e. Seven hundred feet length and 1,700 feet perimeter in the light industrial district, except as required for commercial developments subject to FMC 19.80.060(F).

3. Street Standards. Public and private streets shall also conform to FMC 19.165.020, Transportation standards, FMC 19.162.030, Pedestrian access and circulation, and applicable Americans with Disabilities Act (ADA) design standards.

4. A variance to street spacing standards may be granted pursuant to FMC 19.520.030 (Class B variances) when resources are present that are mapped on the Natural Resources Map, where street spacing can be achieved at a minimum of 800 feet and no greater than 1,200 feet.

5. Exception. Exceptions to the above standards may be granted when blocks are divided by one or more pathway(s), where spacing is no more than 330 feet as measured from the right of-way or easement line and in conformance with the provisions of FMC 19.162.030(A). Pathways shall be located to minimize out-of-direction travel by pedestrians and may be designed to accommodate bicycles.

L. Driveway Openings. All driveway openings must comply with the "Standard Specifications for Public Works Construction," pages 53 – 55. Driveway openings or curb cuts shall be within the minimum width necessary to provide the required number of vehicle travel lanes (10 feet for each travel lane). The following standards (i.e., as measured where the front property line meets the sidewalk or right-of-way) are required to provide adequate site access, minimize surface water runoff, and avoid conflicts between vehicles and pedestrians:

1. Single-family, two-family, and three-family uses shall have a minimum driveway width of 10 feet, and a maximum width of 24 feet, except that one recreational vehicle pad driveway may be provided in addition to the standard driveway for lots containing more than 10,000 square feet of area.

2. Multiple-family uses with between four and seven dwelling units shall have a minimum

driveway width of 20 feet, and a maximum width of 24 feet.

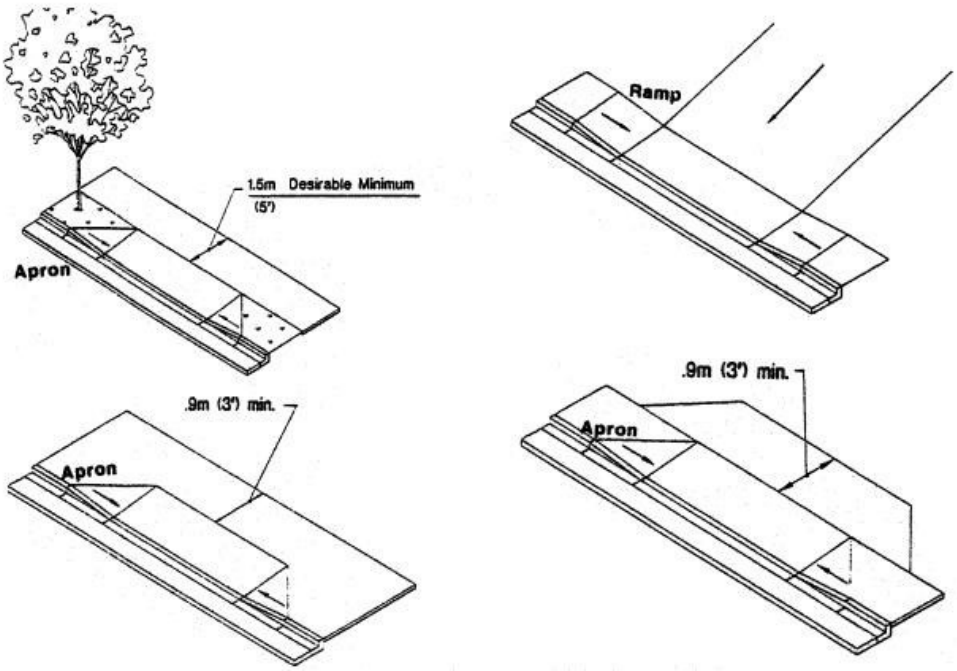
3. Multiple-family uses with more than eight dwelling units, and off-street parking areas with 16 or more parking spaces, shall have a minimum driveway width of 24 feet, and a maximum width of 30 feet. These dimensions may be increased if the city engineer determines that more than two lanes are required based on the number of trips generated or the need for turning lanes.

4. Access widths for all other uses shall be based on 10 feet of width for every travel lane, except that driveways providing direct access to parking spaces shall conform to the parking area standards in Chapter 19.164 FMC, Vehicle and Bicycle Parking.

5. Driveway Aprons. Driveway aprons (when required) shall be constructed of concrete and shall be installed between the street right-of-way and the private drive, as shown above. Driveway aprons shall conform to ADA standards for sidewalks and pathways, which require a continuous route of travel that is a minimum of three feet in width, with a cross slope not exceeding two percent.

Response: The driveway opening on the north side of the property will be reconstructed to City requirements.

Figure 19.162.020.L – Examples of Acceptable Driveway Openings Next to Sidewalks/Pathways



M. Fire Access and Parking Area Turnarounds. A fire equipment access drive shall be provided for any portion of an exterior wall of the first story of a building that is located more than 150 feet from an existing

public street or approved fire equipment access drive. Parking areas shall provide adequate aisles or turnaround areas for service and delivery vehicles so that all vehicles may enter the street in a forward manner. For requirements related to cul-de-sacs, please refer to Chapter
19.165 FMC.

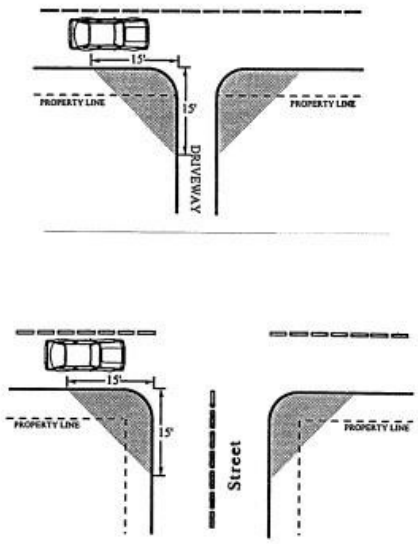
Response: 24' wide driveways are provided through the site with 28' inside turning radii and 48' outside turning radii. Through circulations is provided so the fire equipment does not need to turn around on site. The driveway layout is such that truck turn around on site is available if necessary. The interior building is under 30' in height to the eave and aerial access trucks are not required. Access to within 150' of all parts of the first story of both buildings is provided. Aerial fire truck access to the four story building will be along Market and Village. Street trees have been spaced along Market Drive at two locations to provide unobstructed access.

N. Vertical Clearances. Driveways, private streets, aisles, turnaround areas and ramps shall have a minimum vertical clearance of 13 feet 6 inches for their entire length and width.

Response: There are no vertical clearance restrictions at any of the vehicle access systems.

O. Vision Clearance. No signs, structures or vegetation in excess of three feet in height shall be placed in "vision clearance areas," as shown above. The city engineer upon finding that more sight distance is required may increase the minimum vision clearance area (i.e., due to traffic speeds, roadway alignment, etc.).

Figure 19.162.020.O – Vision Clearance Areas



Response: Vision clearance is shown on the proposed site plan. No obstructions will be placed in those areas.

P. Construction. The following development and maintenance standards shall apply to all driveways and private streets, except that the standards do not apply to driveways serving one single-family detached dwelling:

1. Surface Options. Driveways, parking areas, aisles, and turnarounds may be paved with asphalt, concrete or comparable surfacing, or a durable non paving material may be used to reduce surface water runoff and protect water quality. Paving surfaces shall be subject to review and approval by the city engineer.

2. Surface Water Management. When a paved surface is used, all driveways, parking areas, aisles and turnarounds shall have on-site collection or infiltration of surface waters to eliminate sheet flow of such waters onto public rights-of-way and abutting property. Surface water facilities shall be constructed in conformance with city standards.

3. Driveway Aprons. When driveway approaches or "aprons" are required to connect driveways to the public right-of-way, they shall be paved with concrete surfacing (see also subsection L of this section). (Ord. 2-2017 § 1 (Exh. A); Ord. 5-2009 § 2 (Att. 1); Ord. 6-2001
§ 1)

Response: All driveways will be asphalt paved, all aprons will be concrete, and able to support emergency vehicles. Storm water runoff will be collected and dispersed as required.

19.162.030 Pedestrian access and circulation.

The standards presented in this code provide standards for safe, connected and user-friendly pedestrian connections and pathways that join neighborhoods and buildings within a development.

A. Pedestrian Access and Circulation. To ensure safe, direct and convenient pedestrian circulation, all developments, except single-family detached housing (i.e., on individual lots), shall provide a continuous pedestrian and/or multi-use pathway system. (Pathways only provide for pedestrian circulation. Multi-use pathways accommodate pedestrians and bicycles.) The system of pathways shall be designed based on the standards in subsections (A)(1) through (5) of this section:

1. Continuous Pathways. The pathway system shall extend throughout the development site, and connect to all future phases of development, adjacent trails, public parks and open space areas whenever possible. The developer may also be required to connect or stub pathway(s) to adjacent streets and private property, in accordance with the provisions of FMC 19.162.020, Vehicular access and circulation, and the transportation standards in Chapter 19.165 FMC.

Response: The public sidewalks along Market Drive and Village Street will be improved along the entire frontage of the project to City requirements connecting the existing circulation systems to the north and west of the site.

2. Safe, Direct, and Convenient Pathways. Pathways within developments shall provide safe, reasonably direct and convenient connections between primary building entrances and all adjacent streets, based on the following definitions:

a. "Reasonably direct" means a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.

b. "Safe and convenient" means bicycle and pedestrian routes that are reasonably free from hazards and provide a reasonably direct route of travel between destinations.

c. For commercial, industrial, mixed use, public, and institutional buildings, the "primary entrance" is the main public entrance to the building. In the case where no public entrance exists, street connections shall be provided to the main employee entrance.

d. For residential buildings the "primary entrance" is the front door (i.e., facing the street).For multifamily buildings in which each unit does not have its own exterior entrance, the "primary entrance" may be a lobby, courtyard or breezeway, which serves as a common entrance for more than one dwelling.

Response: All proposed residential and commercial uses have reasonably direct, safe and convenient access to the public streets via designated pedestrian pathways. All residential and commercial entries for the four story build front directly on the street. For the internal building, a designated ada compliant pedestrian pathway is provided that provides access to the street, parking, and adjacent site to the west.

3. Connections within Development. For all developments subject to site design review, pathways shall connect all building entrances to one another. In addition, pathways shall connect all parking areas, storage areas, recreational facilities and common areas (as applicable), and adjacent developments to the site, as applicable.

Response: A designated pedestrian pathway connects the two buildings with each other, to the street, the trash room, the bicycle areas, and to the parking areas. The pathway is ada accessible.

4. Street Connectivity. Pathways (for pedestrians and bicycles) shall be provided at or near midblock where the block length exceeds the length required by FMC 19.162.020. Pathways shall also be provided where cul-de-sacs or dead-end streets are planned, to connect the ends of the streets together, to other streets, and/or to other developments, as applicable.
Pathways used to comply with these standards shall conform to all of the following criteria:

a. Multi-use pathways (i.e., for pedestrians and bicyclists) are no less than 10 feet wide and located within a 20-foot-wide right-of-way or easement that allows access for emergency vehicles.

b. If the streets within the subdivision or neighborhood are lighted, the pathways shall also be lighted.

c. Stairs or switchback paths using a narrower right-of-way/easement may be required in lieu of a multi-use pathway where grades are steep.

d. The city may require landscaping within the pathway easement/right-of-way for screening and the privacy of adjoining properties.

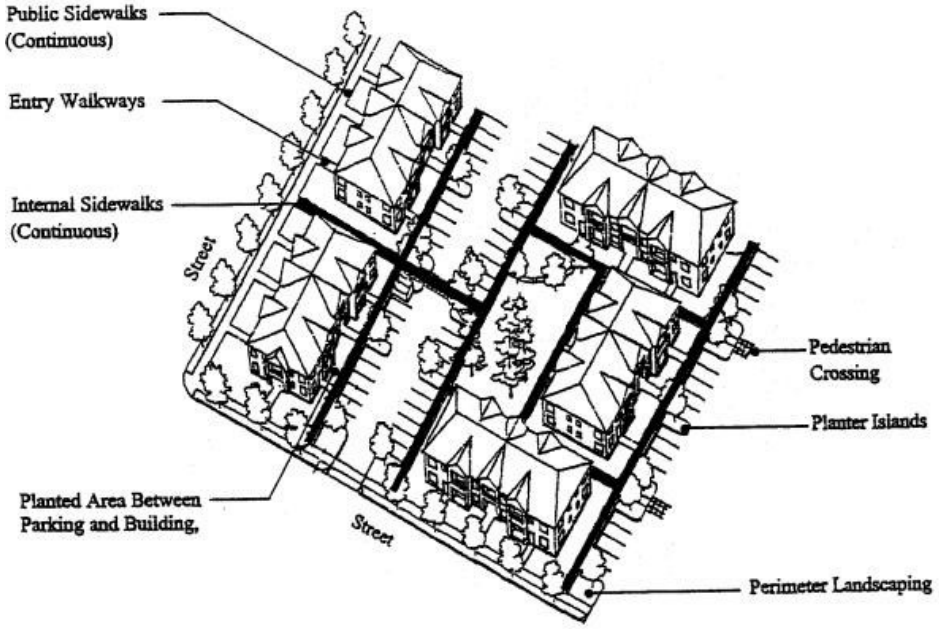
e. The hearings body or planning director may determine, based upon facts in the record, that a pathway is impracticable due to: physical or topographic conditions (e.g., freeways, railroads, extremely steep slopes, sensitive lands, and similar physical constraints); buildings or other existing development on adjacent properties that physically prevent a connection now or in the future, considering the potential for redevelopment; and sites where the provisions of recorded leases, easements, covenants, restrictions, or other agreements recorded as of the effective date of this code prohibit the pathway connection.

Response: No new streets or connectivity elements are proposed off Site. The public right of way along the project street frontage will be improved to City Standards. Street trees will be added. Additional street lighting will be provided if required.

5. Connections to Other Facilities. Proposed pathways shall be located to provide access to existing or planned commercial services and other neighborhood facilities, such as schools, shopping areas and park and transit facilities. To the greatest extent possible, access shall be reasonably direct, providing a route or routes that do not deviate unnecessarily from a straight line or that do not involve a significant amount of out-of-direction travel.

Response: The project proposes a continuation of it internal pedestrian connection system to the Post Office property to the west. All other connections to other facilities will be via the street system.

Figure 19.162.030.A – Pedestrian Pathway System for Multifamily Development (Typical)



B. Design and Construction. Pathways shall conform to all of the standards in subsections (B)(1)through (B)(5) of this section:

1. Vehicle/Pathway Separation. Where pathways are parallel and adjacent to a driveway or street (public or private), they shall be raised six inches and curbed, or separated from the driveway/street by a five-foot minimum strip with bollards, a landscape buffer, or other physical barrier. If a raised path is used, the ends of the raised portions must be equipped with curb ramps.

2. Housing/Pathway Separation. Pedestrian pathways shall be separated a minimum of five feet from all residential living areas on the ground floor, except at building entrances. Separation is measured as measured from the pathway edge to the closest dwelling unit. The separation area shall be landscaped in conformance with the provisions of Chapter 19.163 FMC, Landscaping, Street Trees, Fences and Walls. No pathway/building separation is required for commercial, industrial, public, or institutional uses.

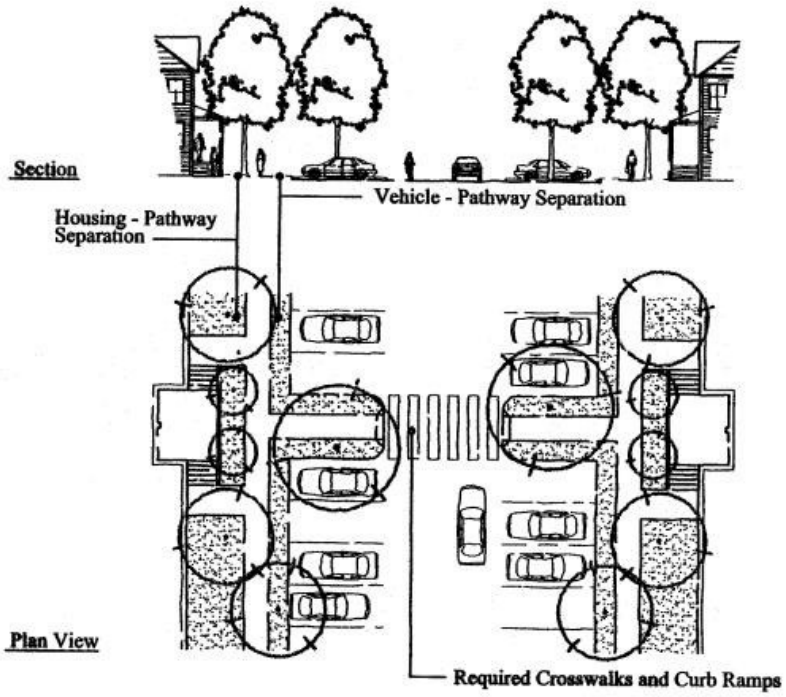
3. Crosswalks. Where pathways cross a parking area, driveway, or street ("crosswalk"), they shall be clearly marked with contrasting paving materials, humps/raised crossings.

4. Pathway Surface. Pathway surfaces shall be concrete, asphalt, brick/masonry pavers, or other durable surface, at least six feet wide, and shall conform to ADA requirements. Multi-use paths (i.e., for bicycles and pedestrians) shall be the same materials, at least 10 feet wide.
(See also Chapter 19.165 FMC, Transportation Standards for public, multi-use pathway

standard.)

5. Accessible Routes. Pathways shall comply with the Americans with Disabilities Act, which requires accessible routes of travel.

Figure 19.162.030.B – Pathway Standards (Typical)



(Ord. 2-2017 § 1 (Exh. A); Ord. 6-2001 § 1)

Response: The internal pedestrian pathway will be concrete construction, raised 6" from surrounding parking and drive areas by a concrete curb. Wheel stops will be placed at each parking space to prevent intrusion into the walking areas. The pathway will be ada compliant with curb ramps as needed. Scored concrete crosswalks will be provide contrasting with the asphalt paved driveway. Walkway widths vary depending on the conditions but are made as wide as possible and adequate for their purpose and anticipated volume of pedestrian traffic. Separation between the four ground floor units of the interior building and the adjacent walk is less than 5' due to site constraints. This portion of the pathway is intended to primarily serve these four units and will not be generally used by residents of other portions of the project, and not at all by the commercial uses or adjacent uses.

Chapter 19.163
LANDSCAPING, STREET TREES, FENCES AND WALLS

Sections:

19.163.010 Purpose.

19.163.020 Landscape conservation.

19.163.025 Existing landscaping.

19.163.030 New landscaping.

19.163.040 Street trees.

19.163.050 Fences and walls.

19.163.010 Purpose.

The purpose of this chapter is to promote community health, safety and welfare by protecting natural vegetation, and setting development standards for landscaping, street trees, fences and walls. Together, these elements of the natural and built environment contribute to the visual quality, environmental health and character of the community. Trees provide climate control through shading during summer months and wind screening during winter. Trees and other plants can also buffer pedestrians from traffic. Walls, fences, trees and other landscape materials also provide vital screening and buffering between land uses. Landscaped areas help to control surface water drainage and can improve water quality, as compared to paved or built surfaces.

The chapter is organized into the following sections:

19.163.020, Landscape Conservation. This section prevents the indiscriminate removal of significant trees and other vegetation, including vegetation associated with streams, wetlands and other protected natural resource areas. This section cross-references Chapter 19.106 FMC, which regulates development of sensitive lands.

19.163.030, New Landscaping. This section sets standards for and requires landscaping of all development sites that require site design review. This section also requires buffering for parking and maneuvering areas, and between different land use districts. Note that other landscaping standards are provided in Article II of this title, Land Use Districts, for specific types of development.

19.163.040, Street Trees. This section sets standards for and requires planting of trees along all streets for shading, comfort and aesthetic purposes.

19.163.050, Fences and Walls. This section sets standards for new fences and walls, including maximum allowable height and materials, to promote security, personal safety, privacy, and aesthetics. (Ord. 3-2012 § 6; Ord. 6-2001 § 1)

19.163.020 Landscape conservation.

A. Applicability. All development sites containing significant vegetation, as defined below, shall comply with the standards of this section. The purpose of this section is to incorporate significant native vegetation into the landscapes of development and protect vegetation that is subject to requirements of the significant environmental concern and riparian buffer overlay zones, Chapter 19.106 FMC. The use of mature, native vegetation within developments is a preferred alternative to removal of vegetation and re-planting. Mature landscaping provides summer shade and wind breaks, and allows for water conservation due to larger plants having established root systems. B. Significant Vegetation. "Significant vegetation" means:

1. Significant Trees and Shrubs. Individual trees and shrubs with a trunk diameter of six inches or greater, as measured four feet above the ground (DBH), and all plants within the drip line of such trees and shrubs, shall be protected.

2. Sensitive Lands. Trees and shrubs on sites that have been designated as "sensitive lands," in accordance with Chapter 19.106 FMC, Natural Resource Regulations, and Chapter 19.105 FMC, Floodplain Overlay (e.g., due to slope, natural resource areas, wildlife habitat, etc.) shall be protected.

3. Exception. Protection shall not be required for plants listed as non-native, invasive plants by the Oregon State University Extension Service in the applicable OSU bulletins for Multnomah County.

C. Mapping and Protection Required. Significant vegetation shall be mapped as required by this code. Significant trees shall be mapped individually and identified by species and size (diameter at four feet above grade, or "DBH"). A "protection" area shall be defined around the edge of all branches (drip-line) of each tree (drip lines may overlap between trees). The city also may require an inventory, survey, or assessment prepared by a qualified professional when necessary to determine vegetation boundaries, building setbacks, and other protection or mitigation requirements.

D. Protection Standards. All of the following protection standards shall apply to significant vegetation areas:

1. Protection of Significant Trees. Significant trees identified as meeting the criteria in subsection (B)(1) of this section shall be retained whenever practicable. Preservation may become impracticable when it would prevent reasonable development of public streets, utilities, or land uses permitted by the applicable land use district.

2. Sensitive Lands. Sensitive lands shall be protected in conformance with the provisions of Chapters 19.105 and 19.106 FMC.

3. Conservation Easements and Dedications. When necessary to implement the Comprehensive Plan, the city may require dedication of land or recordation of a conservation easement to protect sensitive lands, including groves of significant trees. This will be addressed on a case by case basis. (Ord. 3-2012 § 6; Ord. 6-2001 § 1)

Response: There are no existing trees, no Sensitive lands or conservation easements on site.

19.163.025 Existing landscaping.

A. Applicability. This section shall apply to all developments.

B. Construction. All areas of significant vegetation shall be protected prior to, during, and after construction. Grading and operation of vehicles and heavy equipment is prohibited within significant vegetation areas, except as approved by the city for installation of utilities or streets. Such approval shall only be granted after finding that there is no other reasonable alternative to avoid the protected area, and any required mitigation is provided in conformance with Chapter 19.105 FMC, Floodplain Overlay and Chapter 19.106 FMC, Natural Resource Regulations.

C. Exemptions. The protection standards in FMC 19.163.020(D) shall not apply in the following situations:

1. Dead, Diseased, and/or Hazardous Vegetation. Vegetation that is dead or diseased, or poses a hazard to personal safety, property or the health of other trees, may be removed. Prior to tree removal, the applicant shall provide a report from a certified arborist or other qualified professional to determine whether the subject tree is diseased or poses a hazard, and any possible treatment to avoid removal, except as provided by subsection (C)(2) of this section.

2. Emergencies. Significant vegetation may be removed in the event of an emergency without land use approval when the vegetation poses an immediate threat to life or safety, as determined by the planning director. The planning director shall prepare a notice or letter of decision within 10 days of the tree(s) being removed. The decision letter or notice shall explain the nature of the emergency and be on file and available for public review at City Hall.

(Ord. 3-2012 § 6; Ord. 6-2001 § 1)

Response: There is no existing landscape on site.

19.163.030 New landscaping.

A. Applicability. This section shall apply to all developments requiring site design review, and other developments with required landscaping.

B. Landscaping Plan Required. A landscape plan is required at the time of design review or other pertinent applications. All landscape plans shall conform to the requirements in FMC 19.420.020
(E), Landscape plans.

Response: A Landscape plan is part of the design review submittal.

C. Landscape Area Standards. The minimum percentage of required landscaping equals:

1. Residential districts: 20 percent of the site.

2. Town center commercial district: five percent of the site.

3. General industrial district: 10 percent of the site.

4. Light industrial district: 10 percent of the site.

5. Corridor commercial district: five percent of the site.

6. Neighborhood commercial district: 10 percent of the site.

Response: Does not apply

D. Landscape Materials. This section provides guidelines that ensure significant vegetation growth and establishment using a variety of size specifications and coverage recommendations.

Landscape materials include trees, shrubs, ground cover plants, non plant ground covers, and outdoor hardscape features, as described below:

1. Native Vegetation. Native vegetation shall be preserved or planted where practicable.

2. Plant Selection. A combination of deciduous and evergreen trees, shrubs and groundcovers shall be used for all planted areas, the selection of which shall be based on local climate, exposure, water availability, and drainage conditions. As necessary, soils shall be amended to allow for healthy plant growth.

3. Non-native, invasive plants, as per FMC 19.164.020(B), shall be prohibited.

4. Hardscape features (i.e., patios, decks, plazas, etc.) may cover up to 15 percent of the required landscape area. Swimming pools, sports courts and similar active recreation facilities may not be counted toward fulfilling the landscape requirement.

5. Non plant Ground Covers. Bark dust, chips, aggregate or other non plant ground covers maybe used, but shall cover no more than five percent of the area to be landscaped. “Coverage” is measured based on the size of plants at maturity or after five years of growth, whichever comes sooner.

6. Tree Size. Trees shall have a minimum caliper size of 1.5 inches or greater, or be six feet or taller, at time of planting.

7. Shrub Size. Shrubs shall be planted from one-gallon containers or larger.

8. Ground Cover Size. Ground cover plants shall be sized and spaced so that they grow together to cover a minimum of 80 percent of the underlying soil within three years.

Response: Landscape plan complies with items 1-8 above.

9. Significant Vegetation. Significant vegetation preserved in accordance with FMC 19.163.020 may be credited toward meeting the minimum landscape area standards. Credit shall be granted on a per square foot basis. The street tree standards of FMC 19.163.040 may be waived when trees preserved within the front yard provide the same or better shading and visual quality as would otherwise be provided by street trees.

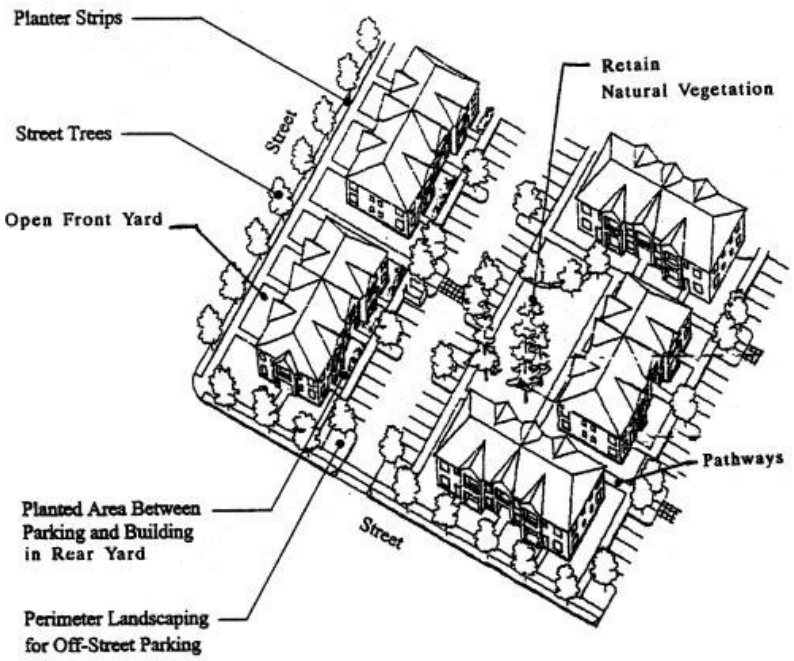
Response: There is no existing vegetation on site.

10. Stormwater Facilities. Stormwater facilities (e.g., detention/retention ponds and swales) shall be landscaped with water tolerant, native plants.

Response: There is no stormwater facility on site.

E.

Figure 19.163.030 – Landscape Areas in a Multiple-Family Development (Typical)



F. Landscape Design Standards. The landscape design standards provide guidelines within setback areas, parking areas, etc.

All yards, parking lots and required street tree planter strips shall be landscaped in accordance with the provisions of this chapter. Landscaping shall be installed with development to provide erosion control, visual interest, buffering, privacy, open space and pathway identification, shading and wind buffering, based on the following standards:

1. Yard Setback Landscaping. Landscaping shall satisfy the following criteria:

    a. Provide visual screening and privacy within side and rear yards; while leaving front yards and building entrances mostly visible for security purposes;

    b. Use shrubs and trees as windbreaks, as appropriate;

    c. Retain natural vegetation, as practicable;

d. Define pedestrian pathways and open space areas with landscape materials;

e. Provide focal points within a development, such as signature trees (i.e., large or unique trees), hedges and flowering plants;

f. Use trees to provide summer shading within common open space areas, and within front yards when street trees cannot be provided;

g. Use a combination of plants for year-long color and interest;

h. Use landscaping to screen outdoor storage and mechanical equipment areas, and to enhance graded areas such as berms, swales and detention/retention ponds.

Response: There are no required yards/setbacks in the VMU zone.

2. Parking Areas. A minimum of five percent of the combined 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 an evenly distributed mix of shade trees with shrubs and/or ground cover plants. "Evenly distributed" means that the trees and other plants are distributed around the parking lot perimeter and between parking bays to provide a partial canopy. At a minimum, one tree per five parking spaces total shall be planted to create a partial tree canopy over and around the parking area. All parking areas with more than 20 spaces shall include landscape islands with trees to break up the parking area into rows of not more than 12 contiguous parking spaces. All landscaped areas shall have minimum dimensions of four feet by four feet to ensure adequate soil, water, and space for healthy plant growth.

Response: 11.7% parking lot landscape is provided. 11 parking shade trees are required, 23 trees are provided.

3. Buffering and Screening Required. Buffering and screening are required under the following conditions:

a. Parking/Maneuvering Area Adjacent to Streets and Drives. Where a parking or maneuvering area is adjacent and parallel to a street or driveway, a decorative wall (masonry or similar quality material), arcade, trellis, evergreen hedge, or similar screen shall be established parallel to the street or driveway. The required wall or screening shall provide breaks, as necessary, to allow for access to the site and sidewalk by pedestrians via pathways. The design of the wall or screening shall also allow for visual surveillance of the site for security. Evergreen hedges used to comply with this standard shall be a minimum of 36 inches in height at maturity, and shall be of such species, number and spacing to provide the required screening within one year after planting. Any areas between the wall/hedge and the street/driveway line shall be landscaped with plants or other ground cover. All walls shall be maintained in good condition, or otherwise replaced by the owner.

Response: Evergreen conifer hedges are used to screen parking areas visible from the public street.

b. Parking/Maneuvering Area Adjacent to Building. Where a parking or maneuvering area,or driveway, is adjacent to a building, the area shall be separated from the building by a raised pathway, plaza, or landscaped buffer no less than four feet in width. Raised curbs, bollards, wheel stops, or other design features shall be used to protect buildings from being damaged by vehicles. When parking areas are located adjacent to residential ground-floor living space, a landscape buffer is required to fulfill this requirement.

Response: Buildings are separated from parking by both ground level shrub plantings and parking lot shade trees.

c. Screening of Mechanical Equipment, Outdoor Storage, Service and Delivery Areas, and Automobile-Oriented Uses. All mechanical equipment, outdoor storage and manufacturing, and service and delivery areas, shall be screened from view from all public streets and residential districts. Screening shall be provided by one or more of the following: decorative wall (i.e., masonry or similar quality material), evergreen hedge, non-see-through fence, or a similar feature that provides a non-see-through barrier. Walls, fences, and hedges shall comply with the vision clearance requirements and provide for pedestrian circulation, in accordance with Chapter 19.162 FMC, Access and Circulation. (Ord. 6-2001 § 1)

Response: The trash/recycling area is enclosed and buffered with shrub and tree plantings.

19.163.040 Street trees.

The guidelines provided in this section promote healthy street trees and adequate canopy cover to provide shade, reduce storm water runoff, and improve the appearance of a development.

Street trees shall be planted for all developments that are subject to land division or site design review. Requirements for street tree planting strips are provided in Chapter 19.165 FMC, Public Facility Standards. Planting of unimproved streets shall be deferred until the construction of curbs and sidewalks. Street trees shall conform to the following standards and guidelines:

A. Soil Preparation, Planting and Care. The developer shall be responsible for planting street trees, including soil preparation, ground cover material, staking, and temporary irrigation for two years after planting. The developer shall also be responsible for tree care (pruning, watering, fertilization, and replacement as necessary) during the first two years after planting.

Response: The developer will comply with all soil preparation, planting and care of the street trees.

B. Assurances. The city shall require the developer to provide a performance and maintenance bond in an amount determined by the city engineer, to ensure the planting of the tree(s) and care during the first two years after planting.

Response: The developer will provide a performance and maintenance bond.

C. Growth Characteristics. Trees shall be selected based on growth characteristics and site conditions, including available space, overhead clearance, soil conditions, exposure, and desired color and appearance. The following should guide tree selection:

1. Provide a broad canopy where shade is desired.
2. Use low-growing trees for spaces under utility wires.
3. Select trees which can be “limbed-up” where vision clearance is a concern.
4. Use narrow or “columnar” trees where awnings or other building features limit growth, or where greater visibility is desired between buildings and the street.
5. Use species with similar growth characteristics on the same block for design continuity.
6. Avoid using trees that are susceptible to insect damage, and avoid using trees that produce excessive seeds or fruit.
7. Select trees that are well adapted to the environment, including soil, wind, sun exposure, and exhaust. Drought-resistant trees should be used in areas with sandy or rocky soil.
8. Select trees for their seasonal color, as desired.
9. Use deciduous trees for summer shade and winter sun.

D. Caliper Size. The minimum caliper size at planting shall be 1.5 inches, based on the American Association of Nurserymen Standards.

E. Spacing and Location. Street trees shall be planted within existing and proposed planting strips, and in sidewalk tree wells on streets without planting strips. Street tree spacing shall be based upon the type of tree(s) selected and the canopy size at maturity. In general, trees shall be spaced no more than 30 feet apart, except where planting a tree would conflict with existing trees, retaining walls, utilities and similar physical barriers.

Response: The street tree type complies with city requirements and will be installed in a prepared soil mix, staked as required with metal tree grates.

F. Maintenance and Irrigation. The use of drought-tolerant plant species is encouraged, and may be required when irrigation is not available. Irrigation shall be provided for plants that are not drought tolerant.

If the plantings fail to survive, the property owner shall replace them with an equivalent specimen (i.e., evergreen shrub replaces evergreen shrub, deciduous tree replaces deciduous tree, etc.). All other landscape features required by this code shall be maintained in good condition, or otherwise replaced by the owner.

Response: The developer will provide supplemental water until establishment and will provide the necessary ongoing tree maintenance.

G. Additional Requirements. Additional buffering and screening may be required for specific land uses, as identified by Article II of this title, and the city may require additional landscaping through the conditional use permit process. (Ord. 6-2001 § 1)

19.163.050 Fences and walls.

The fences and walls section provides height limits for construction of new walls. The guidelines prevent walls that reduce pedestrian connectivity and sight clearance. The standards also provide guidelines relating to maintenance.

The following standards shall apply to all fences and walls:

A. General Requirements. All fences and walls shall comply with the standards of this section. The city may require installation of walls and/or fences as a condition of development approval, in accordance with conditional use permits or site design review. Walls built for required landscape buffers shall comply with FMC 19.163.030. B. Dimensions.

1. The maximum allowable height of fences and walls is six feet, as measured from the lowest grade at the base of the wall or fence, except that retaining walls and terraced walls may exceed six feet when permitted as part of a site development approval, or as necessary to construct streets and sidewalks. A building permit is required for walls exceeding six feet in height, in conformance with the Uniform Building Code.

2. The height of fences and walls within a front yard setback shall not exceed four feet (except decorative arbors, gates, etc.), as measured from the grade closest to the street right-of-way.

3. Walls and fences to be built for required buffers shall comply with FMC 19.163.030.

4. Fences and walls shall comply with the vision clearance standards of FMC 19.162.020.

C. Maintenance. For safety and for compliance with the purpose of this chapter, walls and fences required as a condition of development approval shall be maintained in good condition, or otherwise replaced by the owner.

D. Fences – Recreational Courts. Any recreational court, with the consent of the planning commission, may be enclosed by a wire fence not to exceed 12 feet in height; provided, that no part of the court fence is within 20 feet of any street.

E. Swimming Pool Fences. A swimming pool, or other manmade outside body of water, which has a minimum depth of three and one-half feet shall be enclosed with a fence not less than four feet and not more than six feet in height. The fence shall not have any opening, holes or gaps therein larger than six inches square, except for doors or gates. The fence gates shall be equipped with a self closing, self-catching device. The dwelling unit and/or accessory building can be used as part of the enclosure.

F. Barbed Wire Fencing. Barbed wire fencing may be permitted for property zoned commercial or industrial when the wire is employed on the top of any other type of fencing, and when the barbed wire is a minimum of six feet above the finished ground surface. Standard barbed wire fencing may be used to enclose property which is zoned agricultural.

G. Electrically Charged or Sharp Pointed Fencing. No electrically charged or sharp pointed fencing (other than barbed wire fencing) shall be constructed or maintained within the city limits except that electrically charged fencing may be permitted when the following standards are met:

1. Allowed only in general industrial, light industrial and agricultural holding zoning districts.

2. The electric fence shall not exceed 10 feet in height and shall be completely surrounded by a nonelectric fence or wall a minimum of six feet in height.

3. A minimum one-foot separation shall be maintained between the electric fence and surrounding nonelectric fence or wall, except at gates/entrances.

4. The fence shall be clearly posted with warning signs that include the statement, “Danger –Electric Fence,” or an equivalent, together with a pictorial warning, at an interval of not more than 30 feet.

5. An approved method to manually disconnect electrical power to all portions of the fence and/or gates shall be provided and approved by the fire chief.

6. All necessary permits shall be obtained prior to installation from the city of Fairview.

H. Critical Facility Security Fences. Notwithstanding subsections (B)(2), (F), and (G) of this section, a facility that is located in any zoning district which is deemed a critical facility for the public health and safety, emergency management or homeland security purposes may include installation of fencing as follows:

1. A facility subject to this provision includes but is not limited to water or sewer pump station, well, public works yard, emergency management and other communications facilities, public safety facilities, flood control structures, public and private utility installations, or water tower or other facility deemed to be a similar use under Chapter 19.480 FMC.

2. Security fencing may not exceed six feet in height surrounding all or a portion of the facility, except that barbed wire, razor wire or other similar measure designed to impede access may be added to the top of a fence not less than six feet in height.

3. The vertical dimension of security measures such as barbed wire located along the top of a fence shall not exceed 18 inches.

4. The combined height of a fence and additional security measures may not exceed seven and one-half feet in height. (Ord. 12-2015 § 2 (Exh. A), 2015; Ord. 5-2011 § 1; Ord. 6-2001 § 1)

Response: The existing rock retaining wall at the northwest corner of the site will be removed and similarly reconstructed to accommodate proposed parking and driveways. No new fencing is proposed.

Chapter 19.164 VEHICLE AND BICYCLE PARKING

Sections:

19.164.010 Purpose.

19.164.020 Applicability.

19.164.030 Vehicle parking standards.

19.164.040 Bicycle parking standards.

19.164.010 Purpose.

The purpose of this chapter is to provide basic and flexible standards for development of vehicle and bicycle parking. The design of parking areas is critically important to the viability of some commercial areas, pedestrian and driver safety, the efficient and safe operation of adjoining streets, and community image and livability. Historically, some communities have required more parking than is necessary for some land uses, paving extensive areas of land that could be put to better use. Because vehicle parking facilities can occupy large amounts of land, they must be planned and designed carefully to use the land efficiently while maintaining the visual character of the community. This chapter recognizes that each development has unique parking needs by providing a flexible approach for determining parking space requirements (i.e., "minimum" and "performance based" standards). This chapter also provides standards for bicycle parking because many people use bicycles for recreation, commuting, and general transportation. Children as well as adults need safe and adequate spaces to park their bicycles throughout the community. (Ord. 6-2001 § 1)

19.164.020 Applicability.

All developments subject to site design review Chapter 19.420 FMC, including development of parking facilities, shall comply with the provisions of this chapter. (Ord. 6-2001 § 1)

19.164.030 Vehicle parking standards.

A. The minimum number of required off-street vehicle parking spaces (i.e., parking that is located in parking lots and garages and not in the street right-of-way) shall be determined based on the standards in Table 19.164.030.A.

There is no minimum number of off-street parking spaces required in the town center commercial district; however, the "maximum parking" standards of this chapter apply.

Table 19.164.030.A

Vehicle Parking – Minimum Standards Option

The number of required off-street vehicle parking spaces shall be determined in

accordance with the following standards. Off-street parking spaces may include spaces in garages, carports, parking lots, and/or driveways so long as vehicles are not parked in a vehicle travel lane (including emergency or fire access lanes), public right-of-way, pathway or landscape area. Credit shall be allowed for "on-street parking," as provided in FMC 19.164.030(B). Parking ratios are based on spaces per 1,000 square feet of gross leasable area unless otherwise stated.

Residential Uses

Single-Family Detached Housing. One parking space shall be provided for each detached single-family dwelling or manufactured home on an individual lot.

Two- and Three-Family Housing. 1.5 spaces per dwelling unit.

Multifamily and Single-Family Attached Housing.

a. Studio units or 1-bedroom units less than 500 sq. ft. – 1 space.

b. 1-bedroom units 500 sq. ft. or larger – 1.25 spaces.

c. 2-bedroom units – 1.50 spaces.

d. 3-bedroom or greater units – 1.75 spaces.

e. Retirement complexes for seniors 55 years or greater – 1 space per unit, plus one per three employees.

Rooming and Boarding Houses, Dormitories. Two spaces for each three guest rooms, or one per three beds, whichever is more.

Senior Housing. Same as for retirement complexes.

Manufactured Home Parks. Same as for single-family detached housing.

Accessory Dwelling. One space.

Commercial Uses

Auto, Boat or Trailer Sales, Retail Nurseries and Similar Bulk Retail Uses. One space per 1,000 square feet of the first 10,000 square feet of gross land area; plus one space per 5,000 square feet for the excess over 10,000 square feet of gross land area; and one space per two employees.

Bank with Drive-In. 4.3 spaces per 1,000 square feet of gross leasable area.

Business, General Retail, Personal Services. General – 4.1 per 1,000 square feet of gross floor area. Furniture and appliances – 0.5 space per 1,000 square feet of gross leasable area.

Chapels and Mortuaries. Two spaces per four fixed seats in the main chapel.

Fast Food with Drive-Through. 9.9 spaces per 1,000 square feet of gross leasable area.

Hotels and Motels. One space per 1,000 square feet of gross leasable area.

Offices. Medical and dental offices – 3.9 spaces per 1,000 square feet of gross leasable area; general offices – 2.7 spaces per 1,000 square feet of gross leasable area.

Restaurants, Bars, Ice Cream Parlors and Similar Uses. 15.3 spaces per 1,000 sq. ft. of gross leasable floor area.

Theaters, Auditoriums, Stadiums, Gymnasiums, Similar Uses. 0.3 spaces per each seat.

Industrial Uses

Industrial Uses, Except Warehousing. 1.6 spaces per 1,000 square feet of leasable floor area.

Warehousing. 0.3 spaces per 1,000 square feet of gross floor area. Parking ratios apply to warehouses 150,000 gross square feet or greater.

Public Utilities (Gas, Water, Telephone, Etc.), Not Including Business Offices. One space per each employee on the largest shift, plus one space per company vehicle.

Public and Institutional Uses

Childcare Centers Having 13 or More Children. One space per two employees; a minimum of two spaces is required.

Churches and Similar Places of Worship. The same as other similar uses.

Golf Courses, Except Miniature. Eight spaces per hole, plus additional spaces for auxiliary uses set forth in this section. Miniature golf courses – four spaces per hole.

Hospitals. Two spaces per patient bed based on maximum capacity.

Nursing and Convalescent Homes. One space per two patient beds based on maximum capacity.

Rest Homes, Homes for the Aged, or Assisted Living. One space for each per dwelling plus one per three employees.

Schools, Elementary and Junior High. One space per employee.

Sports Club/Recreational Facilities. 4.3 spaces per 1,000 square feet of gross leasable area.

High Schools. 0.2 spaces per each student and staff member.

Colleges, Universities and Trade Schools. 0.2 spaces per each student and staff member.

Unspecified Uses

Where a use is not specifically listed in this table, parking requirements shall be determined by finding that a use is similar to those listed in terms of parking needs.

Response: The Village General Standards supersede these minimum requirements. The parking totals provided for this project conform to those standards.

B. Credit for On-Street Parking.

1. The credit for on-street parking allows a reduction of one off-street parking space for everyone on-street parking space adjacent to the development if deemed appropriate by the city.

2. On-Street Parking Credit. The amount of off-street parking required shall be reduced by one off-street parking space for every uncommitted on-street parking space adjacent to the development. On-street parking shall follow the established configuration of existing on-street parking, except that angled parking may be allowed for some streets, where permitted by city standards. The following constitutes an on-street parking space:

a. Parallel parking, each 24 feet of uninterrupted curb;

b. Fifty-degree diagonal, each with 12 feet of curb;

c. Ninety-degree (perpendicular) parking, each with 10 feet of curb;

d. Curb space must be connected to the lot which contains the use;

e. Parking spaces that would not obstruct a required clear vision area, nor any other parking that violates any law or street standard; and

f. On-street parking spaces credited for a specific use may not be used exclusively by that use, but shall be available for general public use at all times. No signs or actions limiting general public use of on-street spaces is permitted. C. Parking Location and Shared Parking.

Response: On street parking is used to satisfy the commercial parking requirement for this project. It is anticipated that 17 on street parking spaces will be available and that 13 spaces are required to serve the commercial use. Each on street parking space is 24' long parallel parking located at the curb adjacent to the project lot. The on street parking does not encroach into the vision clearance of any intersection or driveway.

1. Location. Vehicle parking is allowed only on approved parking shoulders (streets), within garages, carports and other structures, or on driveways or parking lots that have been developed in conformance with this code. Specific locations for parking are indicated in Article II of this title for some land uses (e.g., the requirement that parking be located to side or rear of buildings, with access from alleys, for some uses). (See also Chapter 19.162 FMC, Access and Circulation.)

Response: The proposed on-site parking is composed of two types. Surface parking located behind the building so as not to be visible from the street and tuck under parking located on the back side of the buildings behind the commercial uses also not visible from the street. The parking areas area accessed by driveways shared with adjacent properties.

2. Off-Site Parking. Except for single-family dwellings, the vehicle parking spaces required by this chapter may be located on another parcel of land, provided the parcel is within 500 feet walking distance of the use it serves. The distance from the parking area to the use shall be measured from the nearest parking space to a building entrance, following a sidewalk or other pedestrian route. The right to use the off-site parking must be evidenced by a recorded deed, lease, easement, or similar written instrument.

Response: Off-site parking is not proposed for this project.

3. Mixed Uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street vehicle parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (i.e., the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly.

Response: The proposed residential and commercial uses as proposed each have their own adequate parking to meet code requirements. The commercial uses are relatively small size and only require 13 parking spaces. The row of standard sized parking spaces at the north side of the portion of the building facing Market Drive could be shared spaces between the hours of 8am to 5pm if necessary but that is not proposed at this time as the parking provided conforms to Village requirements.

4. 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), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use.

Response: Shared parking with adjacent properties is not proposed for this project.

5. Availability of Facilities. Owners of off-street parking facilities may post a sign indicating that all parking on the site is available only for residents, customers and/or employees, as applicable. Signs shall conform to the standards of Chapter 19.170 FMC, Sign Regulations.

Response: The owner may decide to post signs indicating residential parking areas so those spaces could be for exclusive residential use.

Response: All required parking is accommodated on site or on the street in front of the site. There is no need for shared parking and enough parking is provided to accommodate all uses without overlap. Actual parking requirements and counts are addressed in a different section.

D. Maximum Number of Parking Spaces. The number of parking spaces provided shall not exceed the standards in the following table:

Use	Maximum in Transit/Ped. Areas	Maximum in All Other Areas
General Office	3.4/1,000 s.f.	4.1
Light Industrial	none	none
Warehouse (150,000 s.f. or larger)	0.4	0.5
Schools, Colleges, etc.	0.3	0.3
Tennis, Racquetball Courts	1.3	1.5
Sports Club/Recreation Facilities	5.4	6.5
Retail/Commercial, Including Shop Centers	5.1	6.2
Bank with Drive-In	5.4	6.5
Movie Theater (spaces/seats)	0.4	0.5
Fast Food with Drive-In	12.4	14.9
Other Restaurants	19.1	23
Worship Places (spaces/seats)	0.6	0.8
Medical/Dental Clinic	4.9	5.9
Residential Uses	none	none
Hotel/Motel	none	none
Single-Family Detached	none	none
Residential, less than 500 s.f. per unit, one bedroom	none	none
Multifamily/Townhouse/1 bedroom	none	none
Multifamily/Townhouse/2 bedroom	none	none
Multifamily/Townhouse/3 bedroom	none	none

Response: This project utilizes minimum parking requirements not maximum requirements.

E. Parking Management. The planning director may require a parking management plan for development of any use that requires more than 10 parking spaces based on the minimum parking spaces provided in Table

19.164.030.A. The parking management plan shall be prepared by a qualified parking or traffic consultant or certified engineer and should include the following:

1. Defining a study area and time period necessary to evaluate parking supply and demand inthe area consistent with the planning period for the city's transportation system plan.

2. Surveying the capacity of the parking supply options in the study area such as shared parking, transit stations or other high-efficiency parking management alternatives.

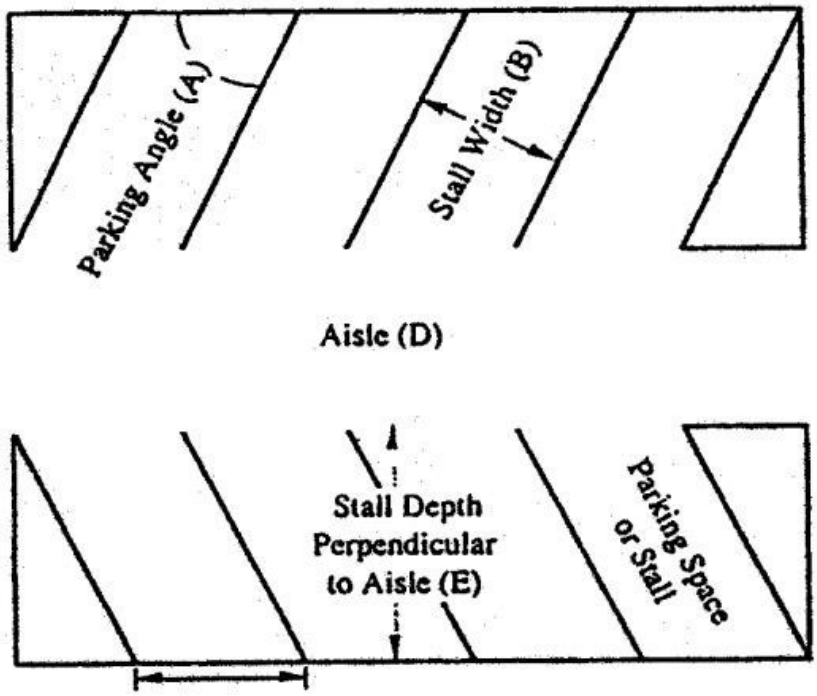
3. Defining a study area and time period necessary to evaluate parking supply and demand in the area consistent with the planning period for the city's transportation system plan.

4. Surveying the capacity of the parking supply options in the study area such as shared parking, transit stations or other high-efficiency parking management alternatives.

Response: The owner of the property will assign parking spaces to the residential tenants and instructions as to their proper use. As part of their lease the owner will provide commercial tenants parking instructions for their business and their patrons.

F. Parking Stall Standard Dimensions and Compact Parking Spaces. All off-street parking stalls shall be improved to conform to city standards for surfacing, stormwater management and striping, and provide dimensions in accordance with the following table. Disabled person parking shall conform to the standards and dimensions of this chapter. The number of compact parking spaces shall not exceed 40 percent of all parking spaces provided on site.

Figure 19.164.030.F – Parking Stall Standard Dimensions and Compact Car Parking



Minimum Parking Space and Aisle Dimensions

Angle (A)	Type	Width (B)	Curb Length (C)	1-Way Aisle Width (D)	2-Way Aisle Width (D)	Stall Depth
0° (Parallel)	Standard Compact Disabled	8 ft. 7 ft. 6 in.	22 ft. 6 in. 19 ft. 6 in.	12 ft. 12 ft.	24 ft. 24 ft.	8 ft. 7 ft. 6 in.
30°	Standard Compact Disabled	9 ft. 7 ft. 6 in.	18 ft. 15 ft.	12 ft. 12 ft.	24 ft. 24 ft.	17 ft. 14 ft.
45°	Standard Compact Disabled	9 ft. 7 ft. 6 in.	12 ft. 6 in. 10 ft. 6 in.	12 ft. 12 ft.	24 ft. 24 ft.	19 ft. 16 ft.

60°	Standard Compact Disabled	9 ft. 7 ft. 6 in.	10 ft. 6 in. 8 ft. 6 in.	18 ft. 15 ft.	24 ft. 24 ft.	20 ft. 16 ft. 6 in.
90°	Standard Compact Disabled	9 ft. 7 ft. 6 in.	9 ft. 7 ft. 6 in.	24 ft. 22 ft.	24 ft. 24 ft.	19 ft. 15 ft.

G. Variances. Developments may request exceptions to the parking standards; see FMC 19.520.030(A)(4).

Important cross-references: See also Article II of this title, land use district standards; Chapter 19.162 FMC, Access and Circulation; Chapter 19.163 FMC, Landscaping, Street Trees, Fences and Walls; and FMC 19.165.050, Storm drainage.

H. Disabled Person Parking Spaces. The following parking shall be provided for disabled persons, in conformance with the Americans with Disabilities Act (Figure 19.164.030.H):

Response: The parking dimensions shown here are superseded by Village General Standards. This project complies with those standards and are detailed in that section. Five handicapped accessible parking spaces are provided on site as required by the table below. Spaces shall be striped and signed with curb ramps as required by code.

Figure 19.164.030.H – Disabled Person Parking Spaces

Minimum Number of Accessible Parking Spaces
ADA Standards for Accessible Design 4.1.2 (5)

Total Number of Parking spaces Provided (per lot)	Total Minimum Number of Accessible Parking Spaces (60" & 96" aisles)	Van Accessible Parking Spaces with min. 96" wide access aisle	Accessible Parking Spaces with min. 60" wide access aisle
	Column A		
1 to 25	1	1	0
26 to 50	2	1	1
51 to 75	3	1	2
76 to 100	4	1	3
101 to 150	5	1	4
151 to 200	6	1	5
201 to 300	7	1	6
301 to 400	8	1	7
401 to 500	9	2	7
501 to 1000	2% of total parking provided in each lot	1/8 of Column A*	7/8 of Column A**
1001 and over	20 plus 1 for each 100 over 1000	1/8 of Column A*	7/8 of Column A**

* one out of every 8 accessible spaces ** 7 out of every 8 accessible parking spaces

The following graphics and text further illustrate Americans with Disability Act requirements.

U.S. Department of Justice
Civil Rights Division
Disability Rights Section

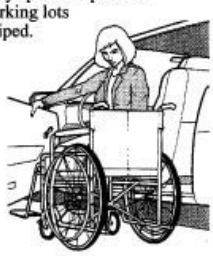
ADA Design Guide 1 Restriping Parking Lots

Accessible Parking Spaces

When a business, State or local government agency, or other covered entity restripes a parking lot, it must provide accessible parking spaces as required by the ADA Standards for Accessible Design. Failure to do so would violate the ADA.

In addition, businesses or privately owned facilities that provide goods or services to the public have a continuing ADA obligation to remove barriers to access in existing parking lots when it is readily achievable to do so. Because restriping is relatively inexpensive, it is readily achievable in most cases.

This ADA Design Guide provides key information about how to create accessible car and van spaces and how many spaces to provide when parking lots are restriped.



Accessible Parking Spaces for Cars

Accessible parking spaces for cars have at least a 60-inch-wide access aisle located adjacent to the designated parking space. The access aisle is just wide enough to permit a person using a wheelchair to enter or exit the car. These parking spaces are identified with a sign and located on level ground.

Van-Accessible Parking Spaces

Van-accessible parking spaces are the same as accessible parking spaces for cars except for three features needed for vans:

- a wider access aisle (96") to accommodate a wheelchair lift;
- vertical clearance to accommodate van height at the van parking space, the adjacent access aisle, and on the vehicular route to and from the van-accessible space, and
- an additional sign that identifies the parking spaces as "van accessible."

One of eight accessible parking spaces, but always at least one, must be van-accessible.

Location

Accessible parking spaces must be located on the shortest accessible route of travel to an accessible facility entrance. Where buildings have multiple accessible entrances with adjacent parking, the accessible parking spaces must be dispersed and located closest to the accessible entrances.

When accessible parking spaces are added in an existing parking lot, locate the spaces on the most level ground close to the accessible entrance. An accessible route must always be provided from the accessible parking to the accessible entrance. An accessible route never has curbs or stairs, must be at least 3-feet wide, and has a firm, stable, slip-resistant surface. The slope along the accessible route should not be greater than 1:12 in the direction of travel.

Accessible parking spaces may be clustered in one or more lots if equivalent or greater accessibility is provided in terms of distance from the accessible entrance, parking fees, and convenience. Van-accessible parking spaces located in parking garages may be clustered on one floor (to accommodate the 98-inch minimum vertical height requirement).

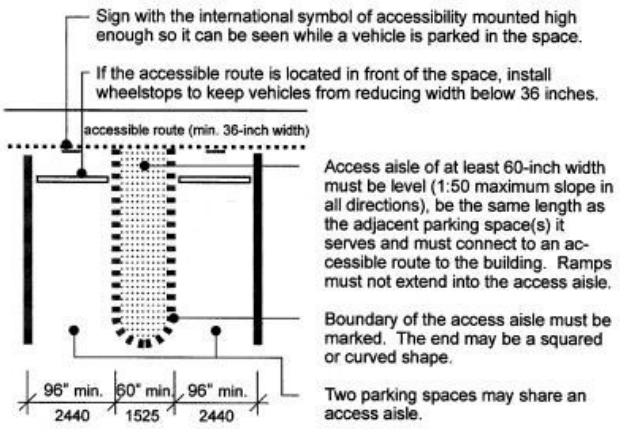
Free Technical Assistance

Answers to technical and general questions about restriping parking lots or other ADA requirements are available by telephone on weekdays. You may also order the ADA Standards for Accessible Design and other ADA publications, including regulations for private businesses or State and local governments, at any time day or night. Information about ADA-related IRS tax credits and deductions is also available from the ADA Information Line.

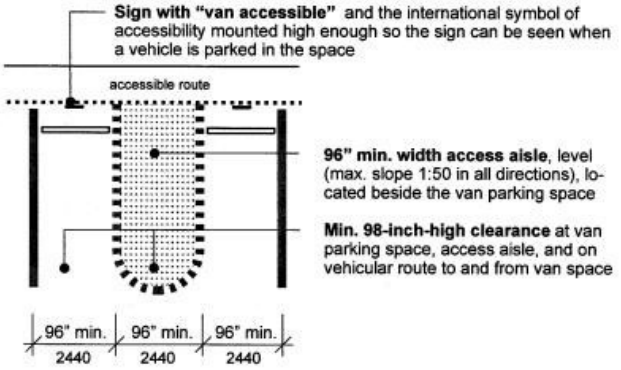
Department of Justice
ADA Information Line

800-514-0301 (voice)
800-514-0383 (tty)

Features of Accessible Parking Spaces for Cars



Three Additional Features for Van-Accessible Parking Spaces



Internet
You may also review or download information on the Department's ADA Internet site at any time. The site provides access to ADA regulations, technical assistance materials, and general ADA information. It also provides links to other Federal agencies, and updates on new ADA requirements and enforcement efforts. Internet address:
www.usdoj.gov/crt/ada/adahom1.htm

Reference:
ADA Standards for Accessible Design (28 CFR Part 36):

§ 4.1.6 Alterations;
§ 4.1.2 Accessible Sites and Exterior Facilities: New Construction, and
§ 4.1.6 Parking and Passenger Loading Zones.

I. In parking lots three acres and larger intended for use by the general public, pedestrian pathways shall be raised or separated from parking, parking aisles and travel lanes by a raised curb, concrete bumpers, bollards, landscaping or other physical barrier. If a raised pathway is used, curb ramps shall be provided in accordance with the Americans with Disabilities Act Accessibility Guidelines. (Ord. 2-2017 § 1 (Exh. A); Ord. 3-2010 § 5; Ord. 8-2002 §§ 1 – 3; Ord. 6-2001 § 1)

19.164.040 Bicycle parking standards.

All uses which are subject to site design review shall provide bicycle parking, in conformance with the following standards, which are evaluated during site design review:

A. Number of Bicycle Parking Spaces. A minimum of two bicycle parking spaces per use is required for all uses with greater than 10 vehicle parking spaces. The following additional standards apply to specific types of development:

1. Multifamily Residences. Every residential use of four or more dwelling units shall provide bicycle parking spaces according to the following standards:

   a. Short-term bicycle parking shall be provided at a ratio of one bicycle space for every 10 vehicle parking spaces and shall be located within 30 feet of the main entrance to the building, in a location that is easily accessible for bicycles.

   b. Long-term bicycle parking shall be provided at a ratio of one bicycle space per dwelling unit. Sheltered bicycle parking spaces may be located within a garage, storage shed, basement, utility room or similar area. In those instances in which the residential complex has no garage or other easily accessible storage unit, the bicycle parking spaces may be sheltered from sun and precipitation under an eave, overhang, an independent structure, or similar cover.

2. Commercial Retail, Office, and Institutional Developments. Commercial retail, office, and institutional developments shall provide bicycle parking spaces according to the following standards:

   a. Short-term bicycle parking shall be provided at a ratio of one bicycle space for every10 vehicle parking spaces and shall be located within 50 feet of the main entrance to the building, in a location that is easily accessible for bicycles.

   b. Long-term bicycle parking shall be provided at a ratio of one bicycle space per employee.

3. Schools. Elementary and middle schools, both private and public, shall provide one bicycle parking space for every eight students and employees. High schools shall provide one bicycle parking space for every five students and employees. All spaces shall be long-term spaces sheltered under an eave, overhang, independent structure, or similar cover.

4. Colleges and Trade Schools. Colleges and trade schools shall provide one bicycle parking space for every eight motor vehicle spaces plus one space for every dormitory unit. Fifty percent of the bicycle parking spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.

5. Town Center Commercial District. Within the town center commercial district, bicycle

parking for customers shall be provided along the street at a rate of at least one space per use. Individual uses shall provide their own parking, or spaces may be clustered to serve up to six bicycles.

Bicycle parking spaces shall be located in front of the stores along the street, either on the sidewalks or in specially constructed areas such as pedestrian curb extensions. Inverted "U" style racks are recommended. Bicycle parking shall not interfere with pedestrian passage, leaving a clear area of at least 36 inches between bicycles and other existing and potential obstructions. Customer spaces may or may not be sheltered. When provided, sheltered parking (within a building, or under an eave, overhang, or similar structure) shall be provided at a rate of one space per 10 employees, with a minimum of one space per store.

6. Multiple Uses. For buildings with multiple uses (such as a commercial or mixed use center), bicycle parking standards shall be calculated by using the total number of motor vehicle parking spaces required for the entire development. A minimum of one bicycle parking space for every 10 motor vehicle parking spaces is required.

B. Exemptions. This section does not apply to single-family, two-family, and three-family housing (attached, detached or manufactured housing), home occupations, agriculture and livestock uses, or other developments with fewer than eight vehicle parking spaces.

C. Location and Design. Bicycle parking shall be conveniently located with respect to both the street right-of-way and at least one building entrance (e.g., no farther away than the closest parking space). It should be incorporated whenever possible into building design and coordinated with the design of street furniture when it is provided. Street furniture includes benches, streetlights, planters and other pedestrian amenities.

D. Visibility and Security. Bicycle parking should be visible to cyclists from street sidewalks or building entrances, so that it provides sufficient security from theft and damage.

E. Options for Storage. Bicycle parking requirements for long-term and employee parking can be met by providing a bicycle storage room, bicycle lockers, racks, or other secure storage space inside or outside of the building.

F. Lighting. Bicycle parking shall be at least as well lit as vehicle parking for security.

G. Reserved Areas. Areas set aside for bicycle parking shall be clearly marked and reserved for bicycle parking only.

H. Hazards. Bicycle parking shall not impede or create a hazard to pedestrians. Parking areas shall be located so as to not conflict with vision clearance standards (Chapter 19.162 FMC, Access and Circulation). (Ord. 2-2017 § 1 (Exh. A); Ord. 6-2001 § 1)

Response: Bicycle parking for the residential and commercial uses is superseded by the Village General Standards and is described in detail in that section. In addition, short term bicycle parking is provided at a rate of 1 space for every 10 vehicle spaces. 120 total required vehicle spaces = 12 short term bike parking spaces. These spaces are located throughout the site near residential and

commercial entries primarily along Market and Village. Lockable racks are provided at each space. Some spaces are covered and some are open. All spaces will be lit by street lighting or building mounted lighting and easily visible. The bicycle parking spaces will not create a hazard to pedestrians.

Chapter 19.165 PUBLIC FACILITIES STANDARDS

Sections:

19.165.010 Purpose and applicability. 19.165.020

Transportation standards.

19.165.025 Transportation improvements.

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19.165.040 Sanitary sewer and water service improvements.

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19.165.060 Utilities.

19.165.070 Easements.

19.165.080 Construction plan approval and assurances.

19.165.090 Installation.

19.165.010 Purpose and applicability.

A. Purpose. The purpose of this chapter is to provide planning and design standards for public and private transportation facilities and utilities. Streets are the most common public spaces, touching virtually every parcel of land. Therefore, one of the primary purposes of this chapter is to provide standards for attractive and safe streets that can accommodate vehicle traffic from planned growth, and provide a range of transportation options, including options for driving, walking, bus transit and bicycling. This chapter is also intended to implement the city's transportation system plan.

B. When Standards Apply. Unless otherwise provided, the standard specifications for construction ,reconstruction or repair of transportation facilities, utilities and other public improvements within the city shall occur in accordance with the standards of this chapter. No development may occur unless the public facilities related to development comply with the public facility requirements established in this chapter. The street cross sections found in the Fairview transportation system plan may be modified to accommodate alternative stormwater management methods in accordance with the adopted stormwater design manual subject to the approval of the public works director. The public works director may require modification of the typical cross section to accommodate alternative stormwater management methods when associated with development proposals. Such modifications may be applied as conditions of development approval.

C. Standard Specifications. The city engineer shall establish standard construction specifications consistent with the design standards of this chapter and application of engineering principles. They are incorporated in this code by reference.

D. Conditions of Development Approval. No development may occur unless required public facilities are in place or guaranteed, in conformance with the provisions of this code. Improvements required as a condition of development approval that require a dedication of property for a public use, when not voluntarily accepted by the applicant, shall be roughly proportional to the impact of development. Findings in the development approval shall indicate how the required improvements are roughly proportional to the impact of the proposed development on public facilities.

E. Rough Proportionality Report. Where the applicant objects to the imposition of any applicable development standard under this chapter that required a dedication of property for a public use, the applicant must provide a rough proportionality report justifying an alternative level of improvements including:

1. The estimated extent, on a quantitative basis, to which the improvements will be used by persons served by the building or development, whether the use is for safety or convenience;

2. The estimated level, on a quantitative basis, of improvements needed to meet the estimated extent of use by persons served by the building or development;

3. The estimated impact, on a quantitative basis, of the building or development on the public infrastructure system of which the improvements will be a part; and

4. The estimated level, on a quantitative basis, of improvements needed to mitigate the estimated impact on the public infrastructure system. (Ord. 2-2007 § 1(Exh. 1 § 1); Ord. 6-2001 § 1)

Response: The goal of the project is to comply fully with the intent of the village concept and to become an important contributing element of the overall village character.

19.165.020 Transportation standards.

Transportation standards are necessary so that the Fairview street system remains intact and well connected. Streets are critical to the connection of neighborhoods, businesses, schools, etc. It is important to regulate roadway sizes, locations and right-of-way dimensions.

The street standards are based directly on the Fairview transportation system plan. Traffic calming measures are addressed in the adopted transportation system plan. The city of Fairview has no formalized traffic-calming plan, but has recently adopted a speed hump management program. The street alignment illustrations used in the proposed code are taken directly from the transportation system plan. (Ord. 6-2001 § 1)

Response: The project will meet all transportation standards imposed by the public works department.

19.165.025 Transportation improvements.

A. Development Standards. No development shall occur unless the development has frontage or approved access to a public street, in conformance with the provisions of Chapter 19.162 FMC, Access and Circulation, and the following standards are met:

1. Streets within or adjacent to a development shall be improved in accordance with the transportation system plan and the provisions of this chapter;

2. Development of new streets, and additional street width or improvements planned as a portion of an existing street, shall be improved in accordance with this section, and public streets shall be dedicated to the applicable city, county or state jurisdiction;

3. New streets and drives connected to a collector or arterial street shall be paved; and

4. The city may accept a future improvement guarantee (e.g., owner agrees not to remonstrate(object) against the formation of a local improvement district in the future) in lieu of street improvements if one or more of the following conditions exist:

   a. A partial improvement may create a potential safety hazard to motorists or pedestrians;

   b. Due to the developed condition of adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide increased street safety or capacity, or improved pedestrian circulation;

   c. The improvement would be in conflict with an adopted capital improvement plan; or

   d. The improvement is associated with an approved land partition on property zoned residential and the proposed land partition does not create any new streets.

B. Variances. Variances to the transportation design standards in this section may be granted by means of a Class B variance, as governed by Article V of this title, Exceptions to Code Standards. A variance may be granted under this provision only if a required improvement is not feasible due to topographic constraints or constraints posed by sensitive lands Chapter 19.106 FMC.

C. Creation of Rights-of-Way for Streets and Related Purposes. Streets shall be created through the approval and recording of a final subdivision or partition plat; except the city may approve the creation of a street by acceptance of a deed; provided, that the street is deemed essential by the city council for the purpose of implementing the transportation system plan, and the deeded right of-way conforms to the standards

of this code. All deeds of dedication shall be in a form prescribed by the city engineer and shall name "the public" as grantee.

D. Creation of Access Easements. The city may approve an access easement established by deed when the easement is necessary to provide for access and circulation in conformance with Chapter 19.162 FMC, Access and Circulation. Setback standards do not permit conflicting structures to be built in public easements.

E. Street Location, Width and Grade. Except as noted below, the location, width and grade of all streets shall conform to the transportation system plan, and an approved street plan or subdivision plat. Street location, width and grade 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:

1. Street grades shall be approved by the city engineer in accordance with the design standards in subsection O of this section; and

2. Where the location of a street is not shown in an existing street plan (see subsection H of this section), the location of streets in a development shall either:

   a. Provide for the continuation and connection of existing streets in the surrounding areas, conforming to the street standards of this chapter, or

   b. Conform to a street plan adopted by the planning commission, if it is impractical to connect with existing street patterns because of particular topographical or other existing conditions of the land. Such a plan shall be based on the type of land use to be served, the volume of traffic, the capacity of adjoining streets and the need for public convenience and safety.

F. Minimum Rights-of-Way and Street Sections. Street rights-of-way and improvements shall be the widths as required in the "Standards" section of the Fairview transportation system plan. A variance shall be required to vary the standards found in the Fairview transportation system plan. Where a range of width is indicated, the width shall be determined by the decision-making authority based upon the following factors:

1. Street classification in the transportation system plan;

2. Anticipated traffic generation;

3. On-street parking needs;

4. Sidewalk and bikeway requirements based on anticipated level of use;

5. Requirements for placement of utilities;

6. Street lighting;

7. Minimize drainage, slope, and sensitive lands impacts, as identified by Chapter 19.106 FMC;

8. Street tree location, as provided for in Chapter 19.163 FMC;

9. Protection of significant vegetation, as provided for in Chapter 19.163 FMC;

10. Safety and comfort for motorists, bicyclists, and pedestrians;

11. Street furnishings (e.g., benches, lighting, bus shelters, etc.), when provided;

12. Access needs for emergency vehicles; and

13. Transition between different street widths (i.e., existing streets and new streets), a sapplicable.

G. Traffic Signals and Neighborhood Traffic Management.

1. Traffic management features, such as traffic circles, curb extensions, narrow residential streets, and special paving, may be used to slow traffic in neighborhoods and areas with high pedestrian traffic.

2. Traffic signals shall be required with development when traffic signal warrants are met, in conformance with the Highway Capacity Manual and Manual of Uniform Traffic Control Devices. The location of traffic signals shall be noted on approved street plans. Where a proposed street intersection will result in an immediate need for a traffic signal, a signal meeting approved specifications shall be installed. The developer's cost and the timing of improvements shall be included as a condition of development approval.

3. Preferred neighborhood traffic management tools are detailed in the Fairview transportation system plan.

H. Future Street Plan and Extension of Streets.

1. A future street plan shall be filed by the applicant in conjunction with an application for a subdivision in order to facilitate orderly development of the street system. The plan shall show the pattern of existing and proposed future streets from the boundaries of the proposed land division and shall include other parcels within 500 feet surrounding and adjacent to the proposed land division. The street plan is not binding; rather it is intended to show potential future street extensions with future development.

2. Streets shall be extended to the boundary lines of the parcel or tract to be developed, when the city council determines that the extension is necessary to give street access to, or permit a satisfactory

future division of, adjoining land. The point where the streets temporarily end shall conform to subsections (H)(2)(a) through (d) of this section:

a. These extended streets or street stubs to adjoining properties are not considered to be cul-de-sacs since they are intended to continue as through streets when the adjoining property is developed.

b. A barricade (e.g., fence, bollards, boulders or similar vehicle barrier) shall be constructed at the end of the street by the subdivider and shall not be removed until authorized by the city or other applicable agency with jurisdiction over the street. The cost of the barricade shall be included in the street construction cost.

c. Temporary turnarounds (e.g., hammerhead or bulb-shaped configuration) shall be constructed for stub streets over 150 feet in length.

d. In the case of dead-end stub streets that will connect to streets on adjacent sites in the future, notification that the street is planned for future extension shall be posted on the stub street until the street is extended and shall inform the public that the dead-end street may be extended in the future. I. Street Alignment and Connections.

1. Mixed-use and residential development proposed on sites five acres or greater must submit a site plan that identifies conceptual street connections that are consistent with the transportation system plan.

2. Staggering of streets making “T” intersections at collectors and arterials shall not be designed so that jogs of less than 300 feet on such streets are created, as measured from the centerline of the street.

3. Spacing between local street intersections shall have a minimum separation of 125 feet, except where more closely spaced intersections are designed to provide an open space, pocket park, common area or similar neighborhood amenity. This standard applies to four-way and three-way (offset) intersections.

4. All local and collector streets which abut a development site shall be extended within the site to provide through circulation unless the applicant demonstrates that extension is prevented by environmental or topographical constraints, existing development patterns or compliance with other standards in this code. This exception applies when it is not possible to redesign or reconfigure the street pattern to provide required extensions. Land is considered topographically constrained if the slope is greater than 15 percent for a distance of 250 feet or more. In the case of environmental or topographical constraints, the mere presence of a constraint is not sufficient to show that a street connection is not possible. The applicant must show why the environmental or topographic constraint precludes some reasonable street connection.

5. Proposed streets or street extensions shall be located to provide direct access to existing or planned commercial services and other neighborhood facilities, such as schools, shopping areas and parks and transit facilities.

6. In order to promote efficient vehicular and pedestrian circulation throughout the city, the design of subdivisions and alignment of new streets shall conform to the following standards in Chapter 19.162 FMC, Access and Circulation. The maximum block length shall not exceed:

a. Five hundred thirty feet in the residential district;

b. Two hundred feet in the town center commercial district, except as provided by FMC 19.65.050, Block layout and building orientation;

c. Not applicable to the general industrial district;

d. Seven hundred feet in the light industrial district, except as required for commercial developments subject to Chapter 19.80 FMC;

e. Three hundred feet in the corridor commercial district;

f. Three hundred feet in the neighborhood commercial district.

7. A variance to street spacing standards may be granted pursuant to FMC 19.520.030 (ClassB variances) when resources are present that are mapped on the Natural Resources Map, where street spacing can be achieved at a minimum of 800 feet and no greater than 1,200 feet.

8. Exceptions to the standards in this subsection may be granted when:

a. Habitat quality or the length of the crossing required prevents a full street connection, pursuant to Chapter 19.106 FMC;

b. An access way is provided at or near midblock, in conformance with the provisions of Chapter 19.162 FMC.

J. Sidewalks, Planter Strips, Bicycle Lanes. Sidewalks, planter strips, and bicycle lanes shall be installed in conformance with applicable provisions of the transportation system plan, the Comprehensive Plan, and adopted street plans. Maintenance of sidewalks, curbs, and planter strips is the continuing obligation of the adjacent property owner. All work must comply with the city of Fairview public works construction standards.

K. Internal Pathways. Pathways shall be at least five feet in unobstructed width and shall be constructed to sidewalk standards found in Standard Specifications for Public Works Construction, or according to Multnomah County or ODOT standards as applicable. The property owner shall keep a minimum of five feet of the pathway width clear of both permanent and temporary obstructions (e.g., utility poles,

sandwich signs). Maintenance of internal pathways is the continuing obligation of the property owner or adjacent property owner. All work must comply with the city of
Fairview public works construction standards.

L. Intersection Angles. Streets shall be laid out so as to intersect at an angle as near to a right angle as practicable, except where topography requires a lesser angle or where a reduced angle is necessary to provide an open space, pocket park, common area or similar neighborhood amenity.
In addition, the following standards shall apply:

1. Streets shall have at least 25 feet of tangent adjacent to the right-of-way intersection unless topography requires a lesser distance;

2. Intersections which are not at right angles shall have a minimum corner radius of 20 feet along the right-of-way lines of the acute angle; and

3. Right-of-way lines at intersection with arterial streets shall have a corner radius of not less than 20 feet.

M. Existing Rights-of-Way. Whenever existing rights-of-way adjacent to or within a tract are of less than standard width, additional rights-of-way shall be provided at the time of subdivision or development, subject to the provision of FMC 19.165.025 (C).

N. Cul-de-Sacs. A dead-end street shall be no more than 200 feet long, shall not provide access to greater than eight dwelling units, and shall only be used when environmental or topographical constraints, existing development patterns, or compliance with other standards in this code preclude street extension and through circulation:

1. All cul-de-sacs shall terminate with a circular turnaround. Circular turnarounds shall have a radius of no less than 25 feet, and not more than a radius of 40 feet (i.e., from center to edge of pavement); except that turnarounds may be larger when they contain a landscaped island or parking bay in their center. When an island or parking bay is provided, there shall be a fire apparatus lane of 20 feet in width; and

2. The length of the cul-de-sac shall be measured along the centerline of the roadway from the near side of the intersecting street to the farthest point of the cul-de-sac.

O. Grades and Curves. Grades shall not exceed 10 percent on arterials, 12 percent on collector streets, or 12 percent on any other street (except that local or residential access streets may have segments with grades up to 15 percent for distances of no greater than 250 feet), and:

1. Centerline curve radii shall not be less than 700 feet on arterials, 500 feet on major collectors, 350 feet on minor collectors, or 100 feet on other streets; and

2. Streets intersecting with a minor collector or greater functional classification street, or streets intended to be posted with a stop sign or signalization, shall provide a landing averaging five percent or less. Landings are that portion of the street within 20 feet of the edge of the intersecting street at full improvement.

P. Curbs, Curb Cuts, Ramps, and Driveway Approaches. Concrete curbs, curb cuts, wheelchair, bicycle ramps and driveway approaches shall be constructed in accordance with standards specified in Chapter 19.162 FMC, Access and Circulation.

Q. Streets Adjacent to Railroad Right-of-Way. Wherever the proposed development contains or is adjacent to a railroad right-of-way, a street approximately parallel to and on each side of such right of-way at a distance suitable for the appropriate use of the land shall be created. New railroad crossings and modifications to existing crossings are subject to review and approval by Oregon Department of Transportation.

R. Development Adjoining Arterial Streets. Where a development adjoins or is crossed by an existing or proposed arterial street, the development design shall separate residential access and through traffic, and shall minimize traffic conflicts. The design shall include one or more of the following:

1. A parallel access street along the arterial with a landscape buffer separating the two streets;

2. Deep lots abutting the arterial or major collector to provide adequate buffering with frontage along another street. Double-frontage lots shall conform to the buffering standards in FMC 19.163.030;

3. Screen planting at the rear or side property line to be contained in a non-access reservation (e.g., public easement or tract) along the arterial;

4. Other treatment suitable to meet the objectives of this subsection; or

5. If a lot has access to two streets with different classifications, primary access shall be from the lower classification street, in conformance with Chapter 19.162 FMC.

S. Alleys, Public or Private. Alleys shall conform to the standards in the Fairview transportation system plan. While alley intersections and sharp changes in alignment shall be avoided, the corners of necessary alley intersections shall have a radius of not less than 12 feet.

T. Private Streets. Private streets shall not be used to avoid connections with public streets. Gated communities (i.e., where a gate limits access to a development from a public street) are prohibited. Design standards for private streets shall conform to the provisions of the Fairview transportation system plan.

U. Street Names. No street name shall be used which will duplicate or be confused with the names of existing streets in Multnomah County, except for extensions of existing streets. Street names, signs and numbers

shall conform to the established pattern in the surrounding area, except as requested by emergency service providers.

V. 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 shall be reestablished and protected.

W. 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.

X. Mail Boxes. Plans for mail boxes to be used shall be approved by the United States Postal Service.

Y. Streetlight Standards. Streetlights shall be installed in accordance with city standards.

Z. Street Cross-Sections. All street cross-sections must comply with the Standard Specifications for Public Works Construction pages 40-51. The final lift of asphalt or concrete pavement shall be placed on all new constructed public roadways prior to final city acceptance of the roadway and within one year of the conditional acceptance of the roadway unless otherwise approved by the city engineer. The final lift shall also be placed no later than when 90 percent of the structures in the new development are completed or one year from the commencement of initial construction of the development, whichever is less. All work must comply with public works construction standards.

1. Sub-base and leveling course shall be of select crushed rock;

2. Surface material shall be of Class C or B asphaltic concrete;

3. The final lift shall be Class C asphaltic concrete as defined by APWA standard specifications; and

4. No lift shall be less than one and one-half inches in thickness. (Ord. 2-2017 § 1 (Exh. A); Ord. 3-2012 § 6; Ord. 6-2001 § 1)

Response: The project will meet all transportation improvements as imposed by the public works department.

19.165.030 Public use areas.

Public use areas implement Comprehensive Plan policies that may require a developer to reserve a piece of land for future park and open space to serve the residents of the new development. Specific issues to consider include the amount of time the city has to purchase parkland and whether dedication of park land should count as a credit towards SDCs. A. Dedication Requirements.

1. Where a proposed park, playground or other public use shown in a plan adopted by the city is located in whole or in part in a subdivision, the city may require the dedication or reservation of this area on the final plat for the subdivision.

2. If determined by the planning commission to be in the public interest in accordance with adopted Comprehensive Plan policies, and where an adopted plan of the city does not indicate proposed public use areas, the city may require the dedication or reservation of areas within the subdivision of a character, extent and location suitable for the development of parks and other public uses.

3. All required dedications of public use areas shall conform to FMC 19.430.150(D),Conditions of approval.

B. Acquisition by Public Agency. If the developer is required to reserve land area for a park or playground, the land shall be acquired by the appropriate public agency within 12 months following final plat approval, at a price agreed upon prior to approval of the plat, or the reservation shall be released to the property owner.

C. System Development Charge Credit. Dedication of land to the city for public use areas shall be eligible as a credit toward any required system development charge for parks. (Ord. 6-2001 § 1)

Response: The project will meet requirements imposed by the city.

19.165.040 Sanitary sewer and water service improvements.

The sanitary sewer and water service improvements ensure adequate sanitary sewer services to new developments.

A. Sewers and Water Mains Required. Sanitary sewers and water mains shall be installed to serve each new development and to connect developments to existing mains in accordance with the city's construction specifications and the applicable Comprehensive Plan policies.

B. Sewer and Water Plan Approval. Development permits for sewer and water improvements shall not be issued until the city engineer has approved all sanitary sewer and water plans in conformance with city standards.

C. Oversizing. Proposed sewer and water systems shall be sized to accommodate additional development within the area as projected by the Comprehensive Plan. The developer shall be entitled to system development charge credits for the oversizing.

D. Permits Denied. Development permits may be restricted by the city where a deficiency exists in the existing water or sewer system which cannot be rectified by the development and which if not rectified will result in a threat to public health or safety, surcharging of existing mains, or violations of state or federal

standards pertaining to operation of domestic water and sewerage treatment systems. Building moratoriums shall conform to the criteria and procedures contained in ORS
197.505 to 197.520. (Ord. 6-2001 § 1)

Response: The project will meet requirements imposed by the city. Public water and sewer exist from both street frontages.

19.165.050 Storm drainage.

The storm drainage section requires developers to accommodate and treat stormwater runoff from buildings and parking lots.

A. General Provisions. The city shall issue a development permit only where adequate provisions for stormwater and flood water runoff have been made.

B. Accommodation of Upstream Drainage. Culverts and other drainage facilities shall be large enough to accommodate potential 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 may deny approval of the development permit unless 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.

D. Easements. Where a development is traversed by a watercourse, drainage way, channel or stream, there shall be provided 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. (Ord. 6-2001 § 1)

Response: Public Storm water will runoff to existing public drainage conveyance and discharge to existing water quality and detention facilities.

19.165.060 Utilities.

The utilities section provides standards regarding electric lines and cable. Many types of utilities now must be installed underground for safety and aesthetic purposes.

A. Underground Utilities. All utility lines including, but not limited to, those required for electric, communication, lighting and cable television services and related facilities shall be placed underground, except for surface-mounted transformers, surface-mounted connection boxes and meter cabinets which may be placed above ground, temporary utility service facilities during construction, and high capacity electric lines operating at 50,000 volts or above. The following additional standards apply to all new subdivisions, in order to facilitate underground placement of

utilities:

1. The developer shall make all necessary arrangements with the serving utility to provide the underground services. Care shall be taken to ensure that all above ground equipment does not obstruct vision clearance areas for vehicular traffic;

2. The city reserves the right to approve the location of all surface-mounted facilities;

3. All underground utilities, including sanitary sewers and storm drains installed in streets by the developer, shall be constructed prior to the surfacing of the streets; and

4. Stubs for service connections shall be long enough to avoid disturbing the street

improvements when service connections are made.

B. Easements. Easements shall be provided for all underground utility facilities.

C. Exception to Undergrounding Requirement. The standard applies only to proposed subdivisions. An exception to the undergrounding requirement may be granted due to physical constraints, such as steep topography, sensitive lands, Chapter 19.106 FMC, or existing development conditions.

(Ord. 3-2012 § 6; Ord. 6-2001 § 1)

Response: The utilities existing underground will remain underground any new public utilities and services to the site will remain underground..

19.165.070 Easements.

The easements section provisions reserve adequate space for utilities.

Easements for sewers, storm drainage and water quality facilities, water mains, electric lines or other public utilities shall be dedicated on a final plat, or provided for in the deed restrictions. See also, Chapter 19.420 FMC, Development Review and Site Design Review and Chapter 19.430, Land Divisions and Lot Line Adjustments. The developer or applicant shall make arrangements with the city, the applicable district and each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development. The city's standard width for public main line utility easements shall be 20 feet unless otherwise specified by the utility company, applicable district, or city engineer. (Ord. 6-2001 § 1)

Response: The easements in place will remain in place. No new easements are anticipated or required for public utilities. The City may want access easements.

19.165.080 Construction plan approval and assurances.

The construction plan approval portion ensures the completion of a development by a builder.

No public improvements, including sanitary sewers, storm sewers, streets, sidewalks, curbs, lighting, parks, or other requirements, shall be undertaken except after the plans have been approved by the city, permit fee paid, and permit issued. The permit fee is required to defray the cost and expenses incurred by the city for construction and other services in connection with the improvement. The permit fee shall be set by the city council. The city may require the developer or subdivider to provide bonding or other performance guarantees to ensure completion of required public improvements. (Ord. 6-2001 § 1)

Response: Construction plans will be designed and drafted to city standards and specifications

19.165.090 Installation.

A. Conformance Required. Improvements installed by the developer either as a requirement of these regulations or at his/her own option, shall conform to the requirements of this chapter, approved construction plans, and to improvement standards and specifications adopted by the city.

B. Adopted Installation Standards. The Standard Specifications for Public Works Construction, Oregon Chapter APWA shall be a part of the city's adopted installation standard(s); other standards may also be required upon recommendation of the city engineer.

C. Commencement. Work shall not begin until the city has been notified in advance.

D. Resumption. If work is discontinued for more than one month, it shall not be resumed until the city is notified.

E. City Inspection. Improvements shall be constructed under the inspection and to the satisfaction of the city. The city may require minor changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest. Modifications requested by the developer shall be subject to land use review under Chapter 19.415 FMC, Modifications to Approved Plans and Conditions of Approval. Any monuments that are disturbed before all improvements are completed by the subdivider shall be replaced prior to final acceptance of the improvements.

F. Engineer's Certification and As-Built Plans. A registered civil engineer shall provide written certification in a form required by the city that all improvements, workmanship and materials are in accord with current and standard engineering and construction practices, conform to approved plans and conditions of approval, and are of high grade, prior to city acceptance of the public improvements, or any portion thereof, for operation and maintenance. The developer's engineer shall also provide three sets (one mylar, one electronic, one paper copy) of "as-built" plans, in conformance with the city engineer's specifications, for permanent filing with the city. (Ord. 6-2009 § 4; Ord. 6-2001 § 1)

Response: The improvements and work provided to install the improvements will meet city standards and specifications. The owner's engineer will provide as-builts for completed work.

Exhibit A-2

FAIRVIEW VILLAGE
TRAFFIC IMPACT STUDY

FAIRVIEW, OREGON

21370 SW Langer Farms Parkway, Suite 142, Sherwood, OR 97140 – (503)862-6960

FAIRVIEW VILLAGE
TRAFFIC IMPACT STUDY

FAIRVIEW, OREGON

REGISTERED PROFESSIONAL ENGINEER
54983PE
OREGON
JULY 10, 2002
MICHAEL T. ARD

EXPIRES: 12/31/19

PREPARED FOR:
Blackhawk Development, LLC

PREPARED BY:
Michael Ard, PE
Ard Engineering

DATE:
March 16, 2018

21370 SW Langer Farms Parkway, Suite 142, Sherwood, OR 97140 - (503)862-6960

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EXECUTIVE SUMMARY

1. A mixed-use development consisting of 71 apartment units and 4,600 square feet of retail space is proposed for a site located in the northwest corner of the intersection of NE Village Street at NE Market Drive in Fairview, Oregon. The site will primarily take access via one driveway on NE Village Street at the northeast corner of the project site and one driveway on NE Market Drive at the southwest corner of the project site.

2. The proposed development is projected to generate a net increase of 35 site trips during the morning peak hour and 46 site trips during the evening peak hour.

3. Based on the operational analysis, all study area intersections are projected to operate acceptably per City of Fairview standards through 2020 either with or without the addition of site trips from the proposed development. No operational mitigations are necessary or recommended.

4. Crash data for the most recent five years shows no significant crash trends that may be indicative of design deficiencies. No crash mitigations are recommended.

5. Intersection sight distance is adequate at the two site access driveway locations. No sight distance mitigations are recommended.

6. Based on the warrant analysis, no new traffic signals or left-turn lanes are recommended.

PROJECT DESCRIPTION & LOCATION

INTRODUCTION

A new mixed-use development including 71 apartment units and 4,600 square feet of commercial space is proposed for a parcel located on the west side of NE Village Street north of NE Market Drive in Fairview, Oregon. The site will take access directly to both NE Village Street and NE Market Drive and will share circulation with adjacent properties including the Fairview Post Office located immediately to the west and the VA Outpatient Clinic located to the north.

This report addresses the impacts of the proposed development on the surrounding street system. Based on correspondence with City of Fairview staff, an operational and safety analysis was conducted for the three public intersections surrounding the site as well as the two access driveways that will directly serve site trips.

The purpose of this analysis is to determine whether the surrounding transportation system is capable of safely and efficiently supporting the proposed use and to identify any necessary improvements and mitigations.

SITE LOCATION AND STUDY AREA DESCRIPTION

The project site has an area of approximately 1.6 acres and is located in the northwest corner of the intersection of NE Village Street at NE Market Drive. The site is currently undeveloped and is surrounded by a mixture of residential and commercial land uses including existing mixed-use residential and commercial development to the south, a VA medical clinic to the north, the post office to the immediate west and a Target store farther to the west. The Fairview Columbia Library, Fairview City Hall, and Woodland Elementary School are also located to the south of the project site.

The subject property will take access via an existing driveway on NE Village Street that will be shared with the VA outpatient clinic and a driveway on NE Market Drive that will be shared with the Fairview Post Office. An additional driveway on NE Market Drive serving the VA outpatient clinic can also be used by vehicles traveling to and from the project site; however, due to the circuitous travel path required to use this driveway it is anticipated that the number of such trips will be negligible.

The major roadways serving the study area consist of NE Halsey Street, NE Village Street, and NE Market Drive.

NE Halsey Street is classified by the City of Fairview as a Minor Arterial and has a posted speed limit of 35 mph in the site vicinity. It generally has a three-lane cross-section with one through lane in each direction and a center two-way left-turn lane. West of NE Market Drive it widens to provide two westbound through lanes.

NE Village Street generally has a two-lane cross section in the site vicinity. It widens to provide left-turn lanes at its intersection with NE Halsey Street. It has a posted speed limit of 20 mph and is classified by the City of Fairview as a Neighborhood Collector north of NE Market Drive and as a Local Street south of NE Market Drive. Sidewalks are generally in place along the west side of the roadway except along the frontage of the subject property. It is anticipated that these sidewalks will be completed in conjunction with the proposed development. Some on-street parking is available where sufficient road width is provided.

NE Market Drive also has a two-lane cross-section in the site vicinity. It widens in the vicinity of NE Halsey Street to provide northbound left- and right-turn lanes. It has a posted speed limit of 20 mph and is classified by the City of Fairview as a Neighborhood Collector. Sidewalks are generally in place on both sides of the roadway west of NE Village Street, except along the frontage of the subject site. It is anticipated that these sidewalks will be completed in conjunction with the proposed development. On-street parking is generally permitted along the roadway except along the 90-degree turn in the roadway west of the subject property and in the vicinity of NE Halsey Street where the three-lane cross-section does not have sufficient width to accommodate parking.

EXISTING CONDITIONS

The intersection of NE Halsey Street at NE Market Drive is a T-intersection controlled by a stop sign on the northbound NE Market Drive approach. Through traffic traveling along NE Halsey Street is free flowing. The northbound approach has a left-turn lane and a right-turn lane. The eastbound approach has a single, shared lane for through and right-turn movements. The westbound approach has a left-turn lane within the center median and a dedicated through lane which widens to two lanes immediately west of the intersection.

The intersection of NE Halsey Street at NE Village Street is controlled by a traffic signal. The eastbound approach has a left turn lane, an exclusive through lane, and a right-turn lane. The other three approaches each have a left-turn lane and a shared through/right lane. All left-turn movements operate with permitted signal phasing.

The intersection of NE Village Street at NE Market Drive operates under all-way stop control. Each of the four approaches has a single, shared lane for all turning movements.

The existing east site access on NE Village Street operates under stop control for the eastbound driveway approach. The northbound and southbound approaches are free-flowing. Each of the three approaches has a single, shared lane for all turning movements.

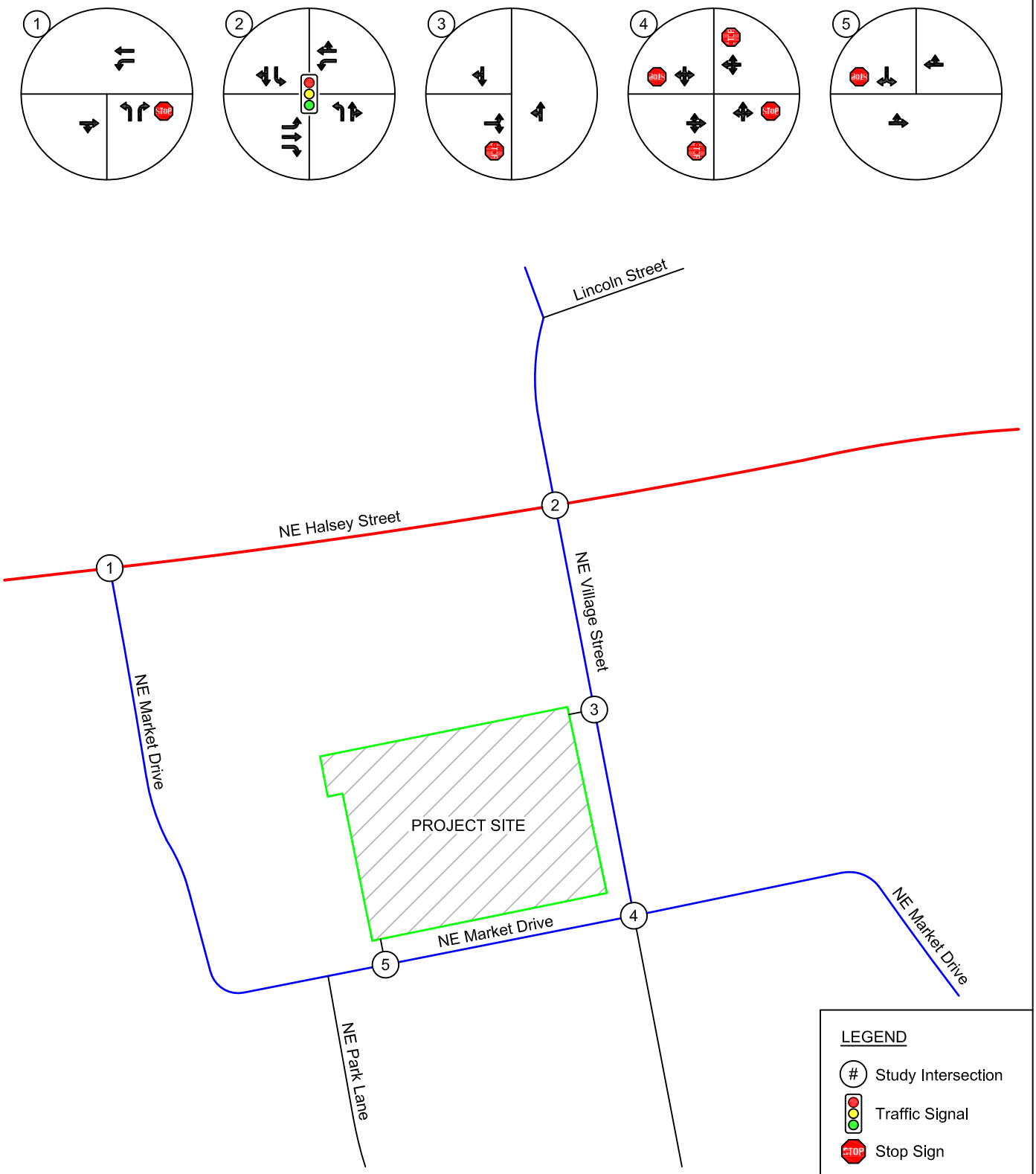
The existing south site access on NE Market Drive currently serves the Fairview post office site as an exit only. Upon development of the subject property the driveway will be converted to serve both entering and exiting traffic. The driveway operates under stop control for the southbound driveway approach. Through traffic traveling along NW Market Drive is free-flowing. Each of the three intersection approaches has a single, shared lane for all turning movements.

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations is provided in Figure 1 on page 7.

TRAFFIC COUNT DATA

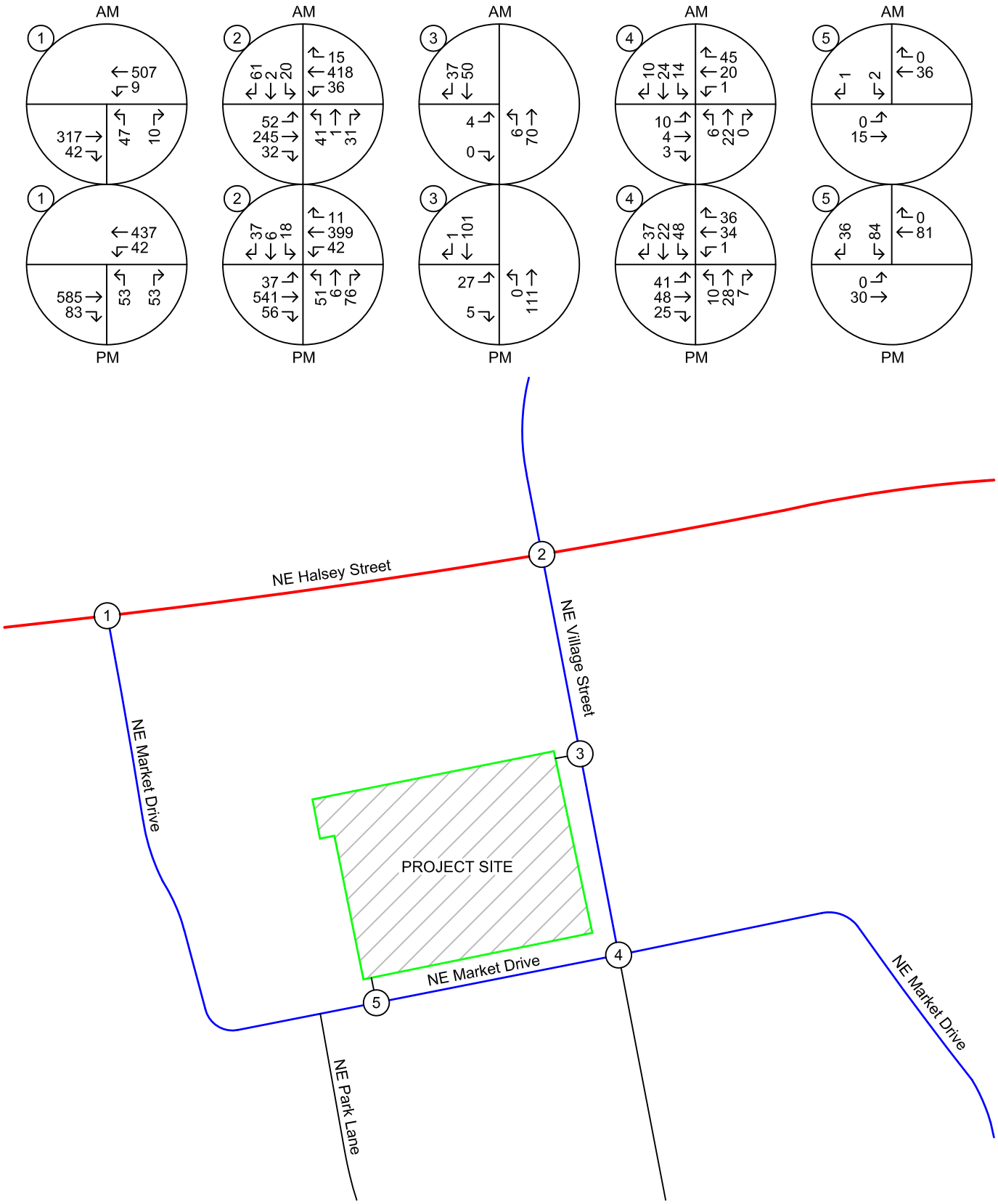
Traffic counts were conducted at the study intersections on Tuesday March 6th, 2018 from 7:00 to 9:00 AM and from 4:00 PM to 6:00 PM. Data was used from the highest-volume hour during each analysis period for each intersection.

Figure 2 on page 8 shows the existing 2018 traffic volumes for the morning and evening peak hours at the study intersections.



VICINITY MAP
Study Area Intersections
Lane Configurations and Traffic Control Devices

FIGURE 1



TURNING MOVEMENT VOLUMES
2018 Existing Conditions
Morning and Evening Peak Hours

FIGURE 2

OPERATIONAL ANALYSIS

An operational analysis was conducted for the study intersections using Synchro 10 software, with outputs calculated based on the *HIGHWAY CAPACITY MANUAL, 6TH EDITION*. The analysis was conducted for the weekday morning and evening peak hours, since these commute periods generally correspond to the highest-volume hours of the day.

The purpose of the existing conditions analysis is to establish how the study area intersections operate currently and allow for calibration of the operational analysis if required.

The results of the operational analysis are reported based on delay, Level of Service (LOS), and volume-to-capacity ratio (v/c). Delays are reported in seconds. Level of service is reported as a letter grade and can range from A to F, with level of service A representing nearly free-flow conditions and level of service F representing high delays and severe congestion. A report of level of service D generally indicates moderately high but tolerable delays, and typically occurs prior to reaching intersection capacity. For the unsignalized intersections, the v/c represents the portion of the available intersection capacity that is being utilized on the worst intersection approach. A v/c ratio of 1.0 would indicate that the approach is operating at capacity. The City of Fairview requires that intersections operate at level of service D or better during the peak hours.

A summary of the existing conditions operational analysis is provided in Table 1 below. The reported delays and levels-of-service for the signalized intersection represent the average delays for the entire intersection. For the unsignalized intersections, the reported delays, levels of service and volume-to-capacity ratios represent the approach lane which experiences the highest delays.

Based on the analysis, all study intersections are currently operating acceptably during the morning and evening peak hours. Detailed capacity analysis worksheets are provided in the technical appendix.

Table 1 - Operational Analysis Summary: 2018 Existing Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Delay	LOS	v/c	Delay	LOS	v/c
NE Halsey St. at NE Market Dr.	16.6	C	0.16	20.7	C	0.21
NE Halsey St. at NE Market Dr.	6.0	A	N/A	6.7	A	N/A
NE Village St. at East Site Access	9.6	A	0.01	10.3	B	0.05
NE Village St. at NE Market Dr.	7.4	A	0.08	8.1	A	0.15
NE Market Dr. at South Site Access	8.7	A	0.01	9.8	A	0.16

SITE TRIPS

The proposed development consists of a 71-unit apartment complex and 4,600 square feet of retail space. To estimate the number of trips that will be generated by the proposed development, trip rates from the *TRIP GENERATION MANUAL, 10th EDITION* were used. Data from land-use codes 220, *Multi-Family Housing (Low-Rise)* and 820, *Shopping Center* were used. The trip estimates are based on the number of dwelling units and the gross floor area for these land uses, respectively.

Since the development will include both residential and retail land uses, some internal trips can reasonably be expected. These trips occur when people travel from the residential uses to the commercial uses within the site (or vice-versa) without exiting the site. Based on the procedures described in NCHRP 684, *Internalization*, it is expected that approximately 8 percent of site trips will be internal trips during the PM peak hour. No internalization reduction was taken for the morning peak hour.

The retail uses within the proposed development are also expected to attract pass-by trips. Pass-by trips occur when vehicles traveling past the site turn into the site while on the way to another destination. Since these trips would travel down the adjacent street regardless of whether they patronize the site, they do not add to the major-street traffic volumes. However, they do add turning movements at the site access driveways. Based on ITE TRIP GENERATION data, 34 percent of the retail site trips are projected to be pass-by trips.

Based on the trip generation analysis, the proposed development is projected to generate 35 net new trips during the morning peak hour and 46 net new site trips during the evening peak hour. A summary of the trip generation calculations is provided in Table 2 below. A detailed trip generation worksheet is also included in the technical appendix.

Table 2 - Trip Generation Summary

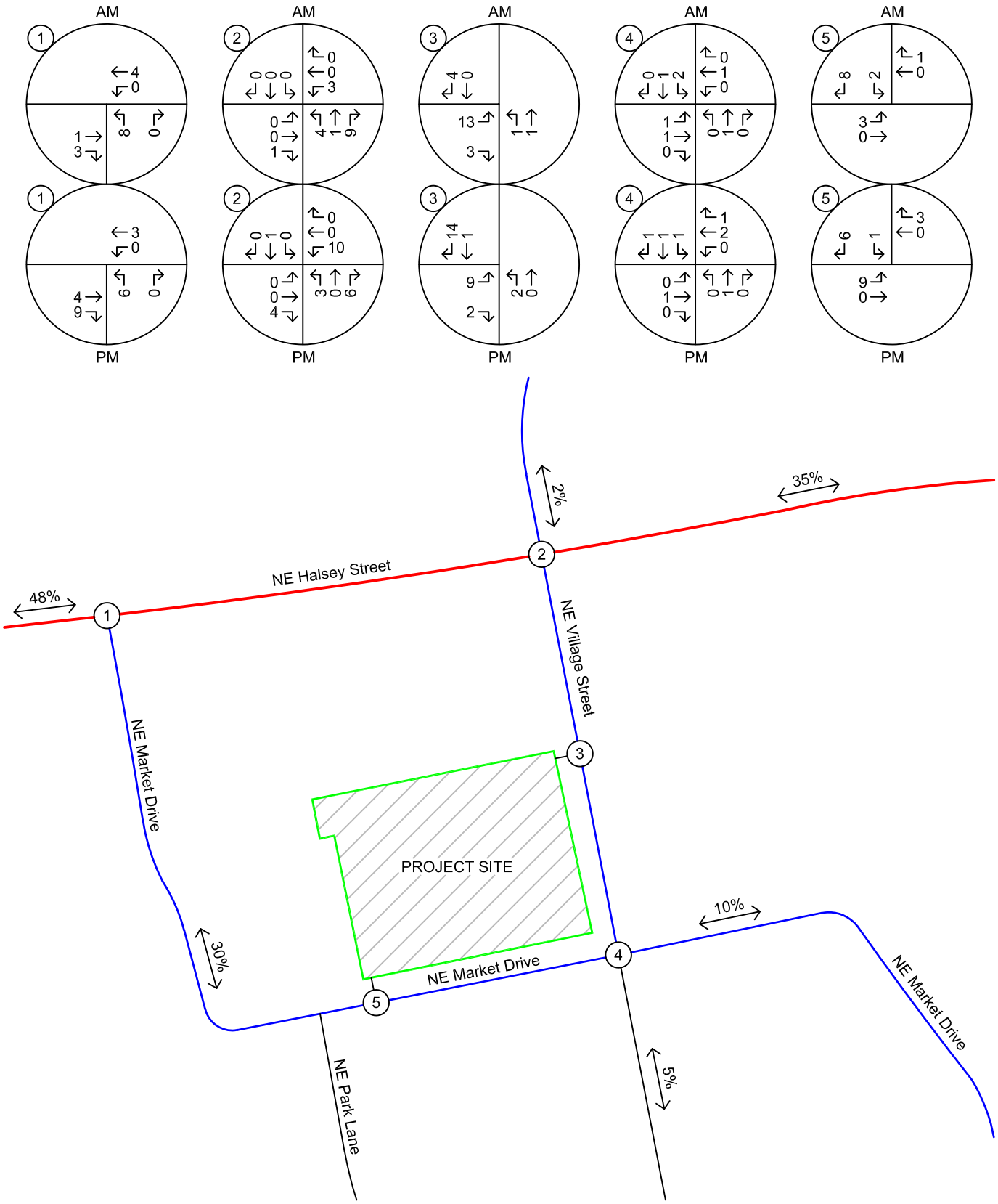
	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
71 Apartment Units	8	25	33	25	15	40	520
-Internal Trips (per worksheet)	0	0	0	-1	-2	-3	-36
4,600 sf Retail	2	2	4	8	9	17	172
-Internal Trips (per worksheet)	0	0	0	-1	-1	-2	-12
-34% Pass-By Trips	-1	-1	-2	-3	-3	-6	-54
Driveway Trips	10	27	37	31	21	52	644
Pass-By Trips	-1	-1	-2	-3	-3	-6	-54
Net Site Trips	**9**	**26**	**35**	**28**	**18**	**46**	**466**

TRIP DISTRIBUTION

The directional distribution of primary site trips to and from the project site was estimated based the existing travel patterns in the site vicinity.

Overall, 48 percent of site trips are projected to travel to and from the west on NE Halsey Street, 35 percent are projected to travel to and from the east, 15 percent are projected to travel to and from the south, and the remaining 2 percent are projected to travel to and from the north.

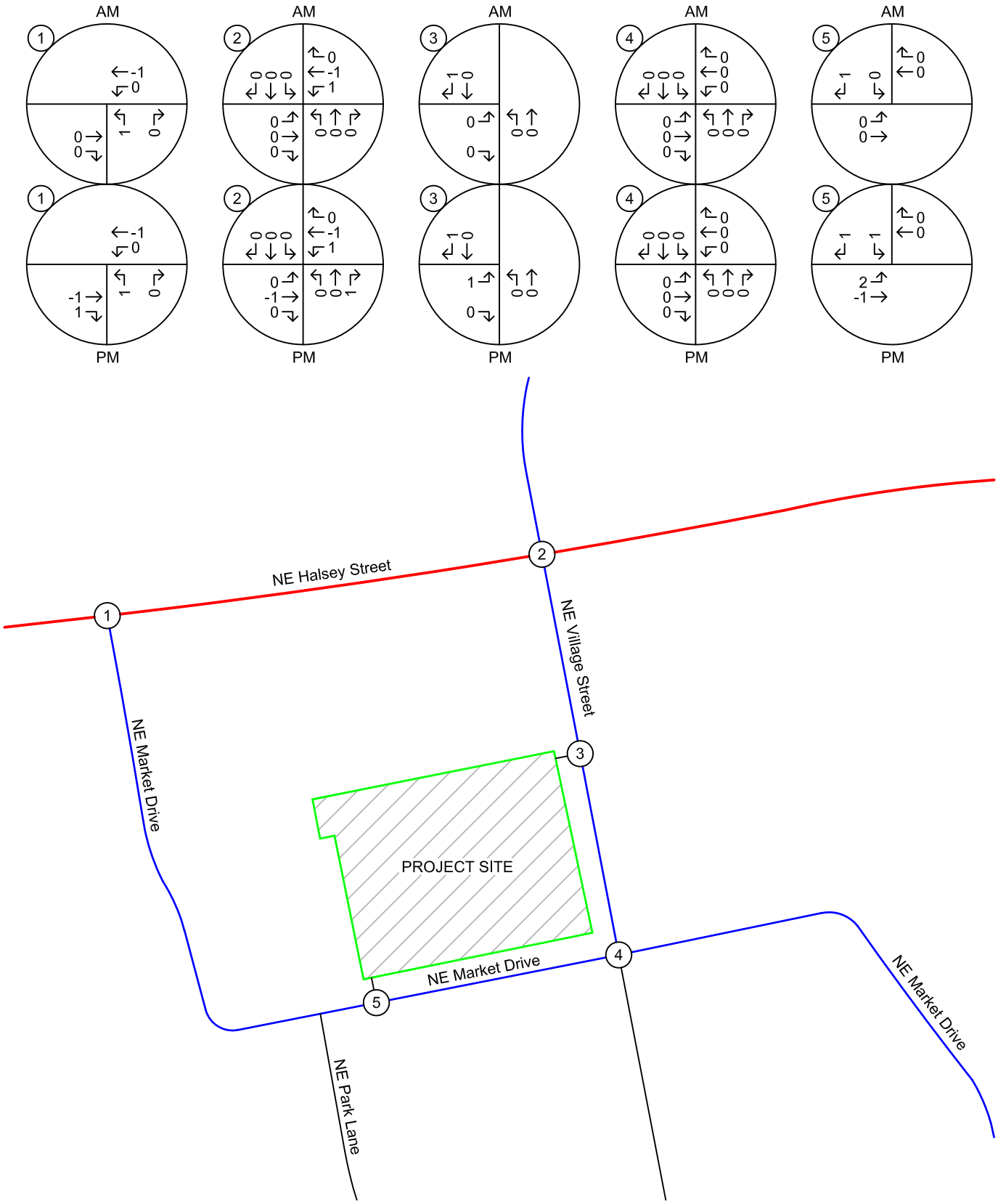
The trip distribution percentages and trip assignment for primary site trips are shown in Figure 3 on page 12. The expected pass-by trips are illustrated in Figure 4 on page 13.



TRAFFIC VOLUMES

Site Trip Distribution and Assignment: Primary Site Trips Morning and Evening Peak Hours

FIGURE 3



TRAFFIC VOLUMES
Pass-By and Diverted Trips
Morning and Evening Peak Hours

FIGURE 4

FUTURE CONDITIONS ANALYSIS

BACKGROUND VOLUMES

In order to determine the expected impact of site trips on the study area intersections, it is necessary to compare traffic conditions both with and without the addition of the projected traffic from the proposed mixed-use development. Since the building cannot be constructed and occupied immediately, the comparison is made for future traffic conditions at the time of project completion. It is anticipated that the proposed use can be completed and occupied within two years. Accordingly, the analysis was conducted for year 2020 traffic conditions.

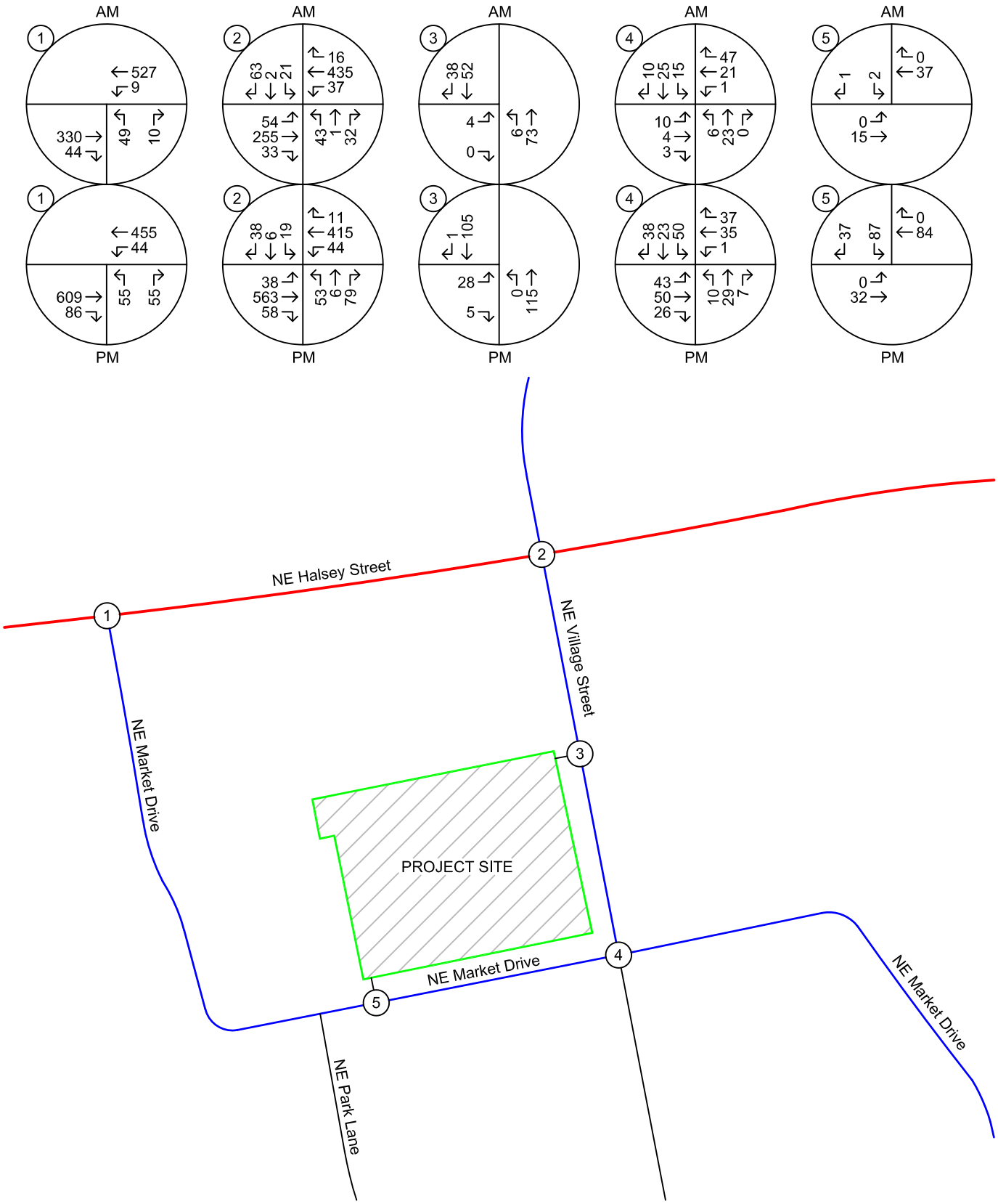
Prior to adding the projected site trips to the study intersections, the existing traffic volumes were adjusted to account for background traffic growth over time. Background growth is expected to occur regardless of whether or not the proposed mixed-use development is constructed, and accounts for other developments both within and outside the City of Fairview. A background growth rate of two percent per year was applied for two years in order to derive the year 2020 background traffic volumes.

Figure 5 on page 15 shows the projected year 2020 background traffic volumes at the study intersections during the morning and evening peak hours.

BACKGROUND VOLUMES PLUS SITE TRIPS

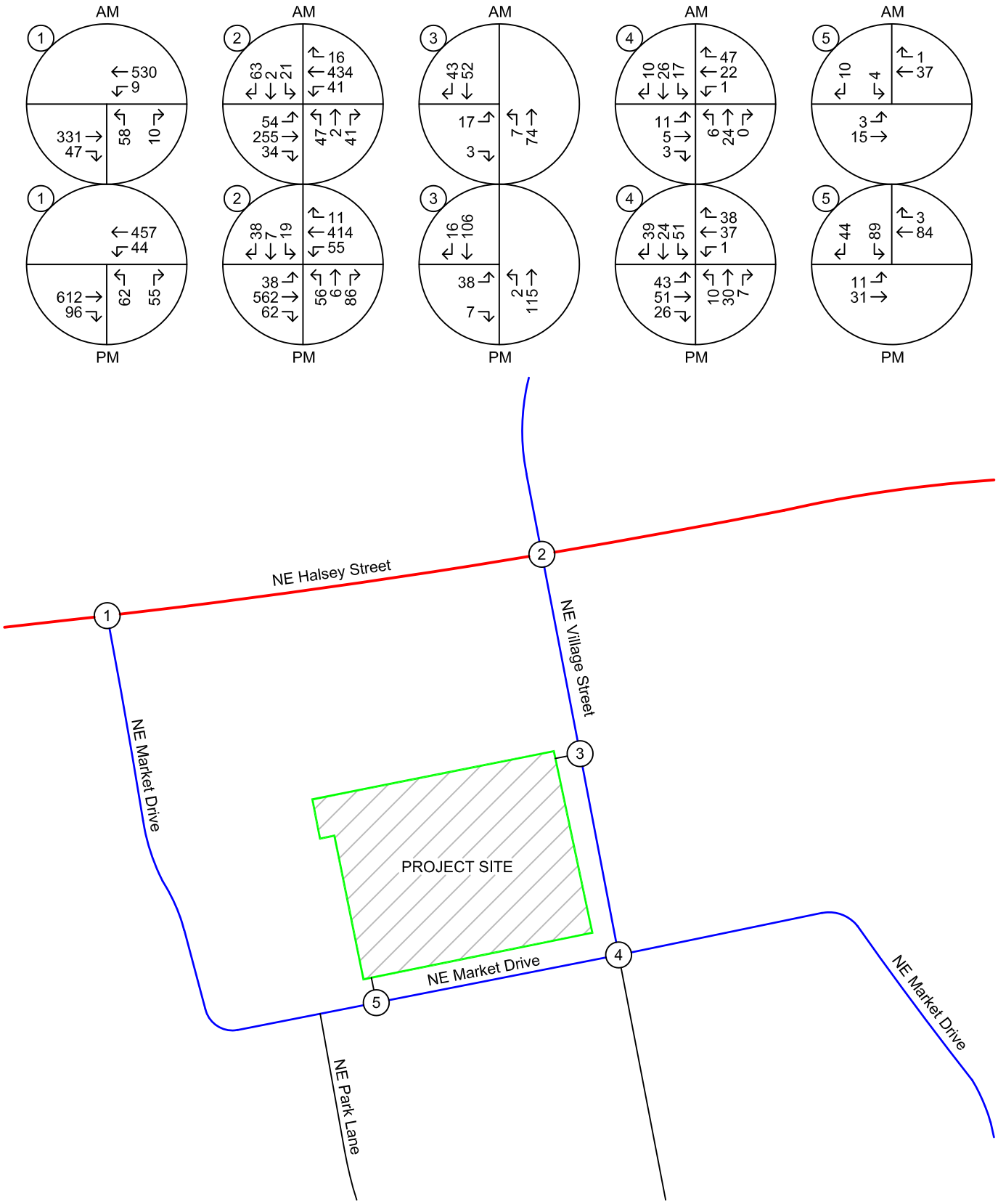
Peak hour trips calculated to be generated by the proposed development were added to the projected year 2020 background traffic volumes to obtain the year 2020 total traffic volumes following completion of the proposed Fairview Village facilities.

Figure 6 on page 16 shows the projected year 2020 peak hour volumes including both background growth and site trips from the proposed development during the morning and evening peak hours.



TRAFFIC VOLUMES
2020 Background Conditions
Morning and Evening Peak Hours

FIGURE 5



TRAFFIC VOLUMES
2020 Backround Plus Site Trips Conditions
Morning and Evening Peak Hours

FIGURE 6

OPERATIONAL ANALYSIS

The future conditions operational analysis was again conducted using Synchro 10 software, with outputs based on the analysis methodologies contained in the *HIGHWAY CAPACITY MANUAL, 6TH EDITION*. The analysis was prepared for each intersection's respective morning and evening peak hour.

The results of the future conditions operational analysis are summarized in Table 3 below. Detailed analysis worksheets are included in the technical appendix.

Table 3 - Operational Analysis Summary: Year 2020 Future Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Delay	LOS	v/c	Delay	LOS	v/c
NE Halsey St. at NE Market Dr.						
2020 Background Conditions	17.2	C	0.17	21.8	C	0.22
2020 Background plus Site	17.8	C	0.18	22.6	C	0.25
NE Halsey St. at NE Market Dr.						
2020 Background Conditions	6.1	A	N/A	6.8	A	N/A
2020 Background plus Site	6.2	A	N/A	6.8	A	N/A
NE Village St. at East Site Access						
2020 Background Conditions	9.6	A	0.01	10.4	B	0.06
2020 Background plus Site	9.6	A	0.03	10.6	B	0.08
NE Village St. at NE Market St.						
2020 Background Conditions	7.4	A	0.08	8.1	A	0.15
2020 Background plus Site	7.4	A	0.08	8.2	A	0.16
NE Market St. at South Site Access						
2020 Background Conditions	8.7	A	0.01	9.9	A	0.17
2020 Background plus Site	8.7	A	0.02	10.1	B	0.18

Based on the results of the operational analysis, all intersections are projected to operate acceptably through year 2020 either with or without the addition of site trips from the proposed development.

SAFETY ANALYSIS

CRASH DATA ANALYSIS

Using data obtained from the Oregon Department of Transportation, a review of the five most recent years of available crash history (from January 2012 to December 2016) was performed for the study intersections. The crash data was evaluated based on the number, type, and severity of collisions, as well as the intersection crash rate. Crash rates allow comparison of relative safety risks at intersections with different lane configurations, volumes, and traffic control devices by accounting for both the number of crashes that occur during the study period and the number of vehicles that traveled through the intersection during that period. Crash rates are calculated using the standard assumption that evening peak hour volumes are approximately 10 percent of the average daily traffic volume at an intersection. The crash rates were compared to statewide crash rates for similar intersection types in order to identify any locations with crash rates in excess of the 90th percentile.

The intersection of NE Halsey Street at NE Market Drive had one reported crash during the five-year analysis period. It was a turning-movement collision that resulted in property damage only. The crash rate for the intersection was calculated to be 0.044 crashes per million entering vehicles. This is well below the 90th percentile crash rate of 0.293 crashes per million entering vehicles for urban stop-controlled T-intersections in the state of Oregon.

The intersection of NE Halsey Street at NE Village Street had five reported crashes during the five-year analysis period. These included three rear-end collisions and two turning-movement collisions. The crashes resulted in two non-incapacitating injuries and five reports of a "possible injury/complaint of pain". The crash rate for the intersection was calculated to be 0.214 crashes per million entering vehicles. This is well below the 90th percentile crash rate of 0.86 crashes per million entering vehicles for urban signalized four-way intersections in the state of Oregon.

The intersection of NE Village Street at NE Market Drive had no reported crashes during the five-year analysis period.

Based on the crash data, no significant safety hazards were identified, and no specific safety mitigations are recommended.

SAFETY FOR ALL MODES

Transit stops for Tri-Met Route 77, *Broadway/Halsey* are located immediately west and east of the intersection of NE Halsey Street at NE Village Street. Service is from 5:30 AM to 11:30 PM weekdays, with typical headways of 10 to 30 minutes. Weekend service is also provided on 20 to 30 minute headways.

Existing sidewalks are in place along both sides of NE Halsey Street. NE Market Drive also has sidewalks along both sides except along the frontage of the subject property. NE Village Street has existing sidewalks on the west side of the roadway except along the site frontage, and also has sidewalks along the east side of the roadway south of NE Market Drive adjacent to developed

properties. It is anticipated that development of the subject property will be accompanied by completion of the sidewalks along the site frontages on NE Market Drive and NE Village Street, providing complete sidewalk connections along these roadways.

Dedicated bike lanes are in place along NE Halsey Street in the site vicinity. NE Market Drive and NE Village Street have posted speeds of 20 mph in the site vicinity and accommodate relatively low volumes of traffic. Accordingly, people riding bicycles may choose to safely share the road with motorized vehicle traffic.

Based on the detailed examination of facilities provided for alternative travel modes, the existing facilities are capable of safely supporting the proposed site uses in addition to the existing uses in the site vicinity. No mitigations beyond completion of the sidewalks adjacent to the project site are necessary or recommended in conjunction with the proposed development.

SIGHT DISTANCE

Intersection sight distance was examined for the primary site access driveways on NE Village Street and NE Market Drive. In accord with the procedures described in *A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS*, published by the American Association of State Highway and Transportation Officials (AASHTO), intersection sight distance was measured from a position 15 feet behind the edge of the traveled way at an elevation of 3.5 feet above the driveway surface to a point within the oncoming travel lanes 3.5 feet above the roadway surface. The sight distance measurements were made in each direction for driveway. Based on the posted 20 mph speed limits, the minimum required intersection sight distance for efficient operation of the driveways is 225 feet in each direction.

Intersection sight distance for the driveway at the northeast corner of the subject property onto NE Village Street was measured to be 254 feet to the north and 250 feet to the south. Notably, the available intersection sight distance is in excess of the distance to the nearest public intersections. Accordingly, the reported sight distances were measured for the approach direction with the most restrictive sight lines. For both approaches, this consisted of vehicles approaching by turning right at the public intersection onto NE Village Street.

Intersection sight distance for the driveway at the southwest corner of the subject property onto NE Market Drive was measured to be 245 feet to the west and 300 feet to the east. Sight distance to the west is limited by the horizontal curve on NE Market Drive where the roadway makes a 90-degree turn to the north immediately west of the post office. Sight distance to the east is restricted only by the distance to the all-way stop-controlled intersection at NE Village Street.

Based on the detailed sight distance analysis, adequate sight lines are available for safe and efficient operation of both driveways serving the proposed development. No sight distance mitigations are necessary or recommended.

WARRANT ANALYSIS

Left-turn lane warrants are analyzed to determine whether the stop-controlled site access intersections may meaningfully benefit from the addition of dedicated turn lanes on the major-street approaches. Such turn lanes allow vehicles waiting to turn left to move out of the through travel lanes.

Left-turn lanes are already in place for the intersections on NE Halsey Street. Left-turn lane warrants are not applicable at the intersection of NE Village Street and NE Market Drive since all vehicles approaching an all-way stop-controlled intersection must stop regardless of what turning movement they are executing. Accordingly, the only intersections where left-turn lane warrants are applicable are the two site access intersections.

Based on the analysis, the traffic volumes at the two site access intersections are inadequate to warrant installation of dedicated left-turn lanes. Accordingly, no new turn lanes are recommended in conjunction with the proposed development. Detailed turn-lane analysis worksheets are included in the attached technical appendix.

Traffic signal warrants were also examined for the unsignalized study intersections to determine whether the installation of any new traffic signals will be warranted upon completion of the proposed development. By inspection, traffic volumes at the site access driveway intersections and the intersection of NE Village Street at NE Market Drive are too low on the major-street approaches to meet traffic signal warrants. However, a more detailed analysis was conducted for the intersection of NE Halsey Street at NE Market Drive. Based on the analysis, traffic signal warrants are also not projected to be met for this intersection through 2020 either with or without the addition of site trips from the proposed development. Accordingly, no new traffic signals are recommended in conjunction with the proposed development. A detailed traffic signal warrant analysis worksheet is included in the attached technical appendix.

CONCLUSIONS

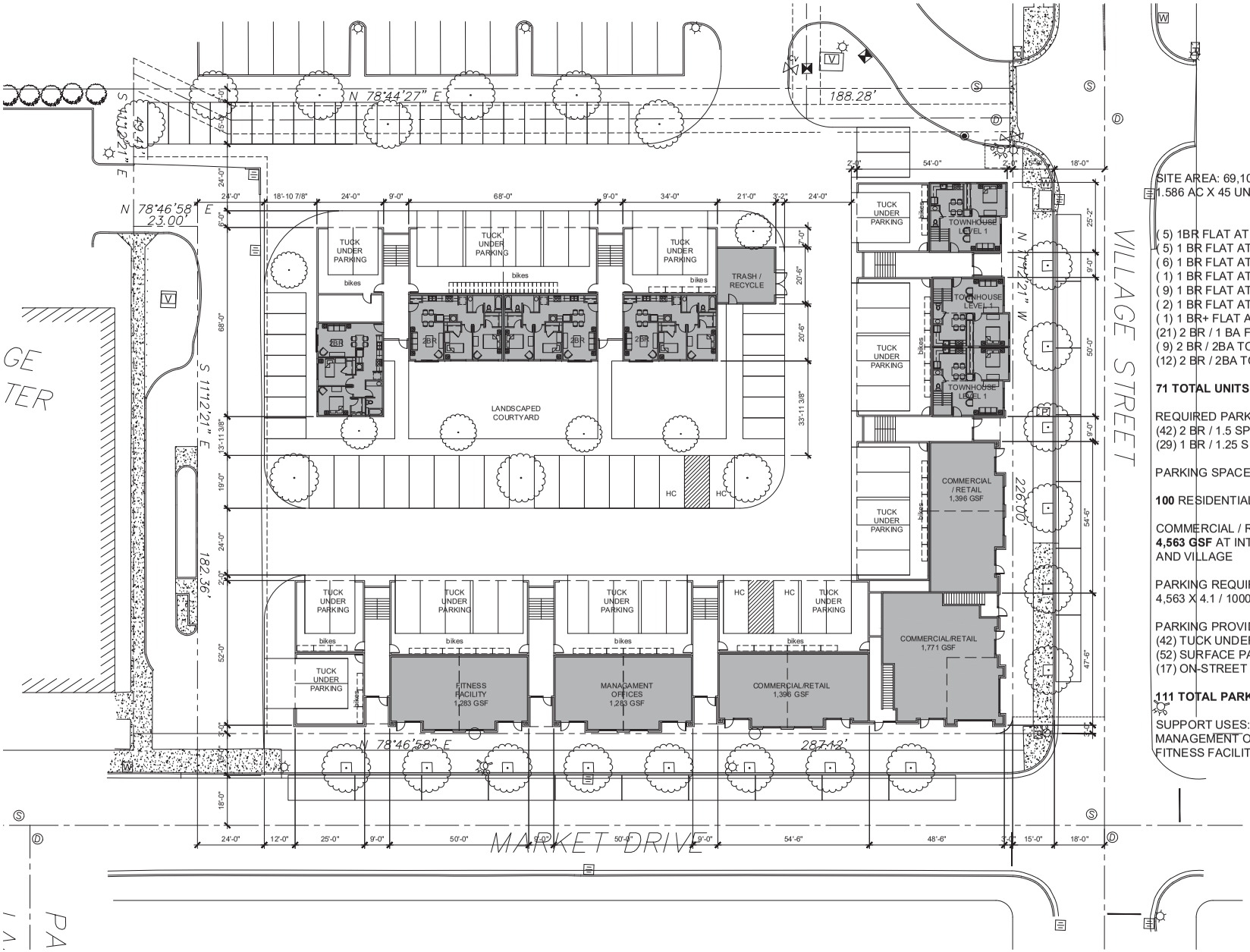
Based on the operational analysis, all study area intersections are projected to operate acceptably per City of Fairview standards through 2020 either with or without the addition of site trips from the proposed development. No operational mitigations are necessary or recommended.

Crash data for the most recent five years shows no significant crash trends that may be indicative of design deficiencies. No crash mitigations are recommended.

Intersection sight distance is adequate at the two site access driveway locations. No sight distance mitigations are recommended.

Based on the warrant analysis, no new traffic signals or left-turn lanes are recommended.

APPENDIX



1 A100 ARCHITECTURAL SITE PLAN
1/16" = 1'-0"

SITE AREA: 69,102 SF = 1.586 AC.
1.586 AC X 45 UNITS / AC. = 71 UNITS

(5) 1BR FLAT AT 600 SF
(5) 1 BR FLAT AT 650 SF
(6) 1 BR FLAT AT 675 SF
(1) 1 BR FLAT AT 716 SF
(9) 1 BR FLAT AT 764 SF
(2) 1 BR FLAT AT 767 SF
(1) 1 BR+ FLAT AT 973 SF
(21) 2 BR / 1 BA FLAT AT 816 SF
(9) 2 BR / 2BA TOWNHOUSE AT 1,023 SF
(12) 2 BR / 2BA TOWNHOUSE AT 1,153 SF

71 TOTAL UNITS

REQUIRED PARKING:
(42) 2 BR / 1.5 SPACES / UNIT = 63 SPACES
(29) 1 BR / 1.25 SPACES / UNIT = 37 SPACES

PARKING SPACES REQUIRED

100 RESIDENTIAL

COMMERCIAL / RETAIL SPACE:
4,563 GSF AT INTERSECTION OF MARKET AND VILLAGE

PARKING REQUIRED:
4,563 X 4.1 / 1000 = **19** SPACES REQUIRED

PARKING PROVIDED:
(42) TUCK UNDER PARKING SPACES
(52) SURFACE PARKING SPACES
(17) ON-STREET PARKING SPACES

111 TOTAL PARKING SPACES

SUPPORT USES:
MANAGEMENT OFFICES = 1,283 GSF
FITNESS FACILITY = 1,283 GSF

REGISTERED ARCHITECT
DOUG C. CIRCOSTA
STATE OF OREGON

© 2018
Doug Circosta, Architect
503-730-6908
14670 SW Forest Drive
Beaverton, OR 97007

CONCEPT DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4
FAIRVIEW, OREGON 97024

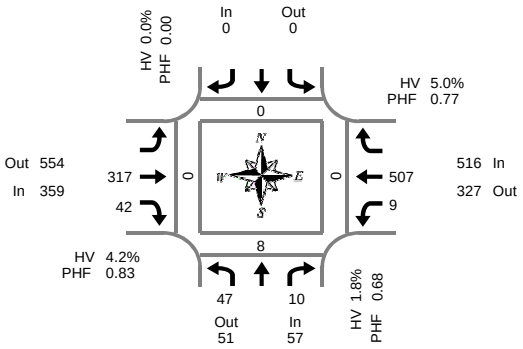
job no.: 1801
date: 2-21-2018

SITE PLAN

A100

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:00 AM to 8:00 AM

NE Market Dr & NE Halsey St

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	4		0	0				0		17	2	0	0	35		0	58	0	0	0	0
7:05 AM	2		0	0				0		21	4	0	1	43		0	71	0	0	0	0
7:10 AM	3		0	0				0		19	4	0	1	37		0	64	0	0	0	0
7:15 AM	4		1	0				0		37	3	0	0	43		0	88	0	0	0	0
7:20 AM	4		1	0				0		32	1	0	0	31		0	69	0	2	0	0
7:25 AM	6		1	0				0		31	4	0	0	47		0	89	0	0	0	0
7:30 AM	5		1	0				0		32	5	1	1	53		0	97	0	1	0	0
7:35 AM	6		2	0				0		36	0	0	1	48		0	93	0	0	0	0
7:40 AM	3		0	0				0		30	4	0	2	57		0	96	0	2	0	0
7:45 AM	4		1	0				0		16	5	0	2	58		0	86	0	3	0	0
7:50 AM	3		1	0				0		23	6	0	1	31		0	65	0	0	0	0
7:55 AM	3		2	0				0		23	4	0	0	24		0	56	0	0	0	0
8:00 AM	4		0	0				0		11	6	0	1	31		0	53	0	1	0	0
8:05 AM	7		0	0				0		13	5	0	0	37		0	62	0	1	0	0
8:10 AM	3		0	0				0		21	5	0	1	20		0	50	0	1	1	0
8:15 AM	3		2	0				0		15	4	0	1	34		0	59	0	0	0	0
8:20 AM	4		3	0				0		10	1	0	3	25		0	46	0	0	0	0
8:25 AM	3		3	0				0		22	4	0	3	34		0	69	0	0	0	0
8:30 AM	4		1	0				0		14	2	0	1	25		0	47	0	0	0	0
8:35 AM	1		3	0				0		22	0	0	3	34		1	63	0	0	0	0
8:40 AM	6		3	0				0		26	5	0	0	39		0	79	0	1	0	0
8:45 AM	3		1	0				0		21	4	0	4	28		0	61	0	0	0	0
8:50 AM	1		0	0				0		23	3	0	5	37		0	69	0	0	0	0
8:55 AM	1		2	0				0		24	1	0	0	27		0	55	0	0	0	0
Total Survey	87		28	0				0		539	82	1	31	878		1	1,645	0	12	1	0

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	9		0	0				0		57	10	0	2	115		0	193	0	0	0	0
7:15 AM	14		3	0				0		100	8	0	0	121		0	246	0	2	0	0
7:30 AM	14		3	0				0		98	9	1	4	158		0	286	0	3	0	0
7:45 AM	10		4	0				0		62	15	0	3	113		0	207	0	3	0	0
8:00 AM	14		0	0				0		45	16	0	2	88		0	165	0	3	1	0
8:15 AM	10		8	0				0		47	9	0	7	93		0	174	0	0	0	0
8:30 AM	11		7	0				0		62	7	0	4	98		1	189	0	1	0	0
8:45 AM	5		3	0				0		68	8	0	9	92		0	185	0	0	0	0
Total Survey	87		28	0				0		539	82	1	31	878		1	1,645	0	12	1	0

Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	57	51	108	0	0	0	0	0	359	554	913	1	516	327	843	0	932
%HV	1.8%				0.0%				4.2%				5.0%				4.5%
PHF	0.68				0.00				0.83				0.77				0.81

Pedestrians Crosswalk			
North	South	East	West
0	8	0	0

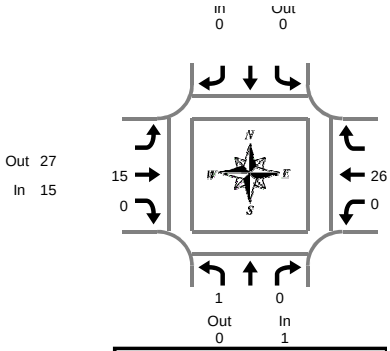
By Movement	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	47		10	57				0		317	42	359	9	507		516	932
%HV	2.1%	NA	0.0%	1.8%	NA	NA	NA	0.0%	NA	4.7%	0.0%	4.2%	0.0%	5.1%	NA	5.0%	4.5%
PHF	0.69		0.63	0.68				0.00		0.79	0.70	0.83	0.45	0.78		0.77	0.81

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
7:00 AM	47		10	0				0		317	42	1	9	507		0	932	0	8	0	0
7:15 AM	52		10	0				0		305	48	1	9	480		0	904	0	11	1	0
7:30 AM	48		15	0				0		252	49	1	16	452		0	832	0	9	1	0
7:45 AM	45		19	0				0		216	47	0	16	392		1	735	0	7	1	0
8:00 AM	40		18	0				0		222	40	0	22	371		1	713	0	4	1	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:00 AM to 8:00 AM

NE Market Dr & NE Halsey St

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
7:00 AM	0		0	0				0		2	0	2	0	3		3	5
7:05 AM	0		0	0				0		1	0	1	0	7		7	8
7:10 AM	0		0	0				0		2	0	2	0	0		0	2
7:15 AM	1		0	1				0		2	0	2	0	2		2	5
7:20 AM	0		0	0				0		1	0	1	0	2		2	3
7:25 AM	0		0	0				0		0	0	0	0	3		3	3
7:30 AM	0		0	0				0		4	0	4	0	2		2	6
7:35 AM	0		0	0				0		1	0	1	0	0		0	1
7:40 AM	0		0	0				0		0	0	0	0	5		5	5
7:45 AM	0		0	0				0		1	0	1	0	1		1	2
7:50 AM	0		0	0				0		1	0	1	0	0		0	1
7:55 AM	0		0	0				0		0	0	0	0	1		1	1
8:00 AM	0		0	0				0		0	2	2	0	2		2	4
8:05 AM	0		0	0				0		1	0	1	0	1		1	2
8:10 AM	0		0	0				0		3	0	3	0	1		1	4
8:15 AM	1		0	1				0		0	0	0	0	3		3	4
8:20 AM	0		0	0				0		0	0	0	0	1		1	1
8:25 AM	0		0	0				0		1	0	1	1	2		3	4
8:30 AM	0		0	0				0		1	0	1	0	1		1	2
8:35 AM	0		0	0				0		1	0	1	0	4		4	5
8:40 AM	0		0	0				0		4	0	4	0	1		1	5
8:45 AM	0		0	0				0		3	0	3	0	2		2	5
8:50 AM	0		0	0				0		1	0	1	1	2		3	4
8:55 AM	0		0	0				0		1	0	1	0	3		3	4
Total Survey	2		0	2				0		31	2	33	2	49		51	86

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
7:00 AM	0		0	0				0		5	0	5	0	10		10	15
7:15 AM	1		0	1				0		3	0	3	0	7		7	11
7:30 AM	0		0	0				0		5	0	5	0	7		7	12
7:45 AM	0		0	0				0		2	0	2	0	2		2	4
8:00 AM	0		0	0				0		4	2	6	0	4		4	10
8:15 AM	1		0	1				0		1	0	1	1	6		7	9
8:30 AM	0		0	0				0		6	0	6	0	6		6	12
8:45 AM	0		0	0				0		5	0	5	1	7		8	13
Total Survey	2		0	2				0		31	2	33	2	49		51	86

Heavy Vehicle Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound NE Market Dr			Southbound NE Market Dr			Eastbound NE Halsey St			Westbound NE Halsey St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	0	0	15	27	42	26	15	41	42
PHF	0.25			0.00			0.75			0.65			0.70

By Movement	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	1		0	1				0		15	0	15	0	26		26	42
PHF	0.25		0.00	0.25				0.00		0.75	0.00	0.75	0.00	0.65		0.65	0.70

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

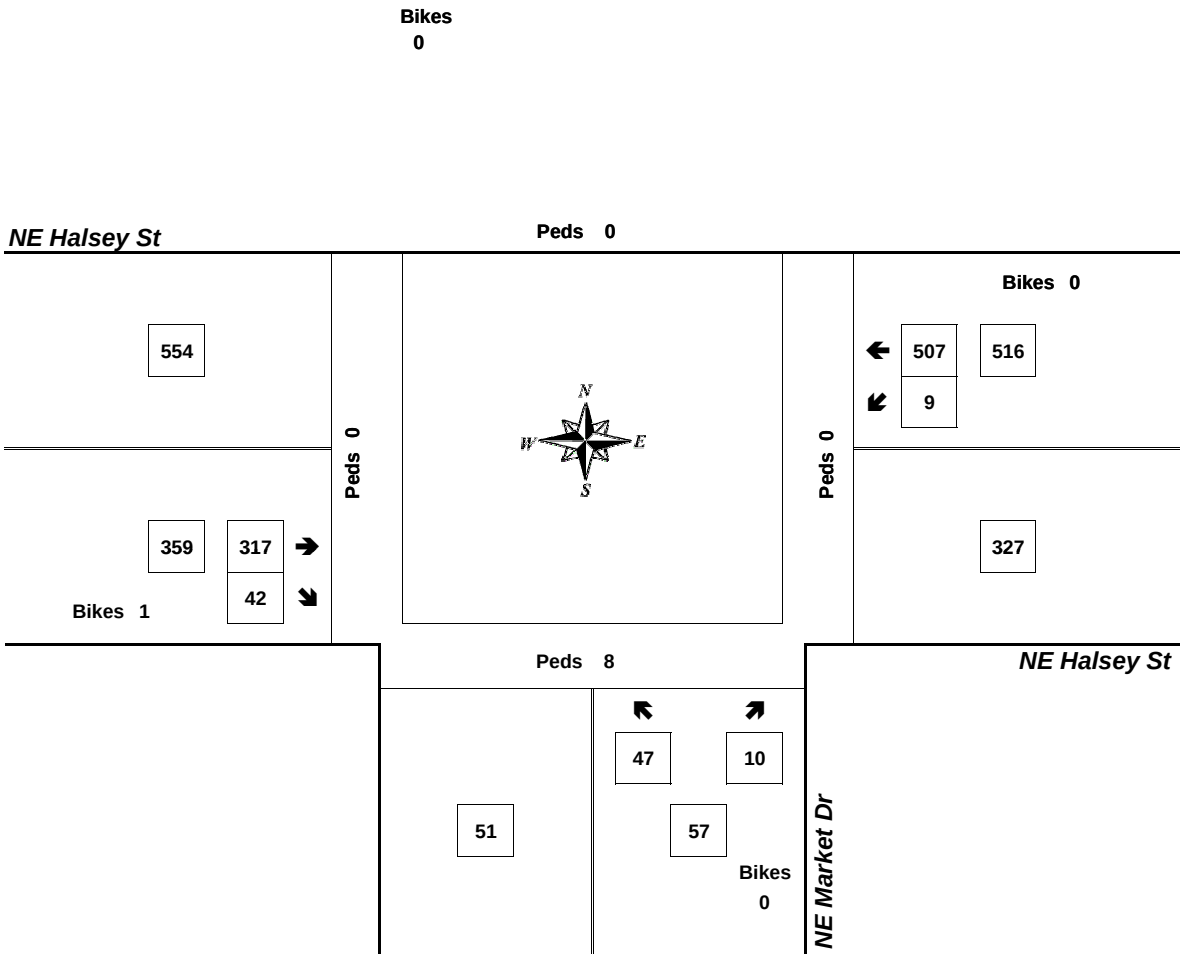
Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
7:00 AM	1		0	1				0		15	0	15	0	26		26	42
7:15 AM	1		0	1				0		14	2	16	0	20		20	37
7:30 AM	1		0	1				0		12	2	14	1	19		20	35
7:45 AM	1		0	1				0		13	2	15	1	18		19	35
8:00 AM	1		0	1				0		16	2	18	2	23		25	44

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

NE Market Dr & NE Halsey St

7:00 AM to 8:00 AM
Tuesday, March 06, 2018

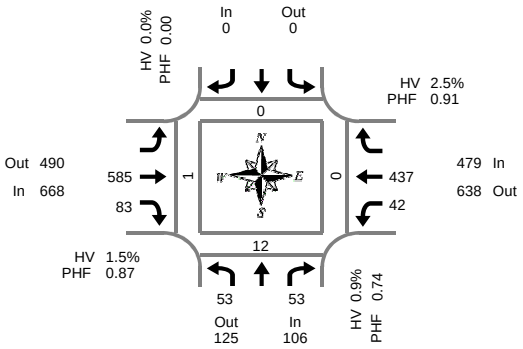


Approach	PHF	HV%	Volume
EB	0.83	4.2%	359
WB	0.77	5.0%	516
NB	0.68	1.8%	57
SB	0.00	0.0%	0
Intersection	0.81	4.5%	932

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:20 PM to 5:20 PM

NE Market Dr & NE Halsey St

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
4:00 PM	5		3	0				0		56	8	0	3	42		0	117	0	0	0	0
4:05 PM	9		2	0				0		45	12	1	3	44		0	115	0	0	0	0
4:10 PM	4		3	0				0		34	11	0	5	45		1	102	0	0	0	0
4:15 PM	5		3	0				0		36	7	0	7	51		0	109	0	0	0	0
4:20 PM	1		4	0				0		54	7	0	2	40		0	108	0	3	0	0
4:25 PM	2		8	0				0		41	6	0	2	32		0	91	0	1	0	1
4:30 PM	6		4	0				0		31	9	0	2	39		0	91	0	0	0	0
4:35 PM	7		5	0				0		60	6	0	6	33		0	117	0	2	0	0
4:40 PM	7		5	0				0		43	6	1	4	44		0	109	0	0	0	0
4:45 PM	2		2	0				0		47	4	0	6	34		0	95	0	4	0	0
4:50 PM	1		3	0				0		51	11	0	3	28		0	97	0	2	0	0
4:55 PM	3		3	0				0		42	5	0	6	40		1	99	0	0	0	0
5:00 PM	9		5	0				0		46	8	0	1	26		0	95	0	0	0	0
5:05 PM	9		7	0				0		52	5	0	4	38		0	115	0	0	0	0
5:10 PM	2		4	0				0		60	6	0	2	42		1	116	0	0	0	0
5:15 PM	4		3	0				0		58	10	0	4	41		0	120	0	0	0	0
5:20 PM	1		2	0				0		37	8	0	3	36		0	87	0	0	0	0
5:25 PM	5		2	0				0		40	4	0	4	33		0	88	0	1	0	0
5:30 PM	2		3	0				0		34	11	0	4	17		0	71	0	0	0	0
5:35 PM	5		4	0				0		46	6	0	3	31		2	95	0	0	0	0
5:40 PM	5		3	0				0		43	5	0	3	39		1	98	0	1	0	0
5:45 PM	1		1	0				0		54	8	0	1	34		0	99	0	0	0	0
5:50 PM	5		4	0				0		34	2	0	4	43		0	92	0	0	0	0
5:55 PM	2		5	0				0		40	8	0	2	25		0	82	0	0	0	0
Total Survey	102		88	0				0		1,084	173	2	84	877		6	2,408	0	14	0	1

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
4:00 PM	18		8	0				0		135	31	1	11	131		1	334	0	0	0	0
4:15 PM	8		15	0				0		131	20	0	11	123		0	308	0	4	0	1
4:30 PM	20		14	0				0		134	21	1	12	116		0	317	0	2	0	0
4:45 PM	6		8	0				0		140	20	0	15	102		1	291	0	6	0	0
5:00 PM	20		16	0				0		158	19	0	7	106		1	326	0	0	0	0
5:15 PM	10		7	0				0		135	22	0	11	110		0	295	0	1	0	0
5:30 PM	12		10	0				0		123	22	0	10	87		3	264	0	1	0	0
5:45 PM	8		10	0				0		128	18	0	7	102		0	273	0	0	0	0
Total Survey	102		88	0				0		1,084	173	2	84	877		6	2,408	0	14	0	1

Peak Hour Summary
4:20 PM to 5:20 PM

By Approach	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	106	125	231	0	0	0	0	0	668	490	1,158	1	479	638	1,117	2	1,253
%HV	0.9%				0.0%				1.5%				2.5%				1.8%
PHF	0.74				0.00				0.87				0.91				0.89

Pedestrians Crosswalk			
North	South	East	West
0	12	0	1

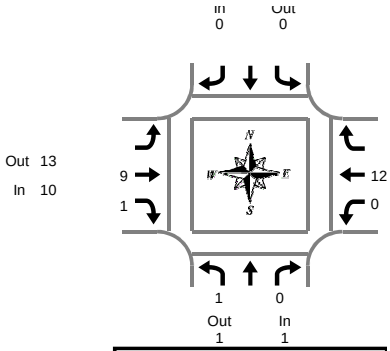
By Movement	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	53		53	106				0		585	83	668	42	437		479	1,253
%HV	1.9%	NA	0.0%	0.9%	NA	NA	NA	0.0%	NA	1.5%	1.2%	1.5%	0.0%	2.7%	NA	2.5%	1.8%
PHF	0.63		0.78	0.74				0.00		0.86	0.86	0.87	0.66	0.90		0.91	0.89

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
4:00 PM	52		45	0				0		540	92	2	49	472		2	1,250	0	12	0	1
4:15 PM	54		53	0				0		563	80	1	45	447		2	1,242	0	12	0	1
4:30 PM	56		45	0				0		567	82	1	45	434		2	1,229	0	9	0	0
4:45 PM	48		41	0				0		556	83	0	43	405		5	1,176	0	8	0	0
5:00 PM	50		43	0				0		544	81	0	35	405		4	1,158	0	2	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:20 PM to 5:20 PM

NE Market Dr & NE Halsey St

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
4:00 PM	0		0	0				0		1	0	1	0	1		1	2
4:05 PM	0		0	0				0		3	0	3	0	2		2	5
4:10 PM	0		0	0				0		3	0	3	0	1		1	4
4:15 PM	0		0	0				0		1	0	1	0	1		1	2
4:20 PM	0		0	0				0		0	1	1	0	1		1	2
4:25 PM	1		0	1				0		2	0	2	0	3		3	6
4:30 PM	0		0	0				0		0	0	0	0	2		2	2
4:35 PM	0		0	0				0		1	0	1	0	0		0	1
4:40 PM	0		0	0				0		0	0	0	0	0		0	0
4:45 PM	0		0	0				0		0	0	0	0	1		1	1
4:50 PM	0		0	0				0		0	0	0	0	1		1	1
4:55 PM	0		0	0				0		2	0	2	0	1		1	3
5:00 PM	0		0	0				0		0	0	0	0	0		0	0
5:05 PM	0		0	0				0		0	0	0	0	1		1	1
5:10 PM	0		0	0				0		2	0	2	0	1		1	3
5:15 PM	0		0	0				0		2	0	2	0	1		1	3
5:20 PM	0		0	0				0		0	0	0	0	1		1	1
5:25 PM	0		0	0				0		0	0	0	0	1		1	1
5:30 PM	0		0	0				0		0	0	0	0	0		0	0
5:35 PM	0		0	0				0		1	0	1	0	2		2	3
5:40 PM	0		0	0				0		0	0	0	0	1		1	1
5:45 PM	0		0	0				0		1	0	1	0	2		2	3
5:50 PM	0		0	0				0		0	0	0	0	1		1	1
5:55 PM	0		0	0				0		1	0	1	0	0		0	1
Total Survey	1		0	1				0		20	1	21	0	25		25	47

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
4:00 PM	0		0	0				0		7	0	7	0	4		4	11
4:15 PM	1		0	1				0		3	1	4	0	5		5	10
4:30 PM	0		0	0				0		1	0	1	0	2		2	3
4:45 PM	0		0	0				0		2	0	2	0	3		3	5
5:00 PM	0		0	0				0		2	0	2	0	2		2	4
5:15 PM	0		0	0				0		2	0	2	0	3		3	5
5:30 PM	0		0	0				0		1	0	1	0	3		3	4
5:45 PM	0		0	0				0		2	0	2	0	3		3	5
Total Survey	1		0	1				0		20	1	21	0	25		25	47

Heavy Vehicle Peak Hour Summary
4:20 PM to 5:20 PM

By Approach	Northbound NE Market Dr			Southbound NE Market Dr			Eastbound NE Halsey St			Westbound NE Halsey St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	0	0	0	10	13	23	12	9	21	23
PHF	0.25			0.00			0.63			0.50			0.58

By Movement	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	1		0	1				0		9	1	10	0	12		12	23
PHF	0.25		0.00	0.25				0.00		0.56	0.25	0.63	0.00	0.50		0.50	0.58

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

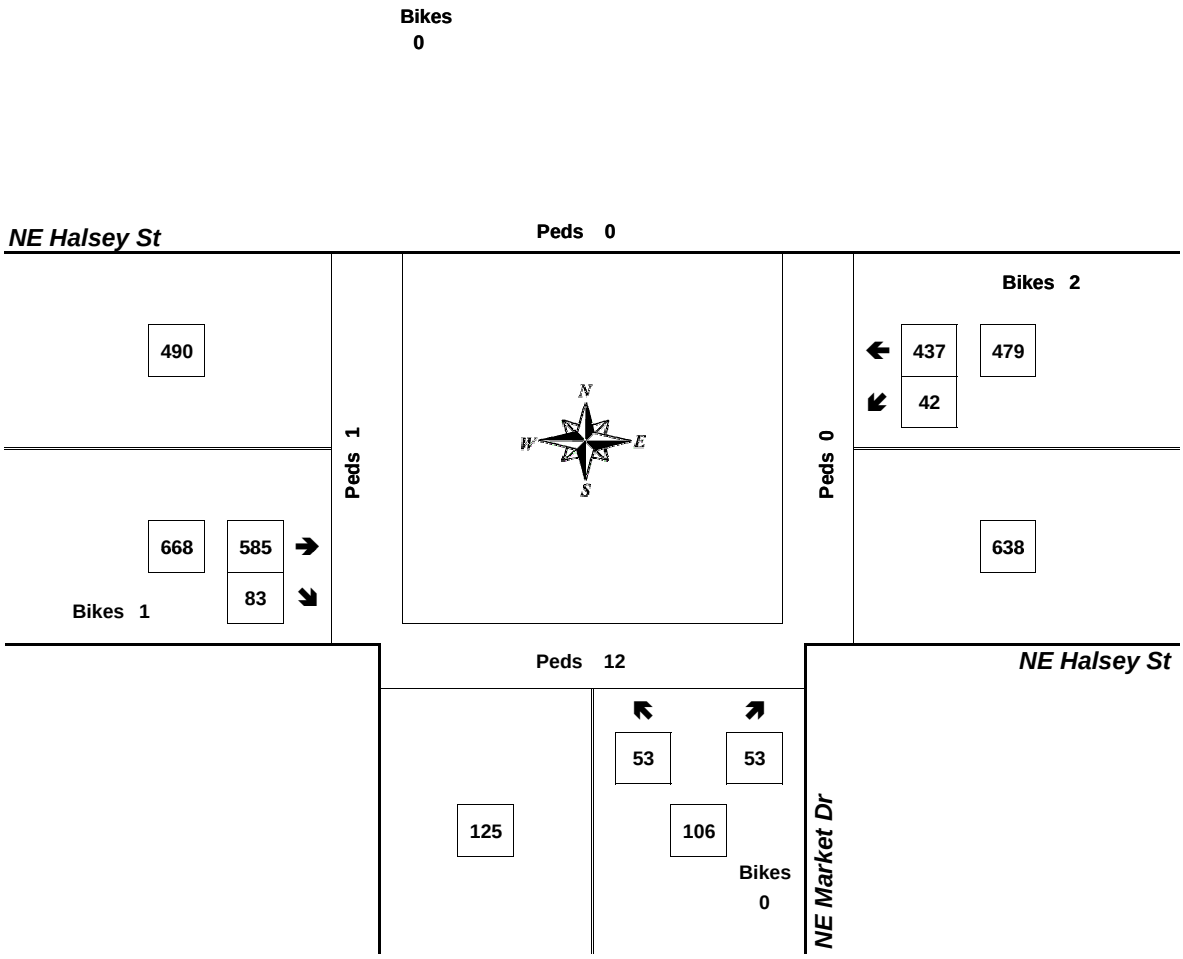
Interval Start Time	Northbound NE Market Dr				Southbound NE Market Dr				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
4:00 PM	1		0	1				0		13	1	14	0	14		14	29
4:15 PM	1		0	1				0		8	1	9	0	12		12	22
4:30 PM	0		0	0				0		7	0	7	0	10		10	17
4:45 PM	0		0	0				0		7	0	7	0	11		11	18
5:00 PM	0		0	0				0		7	0	7	0	11		11	18

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

NE Market Dr & NE Halsey St

4:20 PM to 5:20 PM
Tuesday, March 06, 2018

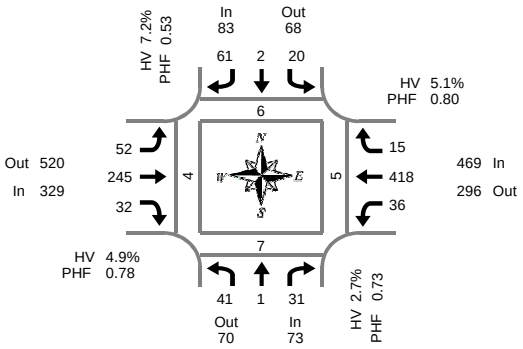


Approach	PHF	HV%	Volume
EB	0.87	1.5%	668
WB	0.91	2.5%	479
NB	0.74	0.9%	106
SB	0.00	0.0%	0
Intersection	0.89	1.8%	1,253

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:00 AM to 8:00 AM

NE Village St & NE Halsey St

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	2	0	1	0	2	1	4	0	2	15	3	0	1	29	0	0	60	1	0	0	1
7:05 AM	4	0	1	0	1	0	2	0	3	12	2	0	2	35	0	0	62	0	0	0	0
7:10 AM	8	0	2	0	0	0	5	0	4	13	1	0	1	31	3	0	68	0	0	0	0
7:15 AM	3	0	5	0	0	0	4	0	10	23	0	0	4	28	2	0	79	0	0	0	0
7:20 AM	2	0	5	0	2	0	2	0	5	31	2	0	0	32	2	0	83	0	2	0	0
7:25 AM	1	1	3	0	0	0	4	0	3	27	3	0	5	35	1	0	83	0	0	0	0
7:30 AM	4	0	2	0	1	0	8	0	8	18	2	1	3	46	4	0	96	0	0	1	0
7:35 AM	5	0	0	0	1	0	10	0	5	37	3	0	1	32	1	0	95	1	1	4	0
7:40 AM	2	0	1	0	7	0	8	0	5	17	4	0	7	46	1	0	98	3	3	0	0
7:45 AM	4	0	3	0	4	0	9	0	2	14	4	0	3	56	0	0	99	0	1	0	1
7:50 AM	2	0	3	0	2	0	3	0	2	13	3	0	3	25	0	0	56	0	0	0	0
7:55 AM	4	0	5	0	0	1	2	0	3	25	5	0	6	23	1	0	75	1	0	0	2
8:00 AM	2	0	3	0	0	0	2	0	0	11	1	0	4	27	3	0	53	0	0	0	0
8:05 AM	6	0	3	0	0	0	2	0	2	8	2	0	3	29	0	0	55	0	0	0	0
8:10 AM	2	0	1	0	1	0	2	0	0	13	3	0	4	18	3	0	47	0	1	0	1
8:15 AM	5	0	4	0	0	1	2	0	1	17	3	0	7	26	1	0	67	0	0	0	0
8:20 AM	2	2	3	0	2	0	6	0	1	11	2	0	6	17	0	0	52	0	0	0	0
8:25 AM	4	0	4	0	3	0	6	0	2	20	1	0	2	31	3	0	76	0	0	0	0
8:30 AM	3	0	3	0	1	0	2	0	2	17	0	0	4	21	1	0	54	0	0	0	0
8:35 AM	1	0	0	0	1	0	2	0	0	19	3	0	4	28	0	1	58	0	0	0	0
8:40 AM	1	0	2	0	2	1	6	0	5	22	2	0	2	38	0	0	81	0	0	0	0
8:45 AM	5	0	0	0	4	1	2	0	2	17	3	0	2	26	1	0	63	1	0	0	1
8:50 AM	0	0	3	0	1	0	4	0	3	19	1	0	4	37	0	0	72	0	0	0	0
8:55 AM	2	0	2	0	0	0	2	0	2	23	4	0	3	24	1	0	63	0	0	0	0
Total Survey	74	3	59	0	35	5	99	0	72	442	57	1	81	740	28	1	1,695	7	8	5	6

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	14	0	4	0	3	1	11	0	9	40	6	0	4	95	3	0	190	1	0	0	1
7:15 AM	6	1	13	0	2	0	10	0	18	81	5	0	9	95	5	0	245	0	2	0	0
7:30 AM	11	0	3	0	9	0	26	0	18	72	9	1	11	124	6	0	289	4	4	5	0
7:45 AM	10	0	11	0	6	1	14	0	7	52	12	0	12	104	1	0	230	1	1	0	3
8:00 AM	10	0	7	0	1	0	6	0	2	32	6	0	11	74	6	0	155	0	1	0	1
8:15 AM	11	2	11	0	5	1	14	0	4	48	6	0	15	74	4	0	195	0	0	0	0
8:30 AM	5	0	5	0	4	1	10	0	7	58	5	0	10	87	1	1	193	0	0	0	0
8:45 AM	7	0	5	0	5	1	8	0	7	59	8	0	9	87	2	0	198	1	0	0	1
Total Survey	74	3	59	0	35	5	99	0	72	442	57	1	81	740	28	1	1,695	7	8	5	6

Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	73	70	143	0	83	68	151	0	329	520	849	1	469	296	765	0	954
%HV	2.7%				7.2%				4.9%				5.1%				5.0%
PHF	0.73				0.53				0.78				0.80				0.82

Pedestrians Crosswalk			
North	South	East	West
6	7	5	4

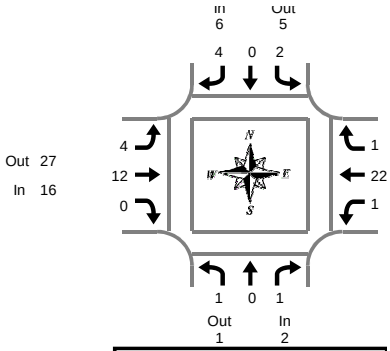
By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	41	1	31	73	20	2	61	83	52	245	32	329	36	418	15	469	954
%HV	2.4%	0.0%	3.2%	2.7%	10.0%	0.0%	6.6%	7.2%	7.7%	4.9%	0.0%	4.9%	2.8%	5.3%	6.7%	5.1%	5.0%
PHF	0.68	0.25	0.60	0.73	0.38	0.50	0.56	0.53	0.68	0.75	0.67	0.78	0.69	0.78	0.54	0.80	0.82

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	41	1	31	0	20	2	61	0	52	245	32	1	36	418	15	0	954	6	7	5	4
7:15 AM	37	1	34	0	18	1	56	0	45	237	32	1	43	397	18	0	919	5	8	5	4
7:30 AM	42	2	32	0	21	2	60	0	31	204	33	1	49	376	17	0	869	5	6	5	4
7:45 AM	36	2	34	0	16	3	44	0	20	190	29	0	48	339	12	1	773	1	2	0	4
8:00 AM	33	2	28	0	15	3	38	0	20	197	25	0	45	322	13	1	741	1	1	0	2

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:00 AM to 8:00 AM

NE Village St & NE Halsey St

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4	6
7:05 AM	1	0	0	1	1	0	0	1	1	0	0	1	0	5	0	5	8
7:10 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	1	0	1	4
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
7:20 AM	0	0	1	1	0	0	0	0	0	1	0	1	0	3	0	3	5
7:25 AM	0	0	0	0	0	0	2	2	1	0	0	1	0	0	0	0	3
7:30 AM	0	0	0	0	1	0	0	1	1	0	0	1	0	2	1	3	5
7:35 AM	0	0	0	0	0	0	1	1	0	4	0	4	0	0	0	0	5
7:40 AM	0	0	0	0	0	0	1	1	0	0	0	0	1	3	0	4	5
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
7:50 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:05 AM	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0	1	3
8:10 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	2	1	3	5
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
8:20 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
8:25 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
8:35 AM	0	0	0	0	0	0	1	1	0	2	0	2	0	1	0	1	4
8:40 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7
8:45 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	2	0	2	5
8:50 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
8:55 AM	0	0	0	0	0	0	1	1	0	0	1	1	0	3	1	4	6
Total Survey	1	0	2	3	2	0	7	9	6	25	1	32	2	45	3	50	94

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	0	0	1	1	0	0	1	2	4	0	6	0	10	0	10	18
7:15 AM	0	0	1	1	0	0	2	2	1	2	0	3	0	4	0	4	10
7:30 AM	0	0	0	0	1	0	2	3	1	4	0	5	1	5	1	7	15
7:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
8:00 AM	0	0	1	1	0	0	0	0	0	3	0	3	0	4	1	5	9
8:15 AM	0	0	0	0	0	0	1	1	0	2	0	2	0	6	0	6	9
8:30 AM	0	0	0	0	0	0	1	1	0	6	0	6	1	5	0	6	13
8:45 AM	0	0	0	0	0	0	1	1	2	2	1	5	0	8	1	9	15
Total Survey	1	0	2	3	2	0	7	9	6	25	1	32	2	45	3	50	94

Heavy Vehicle Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound NE Village St			Southbound NE Village St			Eastbound NE Halsey St			Westbound NE Halsey St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	1	3	6	5	11	16	27	43	24	15	39	48
PHF	0.50			0.38			0.67			0.60			0.67

By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	1	2	2	0	4	6	4	12	0	16	1	22	1	24	48
PHF	0.25	0.00	0.25	0.50	0.50	0.00	0.33	0.38	0.50	0.75	0.00	0.67	0.25	0.55	0.25	0.60	0.67

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

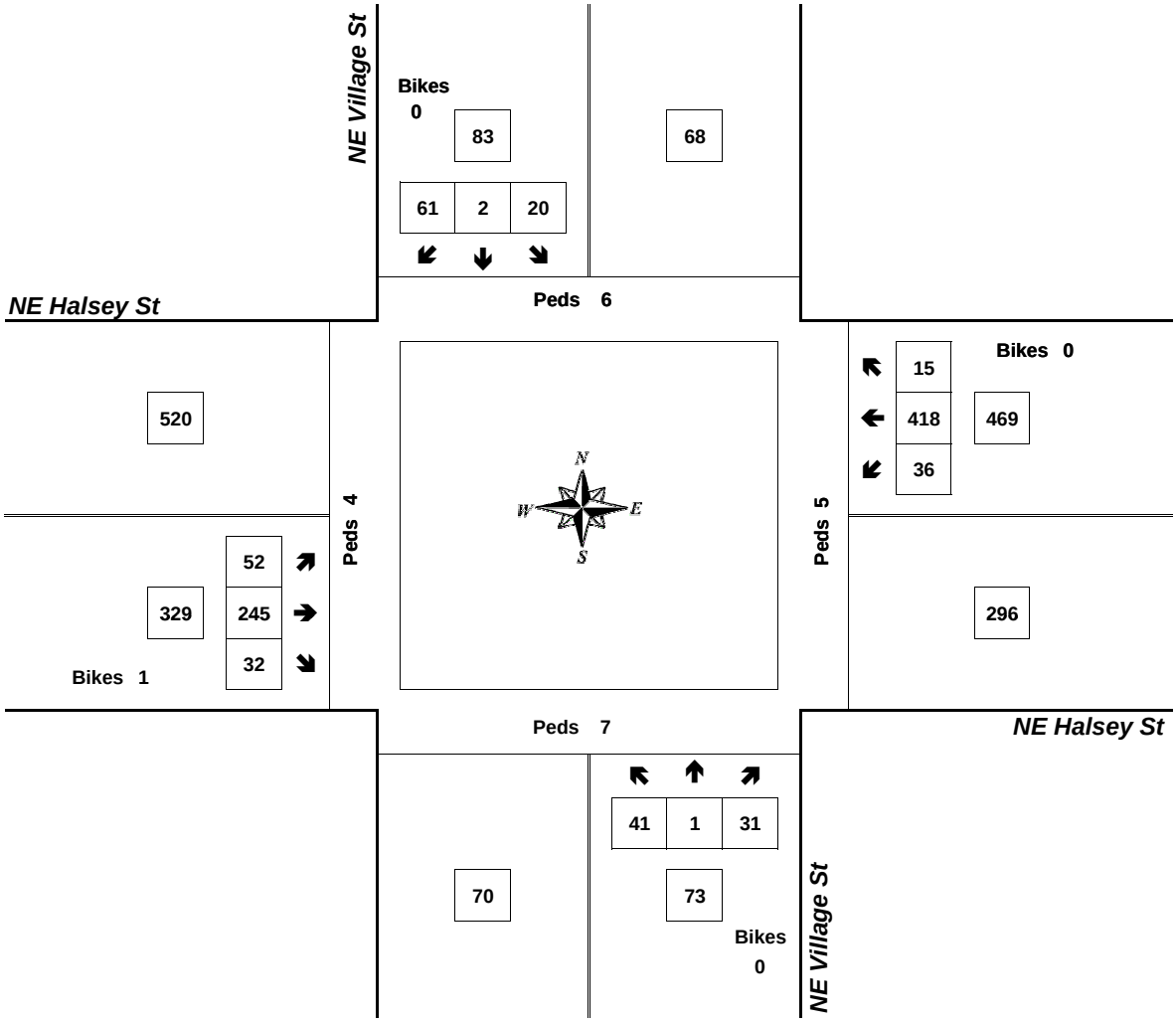
Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	0	1	2	2	0	4	6	4	12	0	16	1	22	1	24	48
7:15 AM	0	0	2	2	1	0	4	5	2	11	0	13	1	16	2	19	39
7:30 AM	0	0	1	1	1	0	3	4	1	11	0	12	1	18	2	21	38
7:45 AM	0	0	1	1	0	0	2	2	0	13	0	13	1	18	1	20	36
8:00 AM	0	0	1	1	0	0	3	3	2	13	1	16	1	23	2	26	46

Peak Hour Summary

Clay Carney
(503) 833-2740

NE Village St & NE Halsey St

7:00 AM to 8:00 AM
Tuesday, March 06, 2018

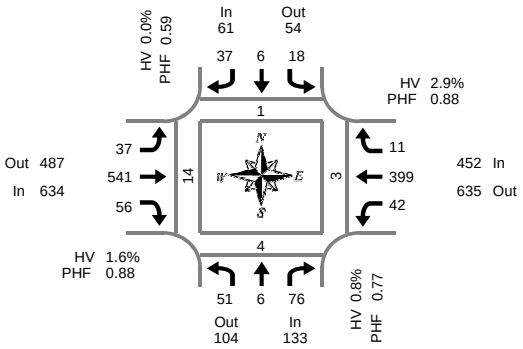


Approach	PHF	HV%	Volume
EB	0.78	4.9%	329
WB	0.80	5.1%	469
NB	0.73	2.7%	73
SB	0.53	7.2%	83
Intersection	0.82	5.0%	954

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:20 PM to 5:20 PM

NE Village St & NE Halsey St

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	3	1	8	0	3	1	6	0	9	42	5	1	3	37	0	0	118	1	0	0	2
4:05 PM	6	0	6	0	2	1	6	0	4	36	2	0	2	38	3	0	106	0	0	0	1
4:10 PM	6	0	6	0	0	0	3	0	3	31	1	0	4	41	0	0	95	0	0	0	2
4:15 PM	6	1	5	0	3	0	3	0	2	38	2	0	5	41	1	0	107	1	0	4	3
4:20 PM	2	0	4	0	1	1	4	0	2	47	5	0	5	44	0	0	115	0	0	2	1
4:25 PM	3	0	7	0	1	1	1	0	4	48	4	0	4	25	2	0	100	0	1	1	0
4:30 PM	6	0	8	0	2	0	3	0	2	32	2	0	6	42	1	0	104	0	0	0	0
4:35 PM	9	0	5	0	0	0	1	0	3	40	6	0	4	26	0	0	94	0	0	0	2
4:40 PM	8	0	7	1	3	1	5	0	4	45	7	1	3	37	0	0	120	0	0	0	2
4:45 PM	2	0	9	0	4	1	6	0	4	39	4	0	1	32	2	0	104	0	3	0	0
4:50 PM	3	0	8	0	2	0	4	0	5	46	6	0	1	25	2	0	102	0	0	0	0
4:55 PM	5	1	2	0	2	0	2	0	2	39	6	0	5	35	0	1	99	0	0	0	5
5:00 PM	2	1	7	0	1	0	0	0	5	43	4	0	6	26	1	0	96	1	0	0	1
5:05 PM	3	3	9	0	0	0	5	0	2	43	5	0	0	30	1	0	101	0	0	0	1
5:10 PM	3	1	4	0	1	2	4	0	1	65	3	0	2	37	1	1	124	0	0	0	2
5:15 PM	5	0	6	0	1	0	2	0	3	54	4	0	5	40	1	0	121	0	0	0	0
5:20 PM	2	0	7	0	0	0	0	0	3	44	1	0	2	42	2	0	103	0	1	0	0
5:25 PM	3	0	3	0	0	1	3	0	1	31	2	0	2	25	1	0	72	1	4	0	1
5:30 PM	6	0	1	0	0	0	0	0	5	27	5	0	3	22	0	0	69	1	0	0	0
5:35 PM	3	3	5	0	2	0	4	0	4	45	1	0	4	24	1	1	96	0	0	1	0
5:40 PM	4	1	6	0	0	0	5	0	2	42	5	0	0	30	1	1	96	0	0	0	0
5:45 PM	4	2	3	0	2	0	5	0	3	34	5	0	0	32	1	0	91	0	1	0	1
5:50 PM	3	0	6	0	1	1	5	0	4	37	7	0	4	36	0	0	104	2	0	0	0
5:55 PM	1	1	2	0	0	0	2	0	5	38	3	0	3	25	2	0	82	0	0	0	0
Total Survey	98	15	134	1	31	10	79	0	82	986	95	2	74	792	23	4	2,419	7	10	8	24

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	15	1	20	0	5	2	15	0	16	109	8	1	9	116	3	0	319	1	0	0	5
4:15 PM	11	1	16	0	5	2	8	0	8	133	11	0	14	110	3	0	322	1	1	7	4
4:30 PM	23	0	20	1	5	1	9	0	9	117	15	1	13	105	1	0	318	0	0	0	4
4:45 PM	10	1	19	0	8	1	12	0	11	124	16	0	7	92	4	1	305	0	3	0	5
5:00 PM	8	5	20	0	2	2	9	0	8	151	12	0	8	93	3	1	321	1	0	0	4
5:15 PM	10	0	16	0	1	1	5	0	7	129	7	0	9	107	4	0	296	1	5	0	1
5:30 PM	13	4	12	0	2	0	9	0	11	114	11	0	7	76	2	2	261	1	0	1	0
5:45 PM	8	3	11	0	3	1	12	0	12	109	15	0	7	93	3	0	277	2	1	0	1
Total Survey	98	15	134	1	31	10	79	0	82	986	95	2	74	792	23	4	2,419	7	10	8	24

Peak Hour Summary
4:20 PM to 5:20 PM

By Approach	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	133	104	237	1	61	54	115	0	634	487	1,121	1	452	635	1,087	2	1,280
%HV	0.8%				0.0%				1.6%				2.9%				1.9%
PHF	0.77				0.59				0.88				0.88				0.92

Pedestrians Crosswalk			
North	South	East	West
1	4	3	14

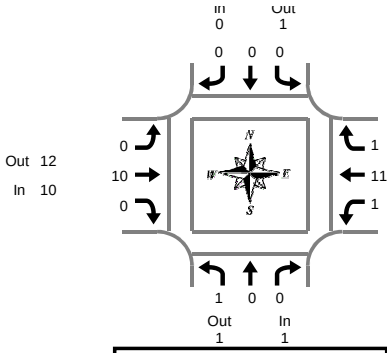
By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	51	6	76	133	18	6	37	61	37	541	56	634	42	399	11	452	1,280
%HV	2.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	1.6%	2.4%	2.8%	9.1%	2.9%	1.9%
PHF	0.55	0.30	0.79	0.77	0.50	0.75	0.62	0.59	0.71	0.83	0.82	0.88	0.70	0.90	0.69	0.88	0.92

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	59	3	75	1	23	6	44	0	44	483	50	2	43	423	11	1	1,264	2	4	7	18
4:15 PM	52	7	75	1	20	6	38	0	36	525	54	1	42	400	11	2	1,266	2	4	7	17
4:30 PM	51	6	75	1	16	5	35	0	35	521	50	1	37	397	12	2	1,240	2	8	0	14
4:45 PM	41	10	67	0	13	4	35	0	37	518	46	0	31	368	13	4	1,183	3	8	1	10
5:00 PM	39	12	59	0	8	4	35	0	38	503	45	0	31	369	12	3	1,155	5	6	1	6

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:20 PM to 5:20 PM

NE Village St & NE Halsey St

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:05 PM	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	2	4
4:10 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:55 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	3	4
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:10 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
5:15 PM	1	0	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3
5:20 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	2	0	2	4
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Survey	1	0	0	1	0	0	1	1	1	20	0	21	1	25	1	27	50

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	1	3	0	4	0	4	0	4	8
4:15 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	5	0	5	10
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
5:00 PM	0	0	0	0	0	0	0	0	0	3	0	3	1	3	1	5	8
5:15 PM	1	0	0	1	0	0	0	0	0	3	0	3	0	2	0	2	6
5:30 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	3	0	3	5
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
Total Survey	1	0	0	1	0	0	1	1	1	20	0	21	1	25	1	27	50

Heavy Vehicle Peak Hour Summary
4:20 PM to 5:20 PM

By Approach	Northbound NE Village St			Southbound NE Village St			Eastbound NE Halsey St			Westbound NE Halsey St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	0	1	1	10	12	22	13	10	23	24
PHF	0.25			0.00			0.63			0.54			0.67

By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	0	1	0	0	0	0	0	10	0	10	1	11	1	13	24
PHF	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.63	0.25	0.46	0.25	0.54	0.67

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

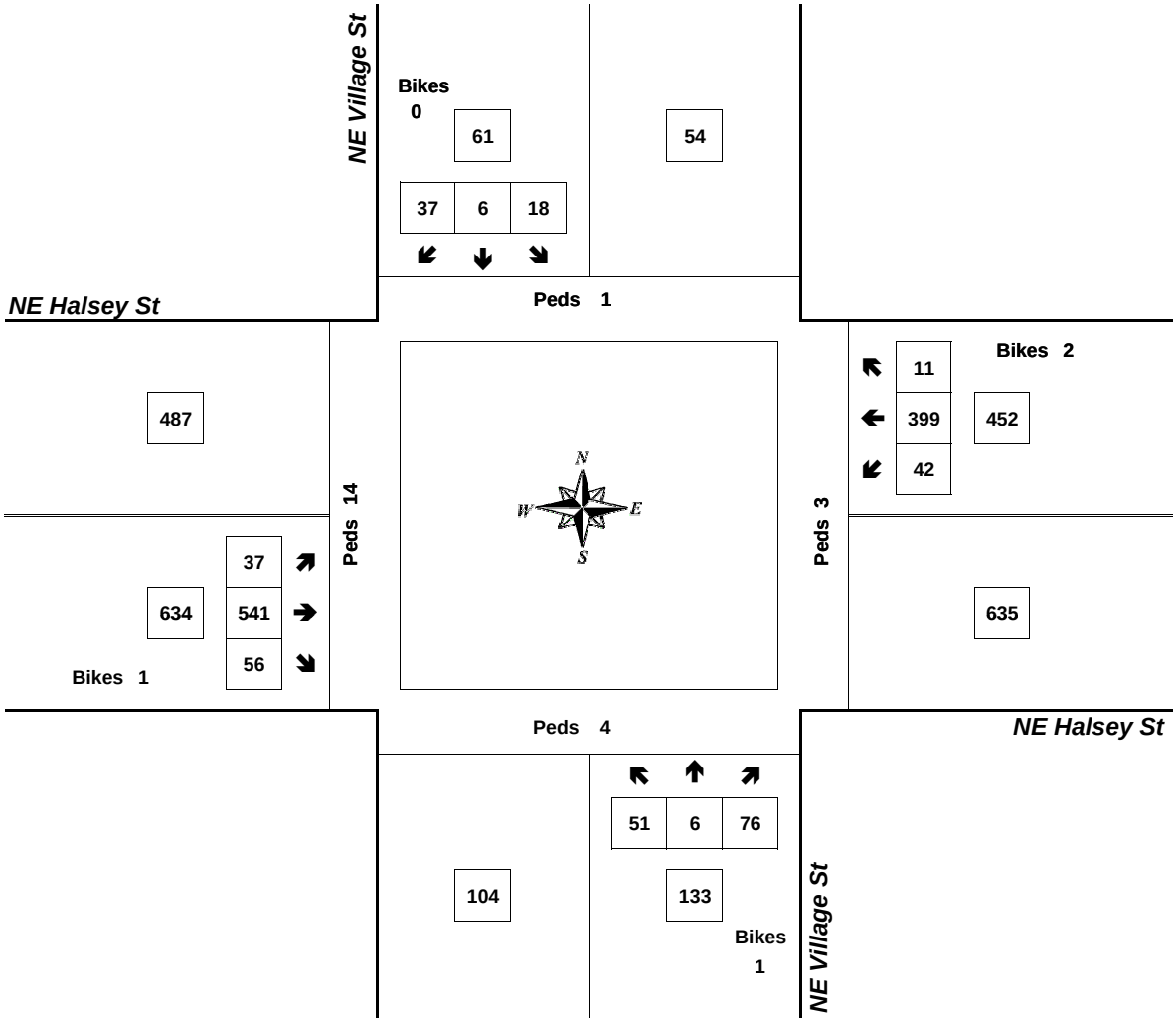
Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Halsey St				Westbound NE Halsey St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	1	11	0	12	0	14	0	14	26
4:15 PM	0	0	0	0	0	0	0	0	0	11	0	11	1	13	1	15	26
4:30 PM	1	0	0	1	0	0	0	0	0	9	0	9	1	10	1	12	22
4:45 PM	1	0	0	1	0	0	1	1	0	9	0	9	1	10	1	12	23
5:00 PM	1	0	0	1	0	0	1	1	0	9	0	9	1	11	1	13	24

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

NE Village St & NE Halsey St

4:20 PM to 5:20 PM
Tuesday, March 06, 2018

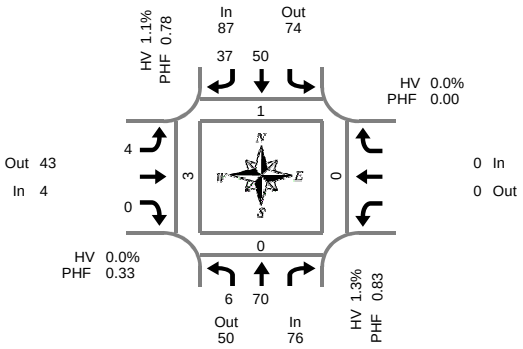


Approach	PHF	HV%	Volume
EB	0.88	1.6%	634
WB	0.88	2.9%	452
NB	0.77	0.8%	133
SB	0.59	0.0%	61
Intersection	0.92	1.9%	1,280

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:25 AM to 8:25 AM

NE Village St & Driveway Access

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
7:00 AM	0	4		0		4	2	0	0		0	0				0	10	0	0	0	1
7:05 AM	0	6		0		2	1	0	0		0	0				0	9	0	0	0	0
7:10 AM	0	7		0		2	0	0	0		0	0				0	9	0	0	0	0
7:15 AM	1	11		0		2	2	0	0		1	0				0	17	0	0	0	0
7:20 AM	0	4		0		1	2	0	0		0	0				0	7	0	0	0	0
7:25 AM	0	7		0		4	4	0	0		0	0				0	15	0	0	0	0
7:30 AM	0	5		0		2	2	0	0		0	0				0	9	0	0	0	0
7:35 AM	1	4		0		2	3	0	0		0	0				0	10	0	0	0	0
7:40 AM	1	3		0		9	3	0	0		0	0				0	16	0	0	0	0
7:45 AM	1	6		0		2	4	0	1		0	0				0	14	0	0	0	0
7:50 AM	1	5		0		4	3	0	0		0	0				0	13	0	0	0	2
7:55 AM	1	9		0		5	4	0	0		0	0				0	19	0	0	0	0
8:00 AM	0	5		0		4	2	0	0		0	0				0	11	0	0	0	0
8:05 AM	0	5		0		3	3	0	2		0	0				0	13	0	0	0	0
8:10 AM	0	7		0		5	3	0	0		0	0				0	15	0	0	0	1
8:15 AM	0	6		0		8	6	0	1		0	0				0	21	1	0	0	0
8:20 AM	1	8		0		2	0	0	0		0	0				0	11	0	0	0	0
8:25 AM	0	4		0		2	1	0	1		0	0				0	8	0	0	0	0
8:30 AM	0	5		0		2	2	0	0		0	0				0	9	0	0	0	0
8:35 AM	0	1		0		5	2	0	0		1	0				0	9	0	0	0	0
8:40 AM	0	3		0		7	0	0	2		0	0				0	12	0	0	0	1
8:45 AM	0	5		0		2	2	0	0		0	0				0	9	0	0	0	1
8:50 AM	0	3		0		4	1	0	0		0	0				0	8	0	0	0	0
8:55 AM	0	1		0		3	3	0	1		0	0				0	8	0	0	0	0
Total Survey	7	124		0		86	55	0	8		2	0				0	282	1	0	0	6

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
7:00 AM	0	17		0		8	3	0	0		0	0				0	28	0	0	0	1
7:15 AM	1	22		0		7	8	0	0		1	0				0	39	0	0	0	0
7:30 AM	2	12		0		13	8	0	0		0	0				0	35	0	0	0	0
7:45 AM	3	20		0		11	11	0	1		0	0				0	46	0	0	0	2
8:00 AM	0	17		0		12	8	0	2		0	0				0	39	0	0	0	1
8:15 AM	1	18		0		12	7	0	2		0	0				0	40	1	0	0	0
8:30 AM	0	9		0		14	4	0	2		1	0				0	30	0	0	0	1
8:45 AM	0	9		0		9	6	0	1		0	0				0	25	0	0	0	1
Total Survey	7	124		0		86	55	0	8		2	0				0	282	1	0	0	6

Peak Hour Summary
7:25 AM to 8:25 AM

By Approach	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	76	50	126	0	87	74	161	0	4	43	47	0	0	0	0	0	167
%HV	1.3%				1.1%				0.0%				0.0%				1.2%
PHF	0.83				0.78				0.33				0.00				0.85

Pedestrians Crosswalk			
North	South	East	West
1	0	0	3

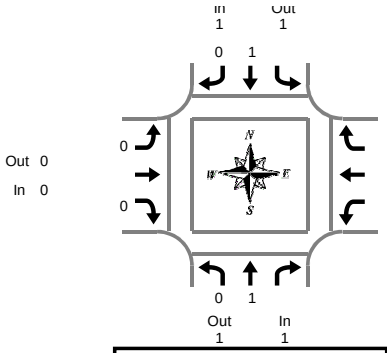
By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	6	70		76		50	37	87	4		0	4				0	167
%HV	0.0%	1.4%	NA	1.3%	NA	2.0%	0.0%	1.1%	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	1.2%
PHF	0.50	0.83		0.83		0.78	0.77	0.78	0.33		0.00	0.33				0.00	0.85

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
7:00 AM	6	71		0		39	30	0	1		1	0				0	148	0	0	0	3
7:15 AM	6	71		0		43	35	0	3		1	0				0	159	0	0	0	3
7:30 AM	6	67		0		48	34	0	5		0	0				0	160	1	0	0	3
7:45 AM	4	64		0		49	30	0	7		1	0				0	155	1	0	0	4
8:00 AM	1	53		0		47	25	0	7		1	0				0	134	1	0	0	3

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:25 AM to 8:25 AM

NE Village St & Driveway Access

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
7:00 AM	0	0		0		0	0	0	0		0	0				0	0
7:05 AM	0	1		1		0	0	0	0		0	0				0	1
7:10 AM	0	0		0		0	0	0	0		0	0				0	0
7:15 AM	0	1		1		0	0	0	0		0	0				0	1
7:20 AM	0	0		0		0	0	0	0		0	0				0	0
7:25 AM	0	0		0		0	0	0	0		0	0				0	0
7:30 AM	0	0		0		0	0	0	0		0	0				0	0
7:35 AM	0	0		0		0	0	0	0		0	0				0	0
7:40 AM	0	0		0		1	0	1	0		0	0				0	1
7:45 AM	0	0		0		0	0	0	0		0	0				0	0
7:50 AM	0	0		0		0	0	0	0		0	0				0	0
7:55 AM	0	0		0		0	0	0	0		0	0				0	0
8:00 AM	0	0		0		0	0	0	0		0	0				0	0
8:05 AM	0	1		1		0	0	0	0		0	0				0	1
8:10 AM	0	0		0		0	0	0	0		0	0				0	0
8:15 AM	0	0		0		0	0	0	0		0	0				0	0
8:20 AM	0	0		0		0	0	0	0		0	0				0	0
8:25 AM	0	0		0		0	0	0	0		0	0				0	0
8:30 AM	0	0		0		1	0	1	0		0	0				0	1
8:35 AM	0	0		0		0	0	0	0		0	0				0	0
8:40 AM	0	0		0		0	0	0	0		0	0				0	0
8:45 AM	0	0		0		0	0	0	0		0	0				0	0
8:50 AM	0	0		0		0	0	0	0		0	0				0	0
8:55 AM	0	0		0		0	1	1	0		0	0				0	1
Total Survey	0	3		3		2	1	3	0		0	0				0	6

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
7:00 AM	0	1		1		0	0	0	0		0	0				0	1
7:15 AM	0	1		1		0	0	0	0		0	0				0	1
7:30 AM	0	0		0		1	0	1	0		0	0				0	1
7:45 AM	0	0		0		0	0	0	0		0	0				0	0
8:00 AM	0	1		1		0	0	0	0		0	0				0	1
8:15 AM	0	0		0		0	0	0	0		0	0				0	0
8:30 AM	0	0		0		1	0	1	0		0	0				0	1
8:45 AM	0	0		0		0	1	1	0		0	0				0	1
Total Survey	0	3		3		2	1	3	0		0	0				0	6

Heavy Vehicle Peak Hour Summary
7:25 AM to 8:25 AM

By Approach	Northbound NE Village St			Southbound NE Village St			Eastbound Driveway Access			Westbound Driveway Access			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	1	1	2	0	0	0	0	0	0	2
PHF	0.25			0.25			0.00			0.00			0.50

By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	0	1		1		1	0	1	0		0	0				0	2
PHF	0.00	0.25		0.25		0.25	0.00	0.25	0.00		0.00	0.00				0.00	0.50

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

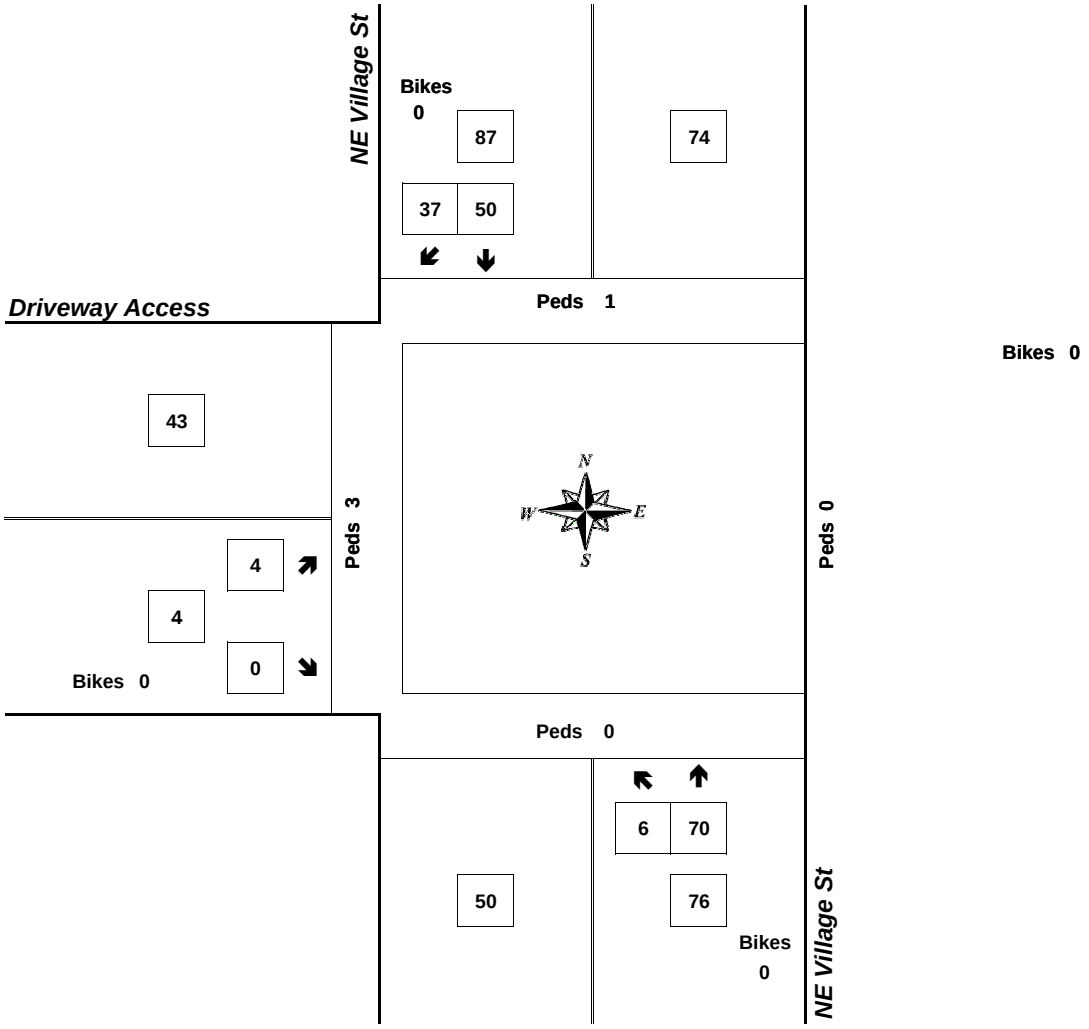
Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
7:00 AM	0	2		2		1	0	1	0		0	0				0	3
7:15 AM	0	2		2		1	0	1	0		0	0				0	3
7:30 AM	0	1		1		1	0	1	0		0	0				0	2
7:45 AM	0	1		1		1	0	1	0		0	0				0	2
8:00 AM	0	1		1		1	1	2	0		0	0				0	3

Peak Hour Summary

Clay Carney
(503) 833-2740

NE Village St & Driveway Access

7:25 AM to 8:25 AM
Tuesday, March 06, 2018

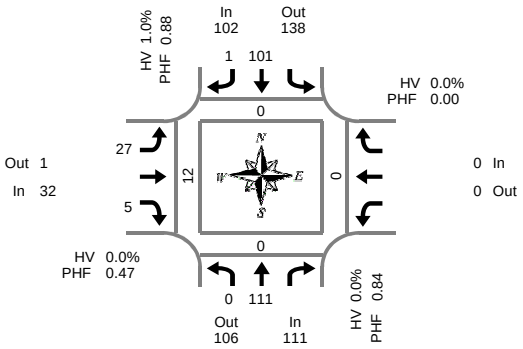


Approach	PHF	HV%	Volume
EB	0.33	0.0%	4
WB	0.00	0.0%	0
NB	0.83	1.3%	76
SB	0.78	1.1%	87
Intersection	0.85	1.2%	167

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:10 PM to 5:10 PM

NE Village St & Driveway Access

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
4:00 PM	0	5		0		7	0	0	4		2	0				0	18	0	0	0	0
4:05 PM	0	7		0		5	0	0	4		0	0				0	16	0	0	0	0
4:10 PM	0	11		0		7	0	0	3		0	0				0	21	0	0	0	2
4:15 PM	0	13		0		9	1	0	1		1	0				0	25	0	0	0	3
4:20 PM	0	5		0		9	0	0	0		0	0				0	14	0	0	0	2
4:25 PM	0	6		0		10	0	0	4		2	0				0	22	0	0	0	0
4:30 PM	0	7		0		6	0	0	8		0	0				0	21	0	0	0	0
4:35 PM	0	8		0		10	0	0	3		0	0				0	21	0	0	0	0
4:40 PM	0	17		1		11	0	0	2		1	0				0	31	0	0	0	0
4:45 PM	0	8		0		6	0	0	1		0	0				0	15	0	0	0	0
4:50 PM	0	8		0		9	0	0	1		0	0				0	18	0	0	0	2
4:55 PM	0	6		0		8	0	0	0		0	0				0	14	0	0	0	2
5:00 PM	0	11		2		12	0	0	2		1	0				0	26	0	0	0	0
5:05 PM	0	11		0		4	0	0	2		0	1				0	17	0	0	0	1
5:10 PM	0	10		0		4	1	0	1		0	0				0	16	0	0	0	0
5:15 PM	0	5		0		9	0	0	1		0	0				0	15	0	0	0	0
5:20 PM	0	9		0		4	0	0	0		0	0				0	13	0	0	0	0
5:25 PM	0	8		0		7	0	0	0		0	0				0	15	0	1	0	0
5:30 PM	0	6		0		5	0	0	2		0	0				0	13	0	0	0	0
5:35 PM	0	9		0		6	0	0	2		0	0				0	17	0	0	0	0
5:40 PM	0	9		0		6	0	0	2		0	0				0	17	0	0	0	0
5:45 PM	0	7		0		9	0	0	0		0	0				0	16	0	0	0	1
5:50 PM	0	11		0		7	0	0	0		0	0				0	18	0	0	0	0
5:55 PM	0	3		0		8	0	0	0		0	0				0	11	0	0	0	0
Total Survey	0	200		3		178	2	0	43		7	1				0	430	0	1	0	13

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
4:00 PM	0	23		0		19	0	0	11		2	0				0	55	0	0	0	2
4:15 PM	0	24		0		28	1	0	5		3	0				0	61	0	0	0	5
4:30 PM	0	32		1		27	0	0	13		1	0				0	73	0	0	0	0
4:45 PM	0	22		0		23	0	0	2		0	0				0	47	0	0	0	4
5:00 PM	0	32		2		20	1	0	5		1	1				0	59	0	0	0	1
5:15 PM	0	22		0		20	0	0	1		0	0				0	43	0	1	0	0
5:30 PM	0	24		0		17	0	0	6		0	0				0	47	0	0	0	0
5:45 PM	0	21		0		24	0	0	0		0	0				0	45	0	0	0	1
Total Survey	0	200		3		178	2	0	43		7	1				0	430	0	1	0	13

Peak Hour Summary
4:10 PM to 5:10 PM

By Approach	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	111	106	217	3	102	138	240	0	32	1	33	1	0	0	0	0	245
%HV	0.0%				1.0%				0.0%				0.0%				0.4%
PHF	0.84				0.88				0.47				0.00				0.84

Pedestrians Crosswalk			
North	South	East	West
0	0	0	12

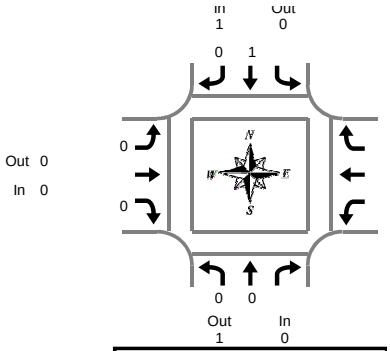
By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	0	111		111		101	1	102	27		5	32				0	245
%HV	0.0%	0.0%	NA	0.0%	NA	1.0%	0.0%	1.0%	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	0.4%
PHF	0.00	0.84		0.84		0.87	0.25	0.88	0.45		0.42	0.47				0.00	0.84

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
4:00 PM	0	101		1		97	1	0	31		6	0				0	236	0	0	0	11
4:15 PM	0	110		3		98	2	0	25		5	1				0	240	0	0	0	10
4:30 PM	0	108		3		90	1	0	21		2	1				0	222	0	1	0	5
4:45 PM	0	100		2		80	1	0	14		1	1				0	196	0	1	0	5
5:00 PM	0	99		2		81	1	0	12		1	1				0	194	0	1	0	2

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:10 PM to 5:10 PM

NE Village St & Driveway Access

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St			Eastbound Driveway Access				Westbound Driveway Access				Interval Total
	L	T		Total		T	R	Total	L		R	Total			Total	
4:00 PM	0	0		0		0	0	0	0		0	0			0	0
4:05 PM	0	0		0		0	0	0	0		0	0			0	0
4:10 PM	0	0		0		0	0	0	0		0	0			0	0
4:15 PM	0	0		0		0	0	0	0		0	0			0	0
4:20 PM	0	0		0		0	0	0	0		0	0			0	0
4:25 PM	0	0		0		0	0	0	0		0	0			0	0
4:30 PM	0	0		0		0	0	0	0		0	0			0	0
4:35 PM	0	0		0		0	0	0	0		0	0			0	0
4:40 PM	0	0		0		0	0	0	0		0	0			0	0
4:45 PM	0	0		0		0	0	0	0		0	0			0	0
4:50 PM	0	0		0		0	0	0	0		0	0			0	0
4:55 PM	0	0		0		0	0	0	0		0	0			0	0
5:00 PM	0	0		0		1	0	1	0		0	0			0	1
5:05 PM	0	0		0		0	0	0	0		0	0			0	0
5:10 PM	0	0		0		0	0	0	0		0	0			0	0
5:15 PM	0	1		1		0	0	0	0		0	0			0	1
5:20 PM	0	0		0		0	0	0	0		0	0			0	0
5:25 PM	0	0		0		0	0	0	0		0	0			0	0
5:30 PM	0	0		0		0	0	0	0		0	0			0	0
5:35 PM	0	0		0		0	0	0	0		0	0			0	0
5:40 PM	0	0		0		0	0	0	0		0	0			0	0
5:45 PM	0	0		0		0	0	0	0		0	0			0	0
5:50 PM	0	0		0		0	0	0	0		0	0			0	0
5:55 PM	0	0		0		0	0	0	0		0	0			0	0
Total Survey	0	1		1		1	0	1	0		0	0			0	2

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St			Eastbound Driveway Access				Westbound Driveway Access				Interval Total
	L	T		Total		T	R	Total	L		R	Total			Total	
4:00 PM	0	0		0		0	0	0	0		0	0			0	0
4:15 PM	0	0		0		0	0	0	0		0	0			0	0
4:30 PM	0	0		0		0	0	0	0		0	0			0	0
4:45 PM	0	0		0		0	0	0	0		0	0			0	0
5:00 PM	0	0		0		1	0	1	0		0	0			0	1
5:15 PM	0	1		1		0	0	0	0		0	0			0	1
5:30 PM	0	0		0		0	0	0	0		0	0			0	0
5:45 PM	0	0		0		0	0	0	0		0	0			0	0
Total Survey	0	1		1		1	0	1	0		0	0			0	2

Heavy Vehicle Peak Hour Summary
4:10 PM to 5:10 PM

By Approach	Northbound NE Village St			Southbound NE Village St			Eastbound Driveway Access			Westbound Driveway Access			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	1	1	1	0	1	0	0	0	0	0	0	1
PHF	0.00			0.25			0.00			0.00			0.25

By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound Driveway Access				Westbound Driveway Access				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	0	0		0		1	0	1	0		0	0				0	1
PHF	0.00	0.00		0.00		0.25	0.00	0.25	0.00		0.00	0.00				0.00	0.25

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

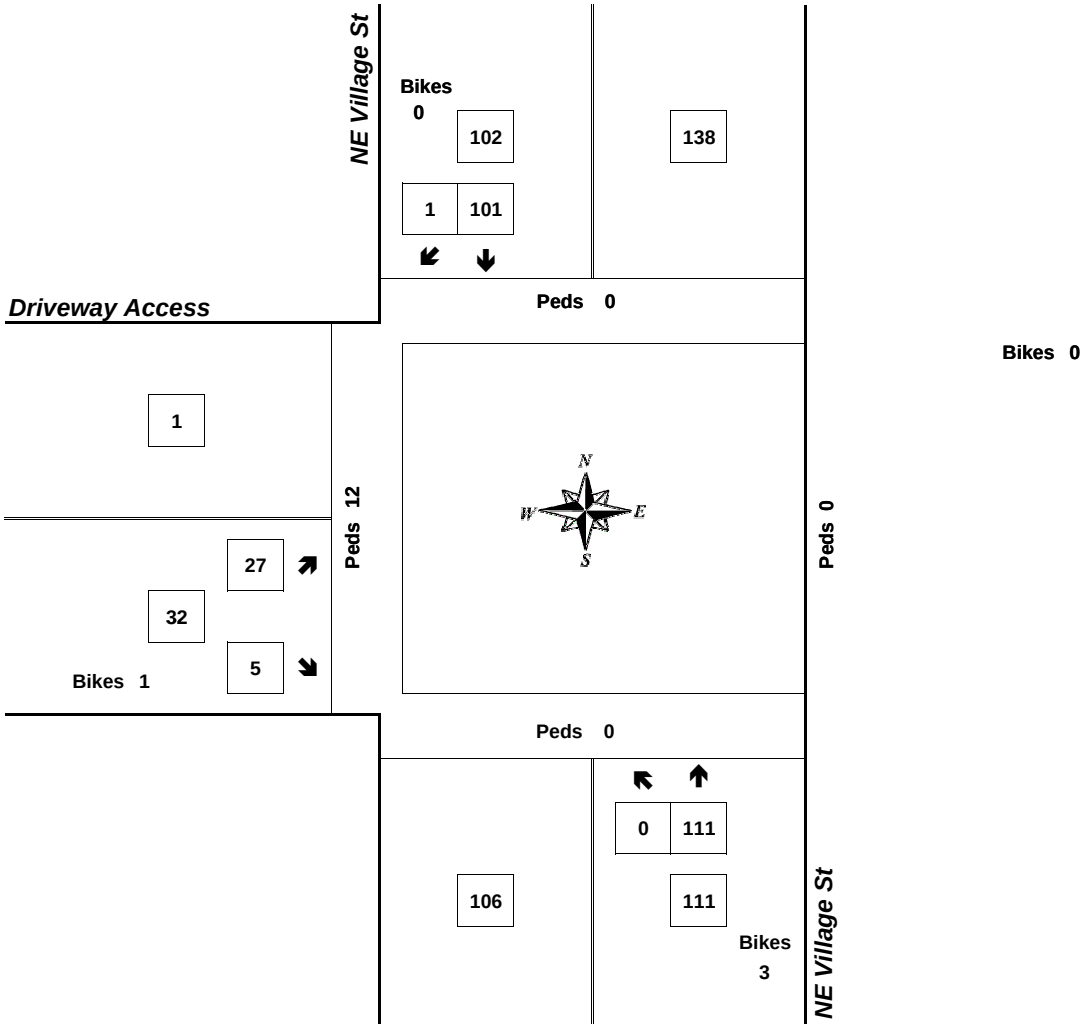
Interval Start Time	Northbound NE Village St				Southbound NE Village St			Eastbound Driveway Access				Westbound Driveway Access				Interval Total
	L	T		Total		T	R	Total	L		R	Total			Total	
4:00 PM	0	0		0		0	0	0	0		0	0			0	0
4:15 PM	0	0		0		1	0	1	0		0	0			0	1
4:30 PM	0	1		1		1	0	1	0		0	0			0	2
4:45 PM	0	1		1		1	0	1	0		0	0			0	2
5:00 PM	0	1		1		1	0	1	0		0	0			0	2

Peak Hour Summary

Clay Carney
(503) 833-2740

NE Village St & Driveway Access

4:10 PM to 5:10 PM
Tuesday, March 06, 2018

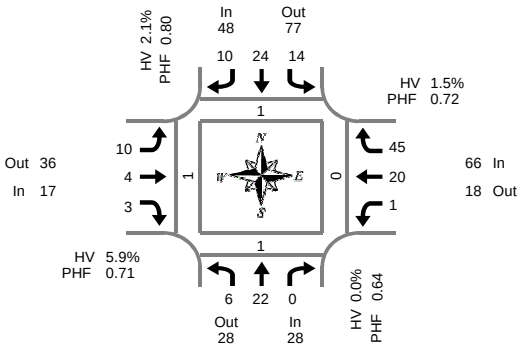


Approach	PHF	HV%	Volume
EB	0.47	0.0%	32
WB	0.00	0.0%	0
NB	0.84	0.0%	111
SB	0.88	1.0%	102
Intersection	0.84	0.4%	245

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:20 AM to 8:20 AM

NE Village St & NE Market Dr

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	1	0	0	2	0	0	0	0	0	0	0	0	2	3	0	8	0	0	0	0
7:05 AM	0	1	0	0	1	2	1	0	0	1	0	0	0	0	2	0	8	0	0	0	0
7:10 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	1	7	0	11	0	0	0	0
7:15 AM	0	2	0	0	1	0	2	0	0	0	0	0	0	0	4	0	9	0	0	0	0
7:20 AM	1	3	0	0	0	1	0	0	1	1	0	0	0	0	8	0	15	0	0	0	0
7:25 AM	1	1	0	0	1	0	1	0	2	0	0	0	0	4	1	0	11	0	0	0	0
7:30 AM	0	0	0	0	3	2	0	0	1	0	1	0	1	4	5	0	17	0	0	0	0
7:35 AM	1	0	0	0	0	1	0	0	1	0	0	0	0	2	5	0	10	0	0	0	0
7:40 AM	0	0	0	0	1	3	1	0	0	1	0	0	0	1	1	0	8	0	0	0	0
7:45 AM	0	1	0	0	1	4	0	0	1	0	1	0	0	1	5	0	14	0	1	0	0
7:50 AM	0	3	0	0	0	2	1	0	2	0	0	0	0	1	4	0	13	0	0	0	0
7:55 AM	0	3	0	0	3	1	1	0	0	0	0	0	0	1	5	0	14	1	0	0	0
8:00 AM	0	3	0	0	2	2	2	0	1	0	0	0	0	2	2	0	14	0	0	0	0
8:05 AM	1	4	0	0	1	2	0	0	1	0	0	0	0	3	3	0	15	0	0	0	1
8:10 AM	1	1	0	0	1	1	0	0	0	2	1	0	0	1	1	0	9	0	0	0	0
8:15 AM	1	3	0	0	1	5	4	0	0	0	0	0	0	0	5	0	19	0	0	0	0
8:20 AM	0	5	0	0	0	0	2	0	1	0	0	0	1	0	3	0	12	0	0	0	1
8:25 AM	0	1	0	0	1	0	1	0	1	1	2	0	1	0	5	0	13	0	0	0	0
8:30 AM	0	1	0	0	0	3	1	0	1	2	1	0	0	2	4	0	15	0	2	0	1
8:35 AM	0	0	0	0	2	1	2	0	1	0	0	0	0	1	0	0	7	0	0	0	0
8:40 AM	0	0	2	0	1	0	4	0	1	0	0	0	0	3	0	0	11	0	0	0	0
8:45 AM	1	2	0	0	2	2	1	0	0	0	1	0	0	2	3	0	14	0	0	1	1
8:50 AM	0	1	0	0	0	1	0	0	0	2	2	0	0	1	2	0	9	0	0	0	0
8:55 AM	0	2	1	0	1	1	2	0	1	0	0	0	0	1	0	0	9	0	0	0	0
Total Survey	7	39	3	0	25	35	26	0	17	10	9	0	3	33	78	0	285	1	3	1	4

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	3	0	0	3	3	1	0	1	1	0	0	0	3	12	0	27	0	0	0	0
7:15 AM	2	6	0	0	2	1	3	0	3	1	0	0	0	4	13	0	35	0	0	0	0
7:30 AM	1	0	0	0	4	6	1	0	2	1	1	0	1	7	11	0	35	0	0	0	0
7:45 AM	0	7	0	0	4	7	2	0	3	0	1	0	0	3	14	0	41	1	1	0	0
8:00 AM	2	8	0	0	4	5	2	0	2	2	1	0	0	6	6	0	38	0	0	0	1
8:15 AM	1	9	0	0	2	5	7	0	2	1	2	0	2	0	13	0	44	0	0	0	1
8:30 AM	0	1	2	0	3	4	7	0	3	2	1	0	0	6	4	0	33	0	2	0	1
8:45 AM	1	5	1	0	3	4	3	0	1	2	3	0	0	4	5	0	32	0	0	1	1
Total Survey	7	39	3	0	25	35	26	0	17	10	9	0	3	33	78	0	285	1	3	1	4

Peak Hour Summary
7:20 AM to 8:20 AM

By Approach	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	28	28	56	0	48	77	125	0	17	36	53	0	66	18	84	0	159
%HV	0.0%				2.1%				5.9%				1.5%				1.9%
PHF	0.64				0.80				0.71				0.72				0.92

Pedestrians Crosswalk			
North	South	East	West
1	1	0	1

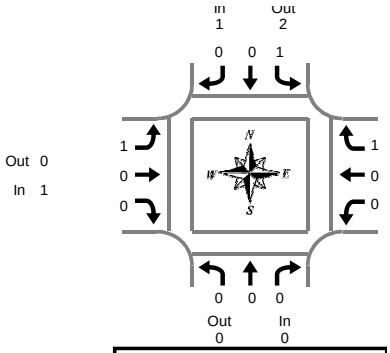
By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	6	22	0	28	14	24	10	48	10	4	3	17	1	20	45	66	159
%HV	0.0%	0.0%	0.0%	0.0%	7.1%	0.0%	0.0%	2.1%	10.0%	0.0%	0.0%	5.9%	0.0%	0.0%	2.2%	1.5%	1.9%
PHF	0.50	0.55	0.00	0.64	0.58	0.67	0.63	0.80	0.63	0.50	0.75	0.71	0.25	0.50	0.80	0.72	0.92

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	3	16	0	0	13	17	7	0	9	3	2	0	1	17	50	0	138	1	1	0	0
7:15 AM	5	21	0	0	14	19	8	0	10	4	3	0	1	20	44	0	149	1	1	0	1
7:30 AM	4	24	0	0	14	23	12	0	9	4	5	0	3	16	44	0	158	1	1	0	2
7:45 AM	3	25	2	0	13	21	18	0	10	5	5	0	2	15	37	0	156	1	3	0	3
8:00 AM	4	23	3	0	12	18	19	0	8	7	7	0	2	16	28	0	147	0	2	1	4

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:20 AM to 8:20 AM

NE Village St & NE Market Dr

Tuesday, March 06, 2018
7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:40 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	1	0	0	1	1	0	0	1	0	0	1	1	3

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
7:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	1	0	0	1	1	0	0	1	0	0	1	1	3

Heavy Vehicle Peak Hour Summary
7:20 AM to 8:20 AM

By Approach	Northbound NE Village St			Southbound NE Village St			Eastbound NE Market Dr			Westbound NE Market Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	2	3	1	0	1	1	1	2	3
PHF	0.00			0.25			0.25			0.25			0.75

By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	1	0	0	1	1	0	0	1	0	0	1	1	3
PHF	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.25	0.00	0.00	0.25	0.00	0.00	0.25	0.25	0.75

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

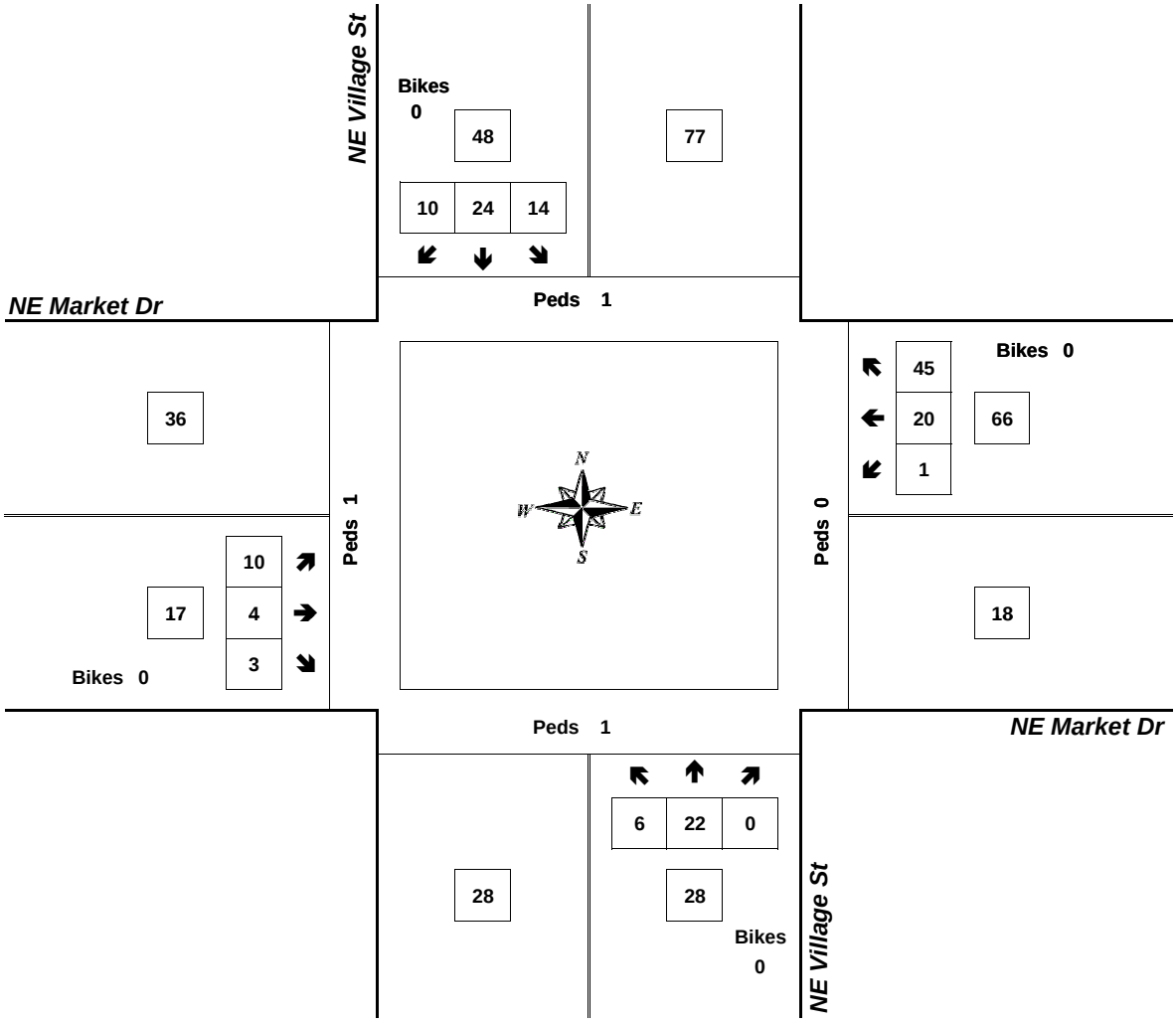
Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	2
7:15 AM	0	0	0	0	1	0	0	1	1	0	0	1	0	0	1	1	3
7:30 AM	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1

Peak Hour Summary

Clay Carney
(503) 833-2740

NE Village St & NE Market Dr

7:20 AM to 8:20 AM
Tuesday, March 06, 2018

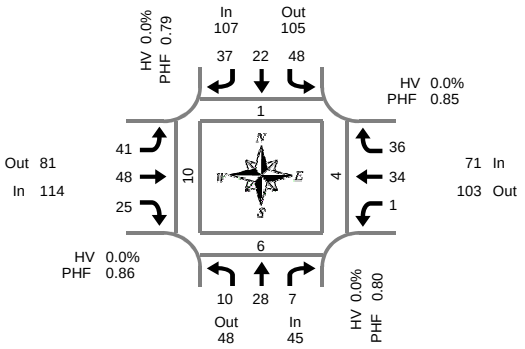


Approach	PHF	HV%	Volume
EB	0.71	5.9%	17
WB	0.72	1.5%	66
NB	0.64	0.0%	28
SB	0.80	2.1%	48
Intersection	0.92	1.9%	159

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:00 PM to 5:00 PM

NE Village St & NE Market Dr

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	2	1	0	0	8	3	2	0	4	5	2	0	0	5	5	0	37	0	1	0	1
4:05 PM	1	1	0	0	2	2	3	0	3	4	5	0	1	3	4	0	29	0	0	0	0
4:10 PM	0	3	2	0	2	2	3	0	3	4	2	0	0	2	1	0	24	0	0	0	1
4:15 PM	1	4	0	0	3	1	2	0	3	5	2	0	0	3	3	0	27	1	0	2	2
4:20 PM	0	2	0	0	4	3	5	2	3	7	2	0	0	2	2	0	30	0	1	2	0
4:25 PM	3	3	1	0	2	2	3	0	4	6	1	0	0	4	0	0	29	0	2	0	1
4:30 PM	0	2	2	0	3	2	6	0	5	1	3	0	0	3	0	0	27	0	0	0	0
4:35 PM	0	1	1	0	4	1	5	0	1	3	2	0	0	1	6	0	25	0	0	0	0
4:40 PM	0	4	0	0	6	3	4	0	5	6	2	0	0	4	4	0	38	0	0	0	0
4:45 PM	3	1	0	0	6	1	0	0	5	3	2	0	0	2	3	1	26	0	0	0	0
4:50 PM	0	3	0	0	2	1	1	0	4	1	1	0	0	2	4	0	19	0	2	0	4
4:55 PM	0	3	1	0	6	1	3	0	1	3	1	0	0	3	4	0	26	0	0	0	1
5:00 PM	0	1	0	0	5	3	6	0	4	3	2	0	0	3	1	0	28	0	1	0	0
5:05 PM	0	3	0	0	2	4	0	0	7	1	2	0	0	2	4	0	25	0	0	0	0
5:10 PM	0	2	2	0	0	3	1	0	2	5	1	0	1	3	2	0	22	0	0	0	0
5:15 PM	1	4	0	0	2	6	0	0	1	3	2	0	0	1	4	0	24	0	0	0	0
5:20 PM	0	3	0	0	3	2	1	0	2	3	2	0	0	2	2	0	20	0	0	0	0
5:25 PM	0	3	0	0	0	1	3	0	5	3	3	0	0	3	2	0	23	0	2	0	2
5:30 PM	1	3	0	0	7	2	0	0	0	2	1	0	0	2	0	0	18	0	1	0	0
5:35 PM	1	2	1	0	1	3	0	0	4	1	1	0	1	5	4	0	24	0	0	0	0
5:40 PM	0	2	0	0	4	3	0	0	3	1	3	0	0	1	6	0	23	0	1	0	1
5:45 PM	1	2	0	0	2	2	0	0	1	5	0	0	0	1	2	0	16	0	0	0	0
5:50 PM	0	1	0	0	3	4	2	0	6	1	0	0	0	1	5	0	23	0	3	0	1
5:55 PM	1	0	0	0	4	2	0	0	3	3	0	0	0	1	1	0	15	0	0	0	0
Total Survey	15	54	10	0	81	57	50	2	79	79	42	0	3	59	69	1	598	1	14	4	14

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	3	5	2	0	12	7	8	0	10	13	9	0	1	10	10	0	90	0	1	0	2
4:15 PM	4	9	1	0	9	6	10	2	10	18	5	0	0	9	5	0	86	1	3	4	3
4:30 PM	0	7	3	0	13	6	15	0	11	10	7	0	0	8	10	0	90	0	0	0	0
4:45 PM	3	7	1	0	14	3	4	0	10	7	4	0	0	7	11	1	71	0	2	0	5
5:00 PM	0	6	2	0	7	10	7	0	13	9	5	0	1	8	7	0	75	0	1	0	0
5:15 PM	1	10	0	0	5	9	4	0	8	9	7	0	0	6	8	0	67	0	2	0	2
5:30 PM	2	7	1	0	12	8	0	0	7	4	5	0	1	8	10	0	65	0	2	0	1
5:45 PM	2	3	0	0	9	8	2	0	10	9	0	0	0	3	8	0	54	0	3	0	1
Total Survey	15	54	10	0	81	57	50	2	79	79	42	0	3	59	69	1	598	1	14	4	14

Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	45	48	93	0	107	105	212	2	114	81	195	0	71	103	174	1	337
%HV	0.0%				0.0%				0.0%				0.0%				0.0%
PHF	0.80				0.79				0.86				0.85				0.94

Pedestrians Crosswalk			
North	South	East	West
1	6	4	10

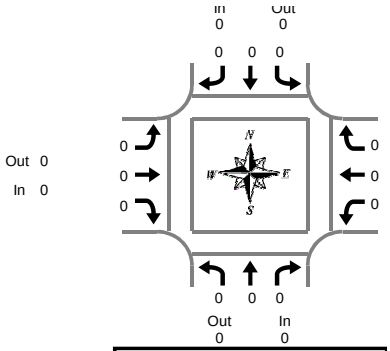
By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	10	28	7	45	48	22	37	107	41	48	25	114	1	34	36	71	337
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PHF	0.63	0.78	0.44	0.80	0.75	0.79	0.62	0.79	0.73	0.67	0.69	0.86	0.25	0.85	0.69	0.85	0.94

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	10	28	7	0	48	22	37	2	41	48	25	0	1	34	36	1	337	1	6	4	10
4:15 PM	7	29	7	0	43	25	36	2	44	44	21	0	1	32	33	1	322	1	6	4	8
4:30 PM	4	30	6	0	39	28	30	0	42	35	23	0	1	29	36	1	303	0	5	0	7
4:45 PM	6	30	4	0	38	30	15	0	38	29	21	0	2	29	36	1	278	0	7	0	8
5:00 PM	5	26	3	0	33	35	13	0	38	31	17	0	2	25	33	0	261	0	8	0	4

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:00 PM to 5:00 PM

NE Village St & NE Market Dr

Tuesday, March 06, 2018
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2

Heavy Vehicle Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound NE Village St			Southbound NE Village St			Eastbound NE Market Dr			Westbound NE Market Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.00			0.00			0.00			0.00			0.00

By Movement	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

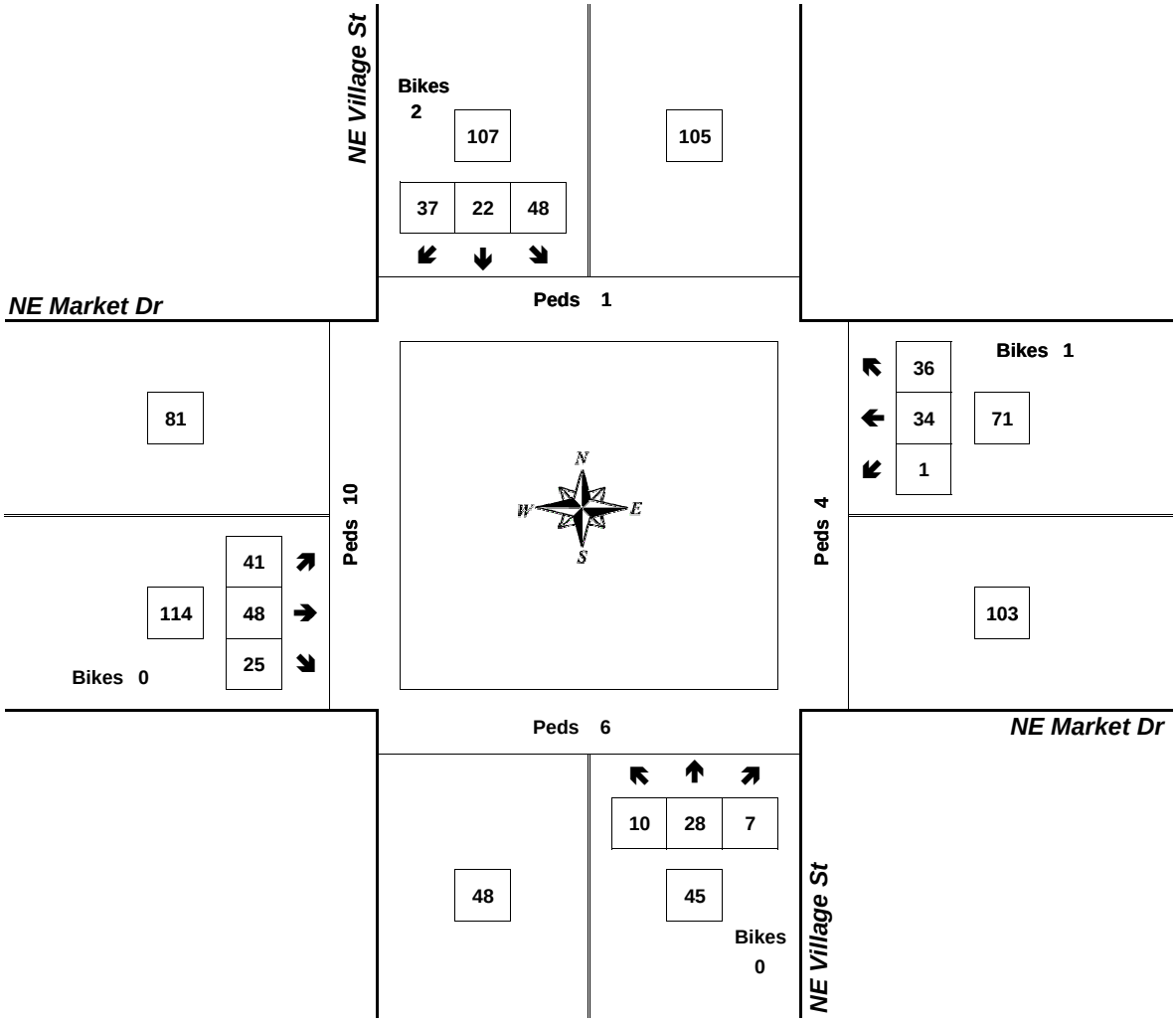
Interval Start Time	Northbound NE Village St				Southbound NE Village St				Eastbound NE Market Dr				Westbound NE Market Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2

Peak Hour Summary

Clay Carney
(503) 833-2740

NE Village St & NE Market Dr

4:00 PM to 5:00 PM
Tuesday, March 06, 2018



Approach	PHF	HV%	Volume
EB	0.86	0.0%	114
WB	0.85	0.0%	71
NB	0.80	0.0%	45
SB	0.79	0.0%	107
Intersection	0.94	0.0%	337

Count Period: 4:00 PM to 6:00 PM

Highway Capacity Manual - Intersection Level of Service Criteria

LOS	Unsignalized/ Roundabout Average Delay (sec/veh)	Signalized Average Delay (sec/veh)	Description
A	≤ 10	≤ 10	Free flow
B	> 10 - 15	> 10 - 20	Stable flow (slight delays)
C	>15 - 25	> 20 - 35	Stable flow (acceptable delays)
D	> 25 - 35	> 35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	> 35 - 50	> 55 - 80	Unstable flow (intolerable delay)
F	> 50	> 80	Forced flow (jammed)

Source: Highway Capacity Manual, 6th Edition, Transportation Research Board

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	317	42	9	507	47	10
Future Vol, veh/h	317	42	9	507	47	10
Conflicting Peds, #/hr	0	8	8	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	391	52	11	626	58	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	451	0	1073	425
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	648	-
Critical Hdwy	-	-	4.15	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.245	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1094	-	244	629
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1086	-	240	624
Mov Cap-2 Maneuver	-	-	-	-	367	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	367	624	-	-	1086	-
HCM Lane V/C Ratio	0.158	0.02	-	-	0.01	-
HCM Control Delay (s)	16.6	10.9	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary
2: NE Village St & NE Halsey St

03/14/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	245	32	36	418	15	41	1	31	20	2	61
Future Volume (veh/h)	52	245	32	36	418	15	41	1	31	20	2	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	0.99		0.99	0.99		0.99
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	1826	1826	1826	1826	1826	1826	1856	1856	1856	1796	1796	1796
Adj Flow Rate, veh/h	63	299	39	44	510	18	50	1	38	24	2	74
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	5	5	5	5	5	5	3	3	3	7	7	7
Cap, veh/h	503	848	698	659	814	29	455	7	255	484	7	247
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	852	1826	1504	1013	1752	62	1298	40	1520	1297	40	1470
Grp Volume(v), veh/h	63	299	39	44	0	528	50	0	39	24	0	76
Grp Sat Flow(s),veh/h/ln	852	1826	1504	1013	0	1814	1298	0	1560	1297	0	1510
Q Serve(g_s), s	1.5	2.6	0.3	0.7	0.0	5.4	0.9	0.0	0.5	0.4	0.0	1.1
Cycle Q Clear(g_c), s	6.9	2.6	0.3	3.3	0.0	5.4	1.9	0.0	0.5	0.9	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.97	1.00		0.97
Lane Grp Cap(c), veh/h	503	848	698	659	0	843	455	0	262	484	0	253
V/C Ratio(X)	0.13	0.35	0.06	0.07	0.00	0.63	0.11	0.00	0.15	0.05	0.00	0.30
Avail Cap(c_a), veh/h	1169	2276	1874	1451	0	2261	1324	0	1307	1353	0	1265
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	4.2	3.6	5.2	0.0	5.0	9.8	0.0	8.7	9.1	0.0	8.9
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.0	0.0	0.8	0.1	0.0	0.3	0.0	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(50%),veh/ln	0.2	0.2	0.0	0.1	0.0	0.6	0.2	0.0	0.1	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	4.4	3.6	5.3	0.0	5.7	9.9	0.0	9.0	9.1	0.0	9.6
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		401			572			89			100	
Approach Delay, s/veh		4.9			5.7			9.5			9.5	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		8.6		15.9		8.6		15.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5		30.5		20.5		30.5				
Max Q Clear Time (g_c+I1), s		3.9		8.9		3.1		7.4				
Green Ext Time (p_c), s		0.3		2.2		0.4		3.6				

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	6	70	50	37
Future Vol, veh/h	4	0	6	70	50	37
Conflicting Peds, #/hr	4	0	0	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	7	82	59	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	185	85	107	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	804	974	1484	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	794	970	1478	-	-	-
Mov Cap-2 Maneuver	794	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	794	-	-
HCM Lane V/C Ratio	0.005	-	0.006	-	-
HCM Control Delay (s)	7.4	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	4	3	1	20	45	6	22	0	14	24	10
Future Vol, veh/h	10	4	3	1	20	45	6	22	0	14	24	10
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
Heavy Vehicles, %	6	6	6	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	4	3	1	22	49	7	24	0	15	26	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7	7.4	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	59%	2%	29%
Vol Thru, %	79%	24%	30%	50%
Vol Right, %	0%	18%	68%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	17	66	48
LT Vol	6	10	1	14
Through Vol	22	4	20	24
RT Vol	0	3	45	10
Lane Flow Rate	30	18	72	52
Geometry Grp	1	1	1	1
Degree of Util (X)	0.035	0.022	0.073	0.059
Departure Headway (Hd)	4.173	4.212	3.683	4.047
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	855	845	966	882
Service Time	2.214	2.261	1.729	2.083
HCM Lane V/C Ratio	0.035	0.021	0.075	0.059
HCM Control Delay	7.4	7.4	7	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	36	0	2	1
Future Vol, veh/h	0	15	36	0	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	42	0	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	42	0	-	0	60	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	18	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1567	-	-	-	947	1029
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1005	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1567	-	-	-	947	1029
Mov Cap-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1005	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1567	-	-	-	973
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	585	83	42	437	53	53
Future Vol, veh/h	585	83	42	437	53	53
Conflicting Peds, #/hr	0	13	12	0	13	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	657	93	47	491	60	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	763	0	1315	729
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	598	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	850	-	174	423
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	549	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	839	-	160	413
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	542	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	413	-	-	839	-
HCM Lane V/C Ratio	0.206	0.144	-	-	0.056	-
HCM Control Delay (s)	20.7	15.2	-	-	9.5	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.5	-	-	0.2	-

HCM 6th Signalized Intersection Summary
2: NE Village St & NE Halsey St

03/14/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	541	56	42	399	11	51	6	76	18	6	37
Future Volume (veh/h)	37	541	56	42	399	11	51	6	76	18	6	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	0.99		0.97	0.97		0.93	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	588	61	46	434	12	55	7	83	20	7	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	2	2	2	2	2	2
Cap, veh/h	548	897	730	439	861	24	489	24	283	447	48	272
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	941	1870	1523	772	1795	50	1315	117	1387	1262	234	1336
Grp Volume(v), veh/h	40	588	61	46	0	446	55	0	90	20	0	47
Grp Sat Flow(s),veh/h/ln	941	1870	1523	772	0	1845	1315	0	1504	1262	0	1570
Q Serve(g_s), s	0.9	6.8	0.6	1.4	0.0	4.7	1.0	0.0	1.4	0.4	0.0	0.7
Cycle Q Clear(g_c), s	5.6	6.8	0.6	8.2	0.0	4.7	1.7	0.0	1.4	1.8	0.0	0.7
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.92	1.00		0.85
Lane Grp Cap(c), veh/h	548	897	730	439	0	884	489	0	307	447	0	320
V/C Ratio(X)	0.07	0.66	0.08	0.10	0.00	0.50	0.11	0.00	0.29	0.04	0.00	0.15
Avail Cap(c_a), veh/h	1140	2073	1688	924	0	2045	1123	0	1032	1055	0	1077
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.0	5.6	4.0	8.7	0.0	5.1	10.0	0.0	9.6	10.4	0.0	9.3
Incr Delay (d2), s/veh	0.1	0.8	0.0	0.1	0.0	0.4	0.1	0.0	0.5	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.1	0.1	0.2	0.0	0.7	0.2	0.0	0.4	0.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	6.4	4.1	8.8	0.0	5.5	10.1	0.0	10.1	10.4	0.0	9.5
LnGrp LOS	A	A	A	A	A	A	B	A	B	B	A	A
Approach Vol, veh/h		689			492			145			67	
Approach Delay, s/veh		6.3			5.8			10.1			9.8	
Approach LOS		A			A			B			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.3		18.1		10.3		18.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		31.5		19.5		31.5				
Max Q Clear Time (g_c+I1), s		3.7		8.8		3.8		10.2				
Green Ext Time (p_c), s		0.6		4.3		0.2		3.0				

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	5	0	111	101	1
Future Vol, veh/h	27	5	0	111	101	1
Conflicting Peds, #/hr	12	12	12	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	6	0	132	120	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	277	145	133	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	144	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	713	902	1452	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	697	882	1435	-	-	-
Mov Cap-2 Maneuver	697	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	873	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1435	-	721	-	-
HCM Lane V/C Ratio	-	-	0.053	-	-
HCM Control Delay (s)	0	-	10.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	48	25	1	34	36	10	28	7	48	22	37
Future Vol, veh/h	41	48	25	1	34	36	10	28	7	48	22	37
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	51	27	1	36	38	11	30	7	51	23	39
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	7.5	7.7	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	36%	1%	45%
Vol Thru, %	62%	42%	48%	21%
Vol Right, %	16%	22%	51%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	114	71	107
LT Vol	10	41	1	48
Through Vol	28	48	34	22
RT Vol	7	25	36	37
Lane Flow Rate	48	121	76	114
Geometry Grp	1	1	1	1
Degree of Util (X)	0.059	0.145	0.087	0.136
Departure Headway (Hd)	4.445	4.319	4.13	4.304
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	808	833	870	836
Service Time	2.46	2.331	2.142	2.318
HCM Lane V/C Ratio	0.059	0.145	0.087	0.136
HCM Control Delay	7.7	8.1	7.5	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.3	0.5

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	81	0	84	36
Future Vol, veh/h	0	30	81	0	84	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	35	95	0	99	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	95	0	-	0	130	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	35	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1499	-	-	-	864	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1499	-	-	-	864	962
Mov Cap-2 Maneuver	-	-	-	-	864	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	987	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1499	-	-	-	891
HCM Lane V/C Ratio	-	-	-	-	0.158
HCM Control Delay (s)	0	-	-	-	9.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Trip Generation Calculation Worksheet

Land Use Description: Multi-Family Housing (Low-Rise)
ITE Land Use Code: 220
Independent Variable: Dwelling Units
Quantity: 71 Dwelling Units

Summary of ITE Trip Generation Data

AM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.46 trips per dwelling unit
Directional Distribution: 23% Entering 77% Exiting

PM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.56 trips per dwelling unit
Directional Distribution: 63% Entering 37% Exiting

Total Weekday Traffic
Trip Rate: 7.32 trips per dwelling unit
Directional Distribution: 50% Entering 50% Exiting

Site Trip Generation Calculations

71 Dwelling Units

	Entering	Exiting	Total
AM Peak Hour	8	25	33
PM Peak Hour	25	15	40
Weekday	260	260	520

Data Source: *Trip Generation Manual, 10th Edition* , Institute of Transportation Engineers, 2017

Trip Generation Calculation Worksheet

Land Use Description: Shopping Center
ITE Land Use Code: 820
Independent Variable: Gross Floor Area
Quantity: 4.6 Thousand Square Feet

Summary of ITE Trip Generation Data

AM Peak Hour of Adjacent Street Traffic
Trip Rate: 0.94 trips per ksf
Directional Distribution: 62% Entering 38% Exiting

PM Peak Hour of Adjacent Street Traffic
Trip Rate: 3.81 trips per ksf
Directional Distribution: 48% Entering 52% Exiting

Total Weekday Traffic
Trip Rate: 37.75 trips per ksf
Directional Distribution: 50% Entering 50% Exiting

Site Trip Generation Calculations

4.6 ksf Shopping Center

	Entering	Exiting	Total
AM Peak Hour	2	2	4
PM Peak Hour	8	9	17
Weekday	86	86	172

Data Source: *Trip Generation Manual, 10th Edition* , Institute of Transportation Engineers, 2017

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Fairview Village Mixed Use	**Organization:**	Ard Engineering
Project Location:	Fairview, Oregon	**Performed By:**	Michael Ard, PE
Scenario Description:	Background plus Site Trips	**Date:**	3/12/2018
Analysis Year:	2020	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	4,600	square feet	17	8	9
Restaurant				0		
Cinema/Entertainment				0		
Residential	220	71	dwelling units	40	25	15
Hotel				0		
All Other Land Uses[2]				0		
				57	33	24

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	1.20	0%	0%	1.20	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.20	0%	0%	1.20	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					100	
Restaurant						
Cinema/Entertainment						
Residential		100				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	69	40	29
Internal Capture Percentage	12%	10%	14%
External Vehicle-Trips[5]	52	31	21
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	27%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	10%	6%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).
[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be
[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.
[6]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	330	44	9	527	49	10
Future Vol, veh/h	330	44	9	527	49	10
Conflicting Peds, #/hr	0	8	8	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	407	54	11	651	60	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	469	0	1115	442
Stage 1	-	-	-	-	442	-
Stage 2	-	-	-	-	673	-
Critical Hdwy	-	-	4.15	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.245	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1077	-	230	615
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	507	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1069	-	226	610
Mov Cap-2 Maneuver	-	-	-	-	355	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	507	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	355	610	-	-	1069	-
HCM Lane V/C Ratio	0.17	0.02	-	-	0.01	-
HCM Control Delay (s)	17.2	11	-	-	8.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary
2: NE Village St & NE Halsey St

03/14/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	255	33	37	435	16	43	1	32	21	2	63
Future Volume (veh/h)	54	255	33	37	435	16	43	1	32	21	2	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	0.99		0.99	0.99		0.99
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	1826	1826	1826	1826	1826	1826	1856	1856	1856	1796	1796	1796
Adj Flow Rate, veh/h	66	311	40	45	530	20	52	1	39	26	2	77
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	5	5	5	5	5	5	3	3	3	7	7	7
Cap, veh/h	491	867	714	653	830	31	444	7	256	475	6	247
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	835	1826	1504	1001	1748	66	1294	39	1520	1296	38	1471
Grp Volume(v), veh/h	66	311	40	45	0	550	52	0	40	26	0	79
Grp Sat Flow(s),veh/h/ln	835	1826	1504	1001	0	1813	1294	0	1559	1296	0	1509
Q Serve(g_s), s	1.6	2.7	0.4	0.8	0.0	5.8	0.9	0.0	0.6	0.4	0.0	1.2
Cycle Q Clear(g_c), s	7.4	2.7	0.4	3.5	0.0	5.8	2.1	0.0	0.6	1.0	0.0	1.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.98	1.00		0.97
Lane Grp Cap(c), veh/h	491	867	714	653	0	861	444	0	262	475	0	254
V/C Ratio(X)	0.13	0.36	0.06	0.07	0.00	0.64	0.12	0.00	0.15	0.05	0.00	0.31
Avail Cap(c_a), veh/h	1104	2208	1819	1388	0	2193	1278	0	1267	1310	0	1227
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.8	4.2	3.6	5.3	0.0	5.0	10.1	0.0	9.0	9.4	0.0	9.2
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.0	0.0	0.8	0.1	0.0	0.3	0.0	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(50%),veh/ln	0.2	0.3	0.0	0.1	0.0	0.6	0.2	0.0	0.1	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	4.4	3.6	5.3	0.0	5.8	10.2	0.0	9.2	9.4	0.0	9.9
LnGrp LOS	A	A	A	A	A	A	B	A	A	A	A	A
Approach Vol, veh/h		417			595			92			105	
Approach Delay, s/veh		4.9			5.7			9.8			9.8	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		8.7		16.5		8.7		16.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		20.5		30.5		20.5		30.5				
Max Q Clear Time (g_c+I1), s		4.1		9.4		3.2		7.8				
Green Ext Time (p_c), s		0.3		2.3		0.4		3.8				

Intersection Summary	
HCM 6th Ctrl Delay	6.1
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	6	73	52	38
Future Vol, veh/h	4	0	6	73	52	38
Conflicting Peds, #/hr	4	0	0	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	7	86	61	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	192	88	110	0	-	0
Stage 1	88	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	797	970	1480	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	787	966	1474	-	-	-
Mov Cap-2 Maneuver	787	-	-	-	-	-
Stage 1	927	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1474	-	787	-	-
HCM Lane V/C Ratio	0.005	-	0.006	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	4	3	1	21	47	6	23	0	15	25	10
Future Vol, veh/h	10	4	3	1	21	47	6	23	0	15	25	10
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
Heavy Vehicles, %	6	6	6	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	4	3	1	23	51	7	25	0	16	27	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	59%	1%	30%
Vol Thru, %	79%	24%	30%	50%
Vol Right, %	0%	18%	68%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	17	69	50
LT Vol	6	10	1	15
Through Vol	23	4	21	25
RT Vol	0	3	47	10
Lane Flow Rate	32	18	75	54
Geometry Grp	1	1	1	1
Degree of Util (X)	0.037	0.022	0.077	0.061
Departure Headway (Hd)	4.179	4.22	3.69	4.06
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	853	843	965	879
Service Time	2.222	2.272	1.737	2.099
HCM Lane V/C Ratio	0.038	0.021	0.078	0.061
HCM Control Delay	7.4	7.4	7	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	37	0	2	1
Future Vol, veh/h	0	15	37	0	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	44	0	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	44	0	-	0	62	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	18	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1564	-	-	-	944	1026
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	1005	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1564	-	-	-	944	1026
Mov Cap-2 Maneuver	-	-	-	-	944	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	1005	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1564	-	-	-	970
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	609	86	44	455	55	55
Future Vol, veh/h	609	86	44	455	55	55
Conflicting Peds, #/hr	0	13	12	0	13	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	684	97	49	511	62	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	794	0	1368	758
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	622	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	827	-	162	407
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	535	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	817	-	149	397
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	529	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	276	397	-	-	817	-
HCM Lane V/C Ratio	0.224	0.156	-	-	0.061	-
HCM Control Delay (s)	21.8	15.7	-	-	9.7	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.5	-	-	0.2	-

HCM 6th Signalized Intersection Summary
2: NE Village St & NE Halsey St

03/14/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	563	58	44	415	11	53	6	79	19	6	38
Future Volume (veh/h)	38	563	58	44	415	11	53	6	79	19	6	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	0.99		0.97	0.97		0.93	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	612	63	48	451	12	58	7	86	21	7	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	2	2	2	2	2	2
Cap, veh/h	541	915	746	428	880	23	479	23	282	435	46	272
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	926	1870	1524	754	1797	48	1313	113	1389	1259	229	1340
Grp Volume(v), veh/h	41	612	63	48	0	463	58	0	93	21	0	48
Grp Sat Flow(s),veh/h/ln	926	1870	1524	754	0	1845	1313	0	1503	1259	0	1568
Q Serve(g_s), s	0.9	7.3	0.6	1.5	0.0	5.0	1.1	0.0	1.5	0.4	0.0	0.7
Cycle Q Clear(g_c), s	5.9	7.3	0.6	8.8	0.0	5.0	1.8	0.0	1.5	2.0	0.0	0.7
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.92	1.00		0.85
Lane Grp Cap(c), veh/h	541	915	746	428	0	903	479	0	305	435	0	318
V/C Ratio(X)	0.08	0.67	0.08	0.11	0.00	0.51	0.12	0.00	0.31	0.05	0.00	0.15
Avail Cap(c_a), veh/h	1086	2015	1641	871	0	1988	1089	0	1002	1019	0	1046
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	5.7	4.0	9.0	0.0	5.1	10.3	0.0	9.9	10.7	0.0	9.6
Incr Delay (d2), s/veh	0.1	0.9	0.0	0.1	0.0	0.5	0.1	0.0	0.6	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.2	0.1	0.2	0.0	0.8	0.3	0.0	0.4	0.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	6.5	4.0	9.1	0.0	5.5	10.5	0.0	10.5	10.8	0.0	9.8
LnGrp LOS	A	A	A	A	A	A	B	A	B	B	A	A
Approach Vol, veh/h		716			511			151			69	
Approach Delay, s/veh		6.3			5.9			10.5			10.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.4		18.8		10.4		18.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		31.5		19.5		31.5				
Max Q Clear Time (g_c+I1), s		3.8		9.3		4.0		10.8				
Green Ext Time (p_c), s		0.6		4.5		0.2		3.1				

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	5	0	115	105	1
Future Vol, veh/h	28	5	0	115	105	1
Conflicting Peds, #/hr	12	12	12	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	6	0	137	125	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	287	150	138	0	-	0
Stage 1	138	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	703	896	1446	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	879	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	688	876	1429	-	-	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	869	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1429	-	711	-	-
HCM Lane V/C Ratio	-	-	0.055	-	-
HCM Control Delay (s)	0	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	50	26	1	35	37	10	29	7	50	23	38
Future Vol, veh/h	43	50	26	1	35	37	10	29	7	50	23	38
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	53	28	1	37	39	11	31	7	53	24	40
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	7.6	7.8	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	36%	1%	45%
Vol Thru, %	63%	42%	48%	21%
Vol Right, %	15%	22%	51%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	46	119	73	111
LT Vol	10	43	1	50
Through Vol	29	50	35	23
RT Vol	7	26	37	38
Lane Flow Rate	49	127	78	118
Geometry Grp	1	1	1	1
Degree of Util (X)	0.061	0.152	0.09	0.142
Departure Headway (Hd)	4.471	4.336	4.15	4.328
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	803	829	866	831
Service Time	2.486	2.351	2.164	2.341
HCM Lane V/C Ratio	0.061	0.153	0.09	0.142
HCM Control Delay	7.8	8.1	7.6	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.3	0.5

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	32	84	0	87	37
Future Vol, veh/h	0	32	84	0	87	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	99	0	102	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	99	0	-	0	137	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1494	-	-	-	856	957
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1494	-	-	-	856	957
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	984	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1494	-	-	-	884
HCM Lane V/C Ratio	-	-	-	-	0.165
HCM Control Delay (s)	0	-	-	-	9.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	47	9	530	58	10
Future Vol, veh/h	331	47	9	530	58	10
Conflicting Peds, #/hr	0	8	8	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	409	58	11	654	72	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	475	0	1122	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	676	-
Critical Hdwy	-	-	4.15	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.245	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1072	-	228	612
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1064	-	224	607
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	505	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	607	-	-	1064	-
HCM Lane V/C Ratio	0.203	0.02	-	-	0.01	-
HCM Control Delay (s)	17.8	11.1	-	-	8.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary
2: NE Village St & NE Halsey St

03/14/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	255	34	41	434	16	47	2	41	21	2	63
Future Volume (veh/h)	54	255	34	41	434	16	47	2	41	21	2	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	0.99		0.99	0.99		0.99
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	1826	1826	1826	1826	1826	1826	1856	1856	1856	1796	1796	1796
Adj Flow Rate, veh/h	66	311	41	50	529	20	57	2	50	26	2	77
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	5	5	5	5	5	5	3	3	3	7	7	7
Cap, veh/h	488	865	712	649	827	31	447	10	260	468	7	254
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	836	1826	1504	1001	1747	66	1295	60	1502	1283	38	1471
Grp Volume(v), veh/h	66	311	41	50	0	549	57	0	52	26	0	79
Grp Sat Flow(s),veh/h/ln	836	1826	1504	1001	0	1813	1295	0	1562	1283	0	1509
Q Serve(g_s), s	1.6	2.8	0.4	0.8	0.0	5.8	1.0	0.0	0.7	0.5	0.0	1.2
Cycle Q Clear(g_c), s	7.5	2.8	0.4	3.6	0.0	5.8	2.2	0.0	0.7	1.2	0.0	1.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.96	1.00		0.97
Lane Grp Cap(c), veh/h	488	865	712	649	0	859	447	0	270	468	0	261
V/C Ratio(X)	0.14	0.36	0.06	0.08	0.00	0.64	0.13	0.00	0.19	0.06	0.00	0.30
Avail Cap(c_a), veh/h	1094	2188	1803	1374	0	2173	1267	0	1259	1280	0	1216
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.9	4.3	3.6	5.4	0.0	5.1	10.1	0.0	9.0	9.5	0.0	9.2
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.1	0.0	0.8	0.1	0.0	0.3	0.0	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(50%),veh/ln	0.2	0.3	0.0	0.1	0.0	0.7	0.2	0.0	0.2	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	4.5	3.7	5.4	0.0	5.9	10.3	0.0	9.3	9.6	0.0	9.8
LnGrp LOS	A	A	A	A	A	A	B	A	A	A	A	A
Approach Vol, veh/h		418			599			109			105	
Approach Delay, s/veh		5.0			5.8			9.8			9.8	
Approach LOS		A			A			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	8.9	16.6	8.9	16.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	30.5	20.5	30.5
Max Q Clear Time (g_c+I1), s	4.2	9.5	3.2	7.8
Green Ext Time (p_c), s	0.4	2.3	0.4	3.8

Intersection Summary	
HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	3	7	74	52	43
Future Vol, veh/h	17	3	7	74	52	43
Conflicting Peds, #/hr	4	0	0	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	4	8	87	61	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	198	91	116	0	-	0
Stage 1	91	-	-	-	-	-
Stage 2	107	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	791	967	1473	-	-	-
Stage 1	933	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	780	963	1467	-	-	-
Mov Cap-2 Maneuver	780	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	913	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1467	-	803	-	-
HCM Lane V/C Ratio	0.006	-	0.029	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	5	3	1	22	47	6	24	0	17	26	10
Future Vol, veh/h	11	5	3	1	22	47	6	24	0	17	26	10
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
Heavy Vehicles, %	6	6	6	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	5	3	1	24	51	7	26	0	18	28	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.1	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	58%	1%	32%
Vol Thru, %	80%	26%	31%	49%
Vol Right, %	0%	16%	67%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	19	70	53
LT Vol	6	11	1	17
Through Vol	24	5	22	26
RT Vol	0	3	47	10
Lane Flow Rate	33	21	76	58
Geometry Grp	1	1	1	1
Degree of Util (X)	0.038	0.024	0.078	0.065
Departure Headway (Hd)	4.186	4.238	3.705	4.078
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	851	839	960	875
Service Time	2.23	2.292	1.755	2.117
HCM Lane V/C Ratio	0.039	0.025	0.079	0.066
HCM Control Delay	7.4	7.4	7.1	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.3	0.2

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	15	37	1	4	10
Future Vol, veh/h	3	15	37	1	4	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	18	44	1	5	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	45	0	-	0	71	45
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1563	-	-	-	933	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1563	-	-	-	930	1025
Mov Cap-2 Maneuver	-	-	-	-	930	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	997	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1563	-	-	-	996
HCM Lane V/C Ratio	0.002	-	-	-	0.017
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	612	96	44	457	62	55
Future Vol, veh/h	612	96	44	457	62	55
Conflicting Peds, #/hr	0	13	12	0	13	12
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	688	108	49	513	70	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	809	0	1379	767
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	624	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	817	-	159	402
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	534	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	807	-	146	392
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	19.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	392	-	-	807	-
HCM Lane V/C Ratio	0.254	0.158	-	-	0.061	-
HCM Control Delay (s)	22.6	15.9	-	-	9.8	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	1	0.6	-	-	0.2	-

HCM 6th Signalized Intersection Summary
2: NE Village St & NE Halsey St

03/14/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	562	62	55	414	11	56	6	86	19	7	38
Future Volume (veh/h)	38	562	62	55	414	11	56	6	86	19	7	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	0.99		0.97	0.97		0.93	0.97		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	611	67	60	450	12	61	7	93	21	8	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	2	2	2	2	2	2
Cap, veh/h	545	927	756	430	891	24	474	21	283	424	52	267
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	927	1870	1524	751	1797	48	1312	105	1396	1252	257	1317
Grp Volume(v), veh/h	41	611	67	60	0	462	61	0	100	21	0	49
Grp Sat Flow(s),veh/h/ln	927	1870	1524	751	0	1845	1312	0	1501	1252	0	1574
Q Serve(g_s), s	0.9	7.3	0.7	1.9	0.0	5.0	1.2	0.0	1.7	0.4	0.0	0.8
Cycle Q Clear(g_c), s	6.0	7.3	0.7	9.2	0.0	5.0	2.0	0.0	1.7	2.1	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.93	1.00		0.84
Lane Grp Cap(c), veh/h	545	927	756	430	0	915	474	0	304	424	0	319
V/C Ratio(X)	0.08	0.66	0.09	0.14	0.00	0.50	0.13	0.00	0.33	0.05	0.00	0.15
Avail Cap(c_a), veh/h	1063	1973	1608	850	0	1947	1065	0	980	988	0	1028
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	5.6	4.0	9.1	0.0	5.1	10.6	0.0	10.2	11.1	0.0	9.8
Incr Delay (d2), s/veh	0.1	0.8	0.1	0.1	0.0	0.4	0.1	0.0	0.6	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.2	0.1	0.2	0.0	0.8	0.3	0.0	0.5	0.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	6.4	4.0	9.2	0.0	5.5	10.7	0.0	10.8	11.1	0.0	10.0
LnGrp LOS	A	A	A	A	A	A	B	A	B	B	A	B
Approach Vol, veh/h		719			522			161			70	
Approach Delay, s/veh		6.3			5.9			10.8			10.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.6		19.3		10.6		19.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		31.5		19.5		31.5				
Max Q Clear Time (g_c+I1), s		4.0		9.3		4.1		11.2				
Green Ext Time (p_c), s		0.7		4.5		0.2		3.2				

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	7	2	115	106	16
Future Vol, veh/h	38	7	2	115	106	16
Conflicting Peds, #/hr	12	12	12	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	8	2	137	126	19

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	301	160	157	0	-	0
Stage 1	148	-	-	-	-	-
Stage 2	153	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	691	885	1423	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	674	865	1407	-	-	-
Mov Cap-2 Maneuver	674	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1407	-	698	-	-
HCM Lane V/C Ratio	0.002	-	0.077	-	-
HCM Control Delay (s)	7.6	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	51	26	1	37	38	10	30	7	51	24	39
Future Vol, veh/h	43	51	26	1	37	38	10	30	7	51	24	39
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	54	28	1	39	40	11	32	7	54	26	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	7.6	7.8	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	36%	1%	45%
Vol Thru, %	64%	43%	49%	21%
Vol Right, %	15%	22%	50%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	47	120	76	114
LT Vol	10	43	1	51
Through Vol	30	51	37	24
RT Vol	7	26	38	39
Lane Flow Rate	50	128	81	121
Geometry Grp	1	1	1	1
Degree of Util (X)	0.062	0.154	0.094	0.146
Departure Headway (Hd)	4.485	4.35	4.165	4.338
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	800	827	863	828
Service Time	2.503	2.365	2.18	2.353
HCM Lane V/C Ratio	0.063	0.155	0.094	0.146
HCM Control Delay	7.8	8.2	7.6	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.3	0.5

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	31	84	3	89	44
Future Vol, veh/h	11	31	84	3	89	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	36	99	4	105	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	103	0	-	0	163	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1489	-	-	-	828	954
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1489	-	-	-	821	954
Mov Cap-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	915	-
Stage 2	-	-	-	-	961	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1489	-	-	-	861
HCM Lane V/C Ratio	0.009	-	-	-	0.182
HCM Control Delay (s)	7.4	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF FAIRVIEW, MULTNOMAH COUNTY

HALSEY ST at MARKET DR, City of Fairview, Multnomah County, 01/01/2012 to 12/31/2016

1- 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D / A L C / U G S / S H L / W C K / O R	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
08197	N N N	08/10/2013	16	NE HALSEY ST	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
NONE		SA	0	NE MARKET DR	CN		UNKNOWN	N	DRY	TURN		PRVTE	E -S									000		00
N		2P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	81	F	OR-Y	028,004		000		02
N		45 32 1.8712679	-122 26 31.7178599																OR<25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									000		00
												PSNGR CAR		01	DRVR	NONE	62	F	OTH-Y N-RES	000		000		00

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URBAN NON-SYSTEM CRASH LISTING

CITY OF FAIRVIEW, MULTNOMAH COUNTY

HALSEY ST at VILLAGE ST, City of Fairview, Multnomah County, 01/01/2012 to 12/31/2016

1 - 4 of 5 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D / A C	R U G S	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
12957	N	N	N	N	11/29/2013	16	NE HALSEY ST	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										013	32,07
CITY					FR	0	VILLAGE ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
N					12P			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	76	M	OR-Y		052	000		32,07
N					45 32 2.7239999	-122 26 23.908272																OR<25					
														02	NONE 0	STOP											
															PRVTE	W -E									011	013	00
															PSNGR CAR		01	DRVR	NONE	53	F	OR-Y		000	000		00
																						OR<25					
														03	NONE 0	STOP											
															PRVTE	W -E									011		00
															PSNGR CAR		01	DRVR	NONE	53	F	OR-Y		000	000		00
																						OR<25					
08669	N	N	N	N	08/22/2014	16	NE HALSEY ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											32,07
CITY					FR	0	VILLAGE ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
N					10A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	50	M	OR-Y		052,026	000		32,07
N					45 32 2.72	-122 26 23.91																OR<25					
														02	NONE 0	STOP											
															PRVTE	E -W									011		00
															PSNGR CAR		01	DRVR	INJC	44	F	OR-Y		000	000		00
																						OR<25					
06865	N	N	N		06/28/2015	16	NE HALSEY ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27
NONE					SU	0	VILLAGE ST	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
N					5P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		026,016	038		27
N					45 32 2.72	-122 26 23.91																OR<25					
														02	NONE 0	STOP											
															PRVTE	E -W									011		00
															PSNGR CAR		01	DRVR	INJC	27	F	OR-Y		000	000		00
																						OR<25					
10573	N	N	N	N	10/03/2013	16	NE HALSEY ST	INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY					TH	0	VILLAGE ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W -E									000		00
N					2P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		000	000		00
N					45 32 2.7239999	-122 26 23.908272																OR<25					
														02	NONE 0	TURN-L											
															PRVTE	E -S									000		00
															PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		028	000		02
																						OR<25					
13636	N	N	N	N	12/16/2014	16	NE HALSEY ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY					TU	0	VILLAGE ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	E -S									000		00
N					4P			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	49	M	OR-Y		028,004	000		02
N					45 32 2.72	-122 26 23.91																OR<25					

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CITY OF FAIRVIEW, MULTNOMAH COUNTY

HALSEY ST at VILLAGE ST, City of Fairview, Multnomah County, 01/01/2012 to 12/31/2016

5 - 5 of 5 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E A L D C S U G R S C H W L O K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
											02	NONE 0	STRGHT												
												PRVTE	W -E									000		00
												PSNGR CAR		01	DRVR	INJC	67	F	OR-Y OR<25		000	000		00
											02	NONE 0	STRGHT												
												PRVTE	W -E									000		00
												PSNGR CAR		02	PSNG	INJB	72	F			000	000		00
											02	NONE 0	STRGHT												
												PRVTE	W -E									000		00
												PSNGR CAR		03	PSNG	INJB	71	F			000	000		00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF FAIRVIEW, MULTNOMAH COUNTY

VILLAGE ST at MARKET DR, City of Fairview, Multnomah County, 01/01/2012 to 12/31/2016

SER# INVEST RD DPT UNLOC?	S P E D	A L C	D R U G S	S C H L	W O R K	DATE DAY TIME LAT	CLASS DIST FROM LONG	CITY STREET FIRST STREET SECOND STREET LRS	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE

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Left-Turn Lane Warrant Analysis

Major-Street Approach at Stop-Controlled Intersection (2-Lane Roadway)

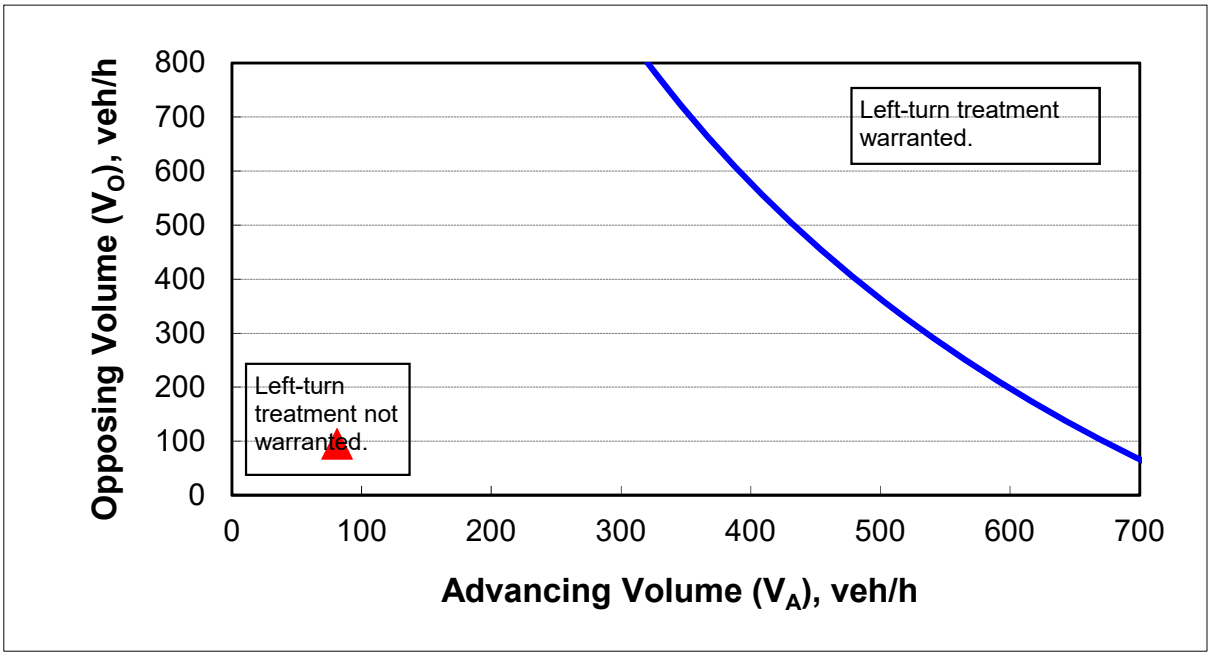
Location: NE Village Street at East Site Access
Scenario: 2020 Background plus Site Trips
Date: 3/13/2018

Variable	Value
85th percentile speed, mph:	20
Left turn volume (V_A), veh/h:	7
Percent of left-turns in advancing volume (V_A), %:	9%
Advancing volume (V_A), veh/h:	81
Opposing volume (V_O), veh/h:	95

Variable				Value
Limiting advancing volume (V_A), veh/h:				676
Guidance for determining the need for a major-road left-turn bay:				
Left-turn treatment NOT warranted.				

CALIBRATION CONSTANTS

Variable		Value
Average time for making left-turn, s:		3.0
Critical headway, s:		5.0
Average time for left-turn vehicle to clear the advancing lane, s:		1.9



Left-Turn Lane Warrant Analysis

Major-Street Approach at Stop-Controlled Intersection (2-Lane Roadway)

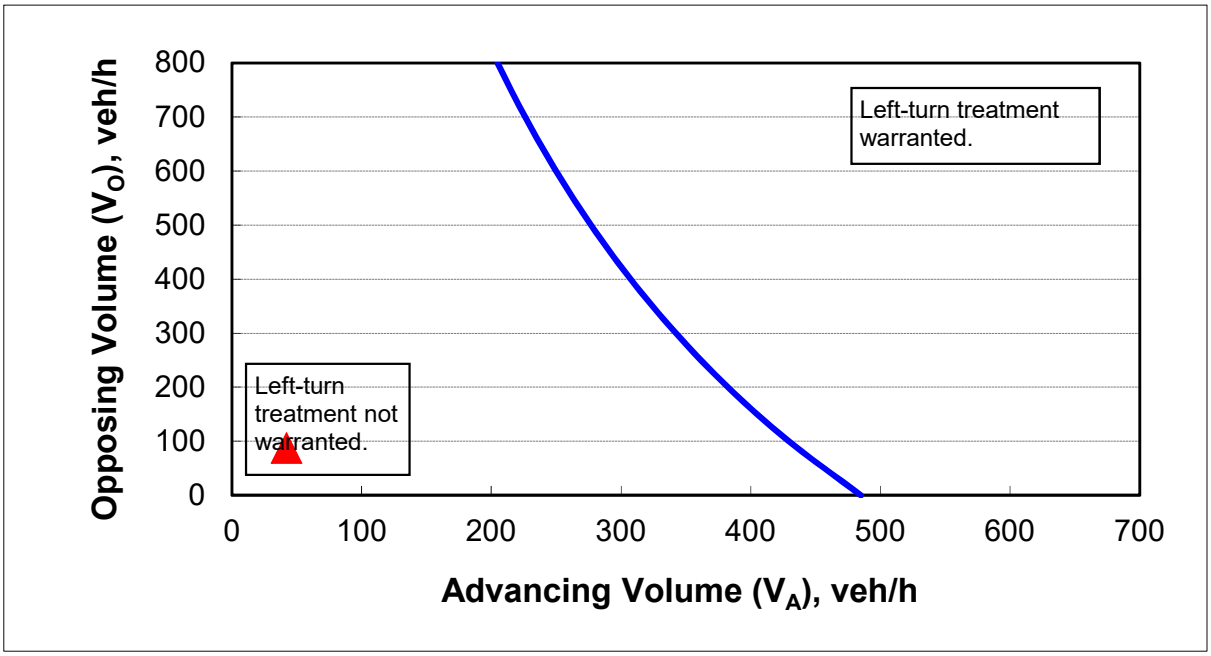
Location: NE Market Drive at South Site Access
Scenario: 2020 Background plus Site Trips
Date: 3/13/2018

Variable	Value
85th percentile speed, mph:	20
Left turn volume (V_A), veh/h:	11
Percent of left-turns in advancing volume (V_A), %:	26%
Advancing volume (V_A), veh/h:	42
Opposing volume (V_O), veh/h:	87

Variable				Value
Limiting advancing volume (V_A), veh/h:				436
Guidance for determining the need for a major-road left-turn bay:				
Left-turn treatment NOT warranted.				

CALIBRATION CONSTANTS

Variable		Value
Average time for making left-turn, s:		3.0
Critical headway, s:		5.0
Average time for left-turn vehicle to clear the advancing lane, s:		1.9



Preliminary Traffic Signal Warrant Analysis

Project Name: Fairview Village Mixed Use
Intersection: NE Halsey Street at NE Market Drive
Scenario: 2020 Background Plus Site Trips

Number of Major Street Lanes: 1 — PM Peak Hour Volume 1209 (sum of both approaches)
Number of Minor Street Lanes 1 — PM Peak Hour Volume 62 (highest-volume approach)[a]
Posted or 85th percentile speed > 40 mph: No
Isolated Population Less than 10,000: No

Warrant 1, Eight-Hour Vehicular Volume

Condition A - Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on minor street (total of both approaches)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on minor street (total of both approaches)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Warrant Anaylsis Calculations	8th Highest Hour[b]	Minimum Volume	Warrant Satisfied?
Condition A - Minimum Vehicular Volume			
Major Street Volume	677	500	
Minor Street Volume	35	150	**No**
Condition B - Interruption of Continuous Traffic			
Major Street Volume	677	750	
Minor Street Volume	35	75	**No**
Combination Warrant[c]			
Major Street Volume	677	600	
Minor Street Volume	35	120	**No**

[a] Minor-Street right turn volumes are reduced to account for the impact of right-turns on red.
[b] Eighth-highest hour volumes are calculated as 5.6 percent of the expected daily traffic volume.
[c] This warrant should be used only after adequate trial of other alternatives has failed to solve traffic problems.

Exhibit A-3

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

Geotechnical Engineering Report

Fairview Apartments

NE Market Drive and NE Village Street
Fairview, Oregon 97024

GeoPacific Engineering, Inc. Job No. 18-4838
February 28, 2018

14835 SW 72nd Avenue
Portland, Oregon 97224

Tel (503) 598-8445
Fax (503) 941-9281

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2 Site Aerial Map
3 Site Plan and Exploration Locations

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

February 28, 2018
Project No. 18-4822

Blackhawk Development, LLC, Inc.
1800 Blankenship Road, Suite #325
West Linn, Oregon 97068
Phone: (503) 742-1942
Email: Liz Edmunds, Blackhawk Development, Liz@blackhawkd.com

SUBJECT: **GEOTECHNICAL ENGINEERING REPORT**
FAIRVIEW APARTMENTS
NE MARKET DRIVE AND NE VILLAGE STREET
PROPERTY ID: R668078, R668079, AND R668077
FAIRVIEW, OREGON 97024

1.0 PROJECT INFORMATION

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site, and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-6363, dated January 17, 2018, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

Site Location:	NW Corner of NE Market Drive and NE Village Street Fairview, Oregon 97024 (see Figures 1 through 3)
Developer:	Blackhawk Development, LLC, Inc. 1800 Blankenship Road, Suite #325 West Linn, Oregon 97068 Phone: (503) 742-1942
Jurisdictional Agency:	Fairview, Oregon
Geotechnical Engineer:	GeoPacific Engineering, Inc 14835 SW 72nd Avenue Portland, Oregon 97224 Tel (503) 598-8445 Fax (503) 941-9281

2.0 SITE AND PROJECT DESCRIPTION

As indicated on Figures 1 through 3, the subject site is located on the northwest corner of NE Market Drive and NE Village Street. The site is approximately 1.5 acres in size and rectangular in shape. Topography gently slopes downward to the northeast, with site elevations ranging from approximately 200 feet above mean sea level (amsl) at the western site boundary to 190 feet amsl at the northeastern site boundary. The site is bordered to the south by Northeast Market Drive with commercial businesses across the street, Northeast Village Street to the east with undeveloped lots beyond, Fairview Post Office to the west, and Fairview VA Clinic to the north. Vegetation on the site primarily consists of short grasses. Historical aerial photography indicate that the site was previously a wooded area containing medium to large trees and shrubs. In 2015, the property was deforested, and graded during construction of the Fairview VA Clinic, located to the north of this site.

GeoPacific understands that the proposed development will consist of a mixed use building, associated parking and drive areas, and underground utilities. A grading plan has not been provided. However, we anticipate that cuts and fills will be on the order of 5 feet or less.

3.0 REGIONAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

According to the *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon (U.S. Geological Survey, Evarts and O'Connor, 2008),* the site is underlain by Pleistocene-aged, unconsolidated, gray, stratified, boulder to cobbly gravel and sand, deposited in thick sheets over older basin-fill deposits flanking the Columbia River. The sediments were deposited by outburst flooding of glacial Lake Missoula (Qfg), and are the gravel facies of catastrophic flood deposits, associated with repeated glacial outburst flooding of the Willamette Valley (Yeats et al., 1996). The last of these outburst floods occurred about 10,000 years ago. Boulders up to 13 feet in diameter have been observed within the site vicinity (Evarts, 2008).

Regional geologic mapping indicates that the catastrophic flood deposits are underlain by Pleistocene-aged alluvium (Qaas) consisting of unconsolidated to well-cemented sandy gravel deposited during glacially induced aggradational episodes from the ancestral Sandy River (Evarts, 2008). Underlying the ancestral Sandy River alluvium is the Tertiary-aged (2-65 million years ago) Troutdale formation - a partially cemented conglomerate and sandstone deposited by an ancestral Columbia River (Trimble, 1963). Regionally, the Troutdale Formation is informally divided into an upper and a lower member (Phillips, 1987). Lithologies in the upper member include lenticular layers of volcaniclastic (vitric) sand, quartzite-bearing gravel, fine-grained sand, silt and clay, micaceous quartz-rich sand, and conglomerate with a cumulative average thickness of 100 to 150 feet. The lower member consists primarily of laminated silty clay and sand with reported thicknesses in water well logs of up to 880 feet and is the equivalent of the Sandy River Mudstone.

The Web Soil Survey (United States Department of Agriculture, Natural Resource Conservation Service (USDA NRCS 2016 Website), indicates that near-surface soils primarily consist of the Multnomah Silt Loam soils series. Multnomah series soils generally consist of deep, well drained soils that formed in gravelly alluvium.

4.0 REGIONAL SEISMIC SETTING

At least four major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Portland Hills Fault Zone, the Lacamas Creek/Sandy River Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone.

4.1 Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults reportedly vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills, and is located approximately 8.2 miles west of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is located approximately 13.1 miles west of the site. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 9.6 miles west of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

According to the USGS Earthquake Hazards Program, the fault was originally mapped as a down-to-the-northeast normal fault, but has also been mapped as part of a regional-scale zone of right-lateral, oblique slip faults, and as a steep escarpment caused by asymmetrical folding above a south-west dipping, blind thrust fault. The Portland Hills fault offsets Miocene Columbia River Basalts, and Miocene to Pliocene sedimentary rocks of the Troutdale Formation. No fault scarps on surficial Quaternary deposits have been described along the fault trace, and the fault is mapped as buried by the Pleistocene aged Missoula flood deposits. No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

4.2 Lacamas Creek / Sandy River Fault Zone

The Lacamas Creek Fault intersects the northeast trending Sandy River Fault north of Camas, Washington at Lacamas Lake, approximately 4.5 miles northeast of the subject site. The Lacamas Creek Fault extends northwest to southeast, intersecting the northeast, southwest trending Sandy River Fault. According to the USGS Earthquake Hazards Program the fault has been mapped as a normal fault with down-to-the-southwest displacement, and has also been described as a steeply northeast or southwest-dipping, oblique, right-lateral, slip-fault. The trace of the Lacamas Lake fault is marked by the very linear lower reach of Lacamas Creek. No fault scarps on Quaternary surficial deposits have been described. The Lacamas Lake fault offsets Pliocene-aged

sedimentary conglomerates generally identified as the Troutdale formation, and Pliocene to Pleistocene aged basalts generally identified as the Boring Lava formation. Recent seismic reflection data across the probable trace of the fault under the Columbia River yielded no unequivocal evidence of displacement underlying the Missoula flood deposits, however, recorded mild seismic activity during the recent past indicates this area may be potentially seismogenic.

4.3 Gales Creek-Newberg-Mt. Angel Structural Zone

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies about 36.8 miles southwest of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault (the fault closest to the subject site); however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

According to the USGS Earthquake Hazards Program, the Mount Angel fault is mapped as a high-angle, reverse-oblique fault, which offsets Miocene rocks of the Columbia River Basalts, and Miocene and Pliocene sedimentary rocks. The fault appears to have controlled emplacement of the Frenchman Spring Member of the Wanapum Basalts, and thus must have a history that predates the Miocene age of these rocks. No unequivocal evidence of deformation of Quaternary deposits has been described, but a thick sequence of sediments deposited by the Missoula floods covers much of the southern part of the fault trace.

4.4 Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately along the Oregon Coast at depths of between 20 and 40 kilometers below the surface.

5.0 FIELD EXPLORATION AND SUBSURFACE CONDITIONS

Our site-specific explorations for this report were conducted on February 13, 2018. A total of five exploratory test pits (TP-1 through TP-5) were excavated at the site to a maximum depth of 7.5 feet below ground surface (bgs) using a backhoe excavator. The approximate locations of our

explorations are indicated on Figures 2 and 3. It should be noted that exploration locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

During the explorations, GeoPacific observed and recorded pertinent soil information such as color, stratigraphy, strength, and soil moisture content. Soils were classified in general accordance with the Unified Soil Classification System (USCS). Soil samples obtained during the explorations were placed in relatively air-tight plastic bags. At the completion of each test, the test pits were backfilled loosely with onsite soil. Summary exploration logs are attached.

The stratigraphic contacts shown on the individual test pit logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times. Soil and groundwater conditions encountered in the explorations are summarized below.

5.1 Soil Descriptions

Topsoil: The ground surface in test pits TP-3, and TP-4 was directly underlain by a moderately organic topsoil horizon. The observed soil consisted of moderately organic SILT (OL-ML), brown in color, and contained fine grass roots throughout. The moderately organic topsoil horizon generally extended to a depth of 6 inches below the ground surface.

Undocumented Fill: The ground surface in test pits TP-1, TP-2, and TP-5 was directly underlain by a layer of recycled concrete. The recycled concrete generally extended 6 to 8 inches below the ground surface, and contained pieces up to one inch in diameter. The layer contained fine grass roots in test pits TP-2, and TP-5.

Underlying the layer of recycled concrete in test pit TP-2 was moderately to highly organic SILT (OL-ML). The silt was dark brown, moist, and contained a high concentration of root and tree debris. Laboratory soils testing of a representative sample taken at 2 feet below the ground surface indicated an organic content of 10.7 percent, and a moisture content of 34.4 percent. The depth of undocumented fill extended to a depth of 2.5 feet below the ground surface in test pit TP-2.

Catastrophic Flood Deposits: Underlying the undocumented fill in test pit TP-2, the observed soil consisted of medium stiff, moist, brown SILT with sand (ML), the soil was of low plasticity, micaceous, and exhibited very strong orange and gray mottling. This soil layer extended to a depth of 6.25 feet in test pit TP-2. Laboratory soils testing of a representative sample taken at 4 feet below ground surface at test pit TP-2, indicated that the soil type classified as SILT with sand (ML) according to the USCS soil classification system, and as A-4(1) according the AASHTO standards. Sieve analysis indicated 78.0 percent by weight passing U.S. No. 200 sieve, and moisture content of 28.2 percent. Atterberg Limit testing indicated a liquid limit of 28.2, and a plasticity index of 2.2.

Underlying the topsoil in test pits TP-3, and TP-4, the undocumented fill in test pits TP-1, and TP-5, and the silt layer in test pit TP-2, soils were observed to consist of brown, moist, dense to very dense, silty GRAVEL, COBBLES, and BOULDERS with sand (GM), containing sub-rounded gravel to boulder sized rock up to 48 inches in diameter, with a sandy silt matrix. This layer of gravel, cobbles, and boulders was observed to extend beyond the maximum observed depth in all explorations, and beyond the maximum observed depth of 7.5 feet below the ground surface. Practical refusal was reached in this layer of densely arranged gravel, cobbles, and boulders at depths ranging from 3 to 7.5 feet below the ground surface using a small backhoe excavator.

5.2 Groundwater and Soil Moisture

On February 13, 2018, observed soil moisture conditions were generally moist throughout the observed subsurface profile. Groundwater was not encountered within our test pit explorations which extended to a maximum depth of 7.5 feet bgs. According to the *Estimated Depth to Groundwater in the Portland, Oregon Area, (United States Geological Survey, Snyder, 2018 website)*, groundwater is present at an approximate depth of 6 to 12 feet below the ground surface. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors. Perched groundwater may be encountered in localized areas. Seeps and springs may exist in areas not explored, and may become evident during site grading

6.0 CONCLUSIONS AND DESIGN RECOMMENDATIONS

Our site investigation indicates that the proposed construction appears to be geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project.

We anticipate that the primary geotechnical concern associated with development at the site will be difficult excavating conditions due to the presence of very dense gravel and boulders. The small backhoe excavator used in our field exploration reached practical refusal at depths ranging from 3 to 7.5 feet throughout the site (See Figures 2 and 3). In our explorations, we observed the presence of densely arranged boulders up to 48 inches in diameter. According to the *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon (U.S. Geological Survey, Evarts and O'Connor, 2008)*, boulders up to 13 feet in diameter have been observed within the site vicinity.

Our secondary geotechnical concern is the presence of undocumented fill observed on the southeastern portion of the site. We observed moderately to highly organic fill to a depth of 2.5 feet in test pit TP-2. Aerial photography from April of 2015, indicates that strippings from previous deforestation of the property, and development of the site to the north may have been spread throughout the eastern portion of the site (see site research for aerial photo).

6.1 Site Preparation Recommendations

Areas of proposed construction and areas to receive fill should be cleared of vegetation, and any organic and inorganic debris, and unsuitable soils. Inorganic debris and organic materials from clearing should be removed from the site. Organic-rich soils and root zones should then be stripped from construction areas of the site or where engineered fill is to be placed. Depth of

stripping of organic soils is estimated to be approximately 0 to 6 inches across the site. However, depths of organic soil layers may increase in areas where trees were once present.

The final depth of soil removal will be determined on the basis of a site inspection after the stripping/excavation has been performed. Stripped topsoil should be removed from the site. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative. Prior to placement of engineered fill, subgrade soils should be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and re-compacted.

If encountered, undocumented fills and any subsurface structures (dry wells, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be completely removed and the excavations backfilled with approved engineered fill. Highly to moderately organic undocumented fill was observed in test pit TP-2 to an observed depth of 2.5 feet below the ground surface.

GeoPacific should be consulted during site preparation to determine whether or not the existing undocumented fill may be used as engineered fill. Based on the results of our exploration, however, some of the existing undocumented fill across the site may not be suitable for use as engineered fill due to the significant amount of organic debris it contains. Use of the existing undocumented fill as engineered fill may require sorting operations.

Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below), or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

6.2 Engineered Fill

All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at the time of construction with the exceptions and additions noted herein. Areas proposed for fill placement should be prepared as described in the *Site Preparation Recommendations* section. Surface soils should then be scarified and recompacted prior to placement of structural fill. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 90 percent of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be

observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd^3, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency. During periods of wet-weather site earthwork may be impacted by soil moisture.

6.3 Excavating Conditions and Utility Trench Backfill

We anticipate that on-site soils can generally be excavated using conventional heavy equipment. Difficult excavating conditions were generally observed below depths ranging from 4 to 5 feet within our explorations. Practical refusal was reached on very dense gravel and boulders at depths of 3 to 7.5 feet below the ground surface in our explorations with the small backhoe used for our field explorations. Bedrock was not encountered within our test pits which extended to a maximum depth of 7.5 feet. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing native soils classify as Type C Soil and temporary excavation side slope inclinations as steep as 1.5H:1V may be assumed for planning purposes. These cut slope inclinations are applicable to excavations above the water table only.

Shallow, perched groundwater may be encountered during the wet weather season and should be anticipated in excavations and utility trenches. Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321 and jurisdictional standards. We recommend that structural trench backfill be compacted to at least 90 percent of the maximum dry density obtained by the Modified Proctor (ASTM D1557) or equivalent. Initial backfill lift thicknesses for a ¾”-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, at least one density test is taken for every 4 vertical feet of backfill on each 100-lineal-foot section of trench.

6.4 Erosion Control Considerations

During our field exploration program, we did not observe soil conditions that may be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw waddles, fiber rolls, and silt fences. If used, these erosion control devices should remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

6.5 Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and will be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent passing the No. 200 sieve. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed, and suitable compaction and site drainage is achieved; and

- Geotextile silt fences, straw waddles, and fiber rolls should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

6.6 Spread Foundations

The proposed structures may be supported on shallow foundations bearing on competent undisturbed, native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 18 inches below exterior grade.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft^2 for footings bearing on competent, native soil and/or engineered fill. Higher allowable bearing pressures are possible if footings are placed over a section of compacted base rock or if footings are bearing on the medium dense to dense gravel, cobbles, and boulders encountered at depths ranging from 0.5 to 6.25 feet in our explorations. If higher allowable bearing capacities are desired, GeoPacific may be consulted to provide additional recommendations. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading.

Wind, earthquakes, and unbalanced earth loads will subject the proposed structure to lateral forces. Lateral forces on a structure will be resisted by a combination of sliding resistance of its base or footing on the underlying soil and passive earth pressure against the buried portions of the structure. For use in design, a coefficient of friction of 0.42 may be assumed along the interface between the base of the footing and subgrade soils. Passive earth pressure for buried portions of structures may be calculated using an equivalent fluid weight of 320 pounds per cubic foot (pcf), assuming footings are cast against dense, natural soils or engineered fill. The recommended coefficient of friction and passive earth pressure values do not include a safety factor. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

6.7 Concrete Slab-on-Grade Floors

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation Recommendations* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content, and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium stiff, fine-grained soils anticipated to be present in the upper four feet at the site. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction, and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 95 percent of its maximum dry density as determined by ASTM D1557 (Modified Proctor) or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

6.8 Footing and Roof Drains

Construction should include typical measures for controlling subsurface water beneath the structure, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The client should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the structure given these other design elements incorporated into its construction. Appropriate design professionals should be consulting regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

If the proposed structures will have a raised floor, and no concrete slab-on-grade floors in living spaces are used, perimeter footing drains may be eliminated at the discretion of the geotechnical engineer based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to meet the street. In no case shall collected stormwater be allowed to flow freely over slope faces.

6.9 Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude 6.5H, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge

loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill).

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

6.10 Flexible Pavement Design

We understand that development at the site will include construction of private parking and drive areas. For the new private pavement section, we conservatively assume that the subgrade will exhibit a resilient modulus of at least 7,500, which correlates to a CBR value of 5. Based upon our understanding of the anticipated traffic which includes light-duty passenger vehicles, daily pickups and deliveries, and occasional fire trucks weighing up to 75,000 lbs. For design, we assume an initial ADT of 600 trips per day and 4 percent heavy trucks. Table 1 presents our recommended minimum dry-weather pavement section for the proposed pavement section, supporting 20 years of vehicle traffic.

Table 1 - Recommended Minimum Dry-Weather Pavement Section

Material Layer	Section Thickness (in)	Compaction Standard
Asphaltic Concrete (AC)	3	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾”-0 (leveling course)	2	95% of Modified Proctor ASTM D1557
Crushed Aggregate Base 1½”-0	10	95% of Modified Proctor ASTM D1557
Subgrade	12	95% of Standard Proctor ASTM D698 or Approved Native

Any pockets of organic debris or loose fill encountered during subgrade preparation should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

6.11 Wet Weather Construction Pavement Section

This section presents our recommendations for wet weather pavement section and construction for new pavement sections at the project. These wet weather pavement section recommendations are intended for use in situations where it is not feasible to compact the subgrade soils to project requirements, due to wet subgrade soil conditions, and/or construction during wet weather. Based on our site review, we recommend a wet weather section with a minimum subgrade deepening of 6 inches to accommodate a working subbase of additional 1½”-0 crushed rock. Geotextile fabric, Mirafi 500x or equivalent, should be placed on subgrade soils prior to placement of base rock.

In some instances, it may be preferable to use a subbase material in combination with over-excavation and increasing the thickness of the rock section. GeoPacific should be consulted for additional recommendations regarding use of additional subbase in wet weather pavement sections if it is desired to pursue this alternative. Cement treatment of the subgrade may also be considered instead of over-excavation. However, mixing and tilling of the soil may be difficult due to the shallow observed depth of cobbles and boulders throughout the site. For planning purposes, we anticipate that treatment of the onsite soils would involve mixing cement powder to approximately 6-8 percent cement content and a mixing depth on the order of 12 to 18 inches. The mixing depth and cement content will depend upon site conditions and moisture content of the subgrade during construction.

With implementation of the above recommendations, it is our opinion that the resulting pavement section will provide equivalent or greater structural strength than the dry weather pavement section

currently planned. However, it should be noted that construction in wet weather is risky and the performance of pavement subgrades depend on a number of factors including the weather conditions, the contractor's methods, and the amount of traffic the road is subjected to. There is a potential that soft spots may develop even with implementation of the wet weather provisions recommended in this letter. If soft spots in the subgrade are identified during roadway excavation, or develop prior to paving, the soft spots should be over-excavated and backfilled with additional crushed rock.

During subgrade excavation, care should be taken to avoid disturbing the subgrade soils. Removals should be performed using an excavator with a smooth-bladed bucket. Truck traffic should be limited until an adequate working surface has been established. We suggest that the crushed rock be spread using bulldozer equipment rather than dump trucks, to reduce the amount of traffic and potential disturbance of subgrade soils. Care should be taken to avoid over-compaction of the base course materials, which could create pumping, unstable subgrade soil conditions. Heavy and/or vibratory compaction efforts should be applied with caution. Following placement and compaction of the crushed rock to project specifications (95 percent of Modified Proctor), a finish proof-roll should be performed before paving.

The above recommendations are subject to field verification. GeoPacific should be on-site during construction to verify subgrade strength and to take density tests on the engineered fill, base rock and asphaltic pavement materials.

7.0 SEISMIC DESIGN

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2018 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake. Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2015 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2014). We recommend Site Class D be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the USGS (United States Geological Survey) 2018 Seismic Design Maps Summary Report are summarized in Table 2, and are based upon existing soil conditions.

Table 2 - Recommended Earthquake Ground Motion Parameters (USGS 2018)

Parameter	Value
Location (Lat, Long), degrees	45.533, -122.439
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Peak Ground Acceleration PGA_M	0.381 g
Short Period, S_s	0.962 g
1.0 Sec Period, S_1	0.453 g
Soil Factors for Site Class D:	
F_a	1.115
F_v	1.610
$SD_s = 2/3 \times F_a \times S_s$	0.715 g
$SD_1 = 2/3 \times F_v \times S_1$	0.424 g
Seismic Design Category	D

7.1 Soil Liquefaction

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2018 Statewide GeoHazards Viewer indicates that the site is not mapped to be at risk for soil liquefaction during an earthquake. Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to ground shaking caused by strong earthquakes. Soil liquefaction is generally limited to loose sands and granular soils located below the water table, and fine-grained soils with a plasticity index less than 8. However, some studies have shown there to be liquefaction potential in fine-grained soils with a plasticity index as high as 15. According to the *Estimated Depth to Groundwater in the Portland, Oregon Area, (United States Geological Survey, Snyder, 2018 website)*, groundwater is present at an approximate depth of 6 to 12 feet below the ground surface. In our explorations, to a maximum depth of 7.5 feet, we encountered dense, coarse-grained soils above the water table, which are not considered susceptible to liquefaction.

8.0 UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER 90013PE OREGON MAY 22, 2015 BENJAMIN G. ANDERSON

Expires: 12/31/19

Thomas J. Torkelson, E.I.T.
Engineering Staff

Benjamin G. Anderson, P.E.
Project Engineer

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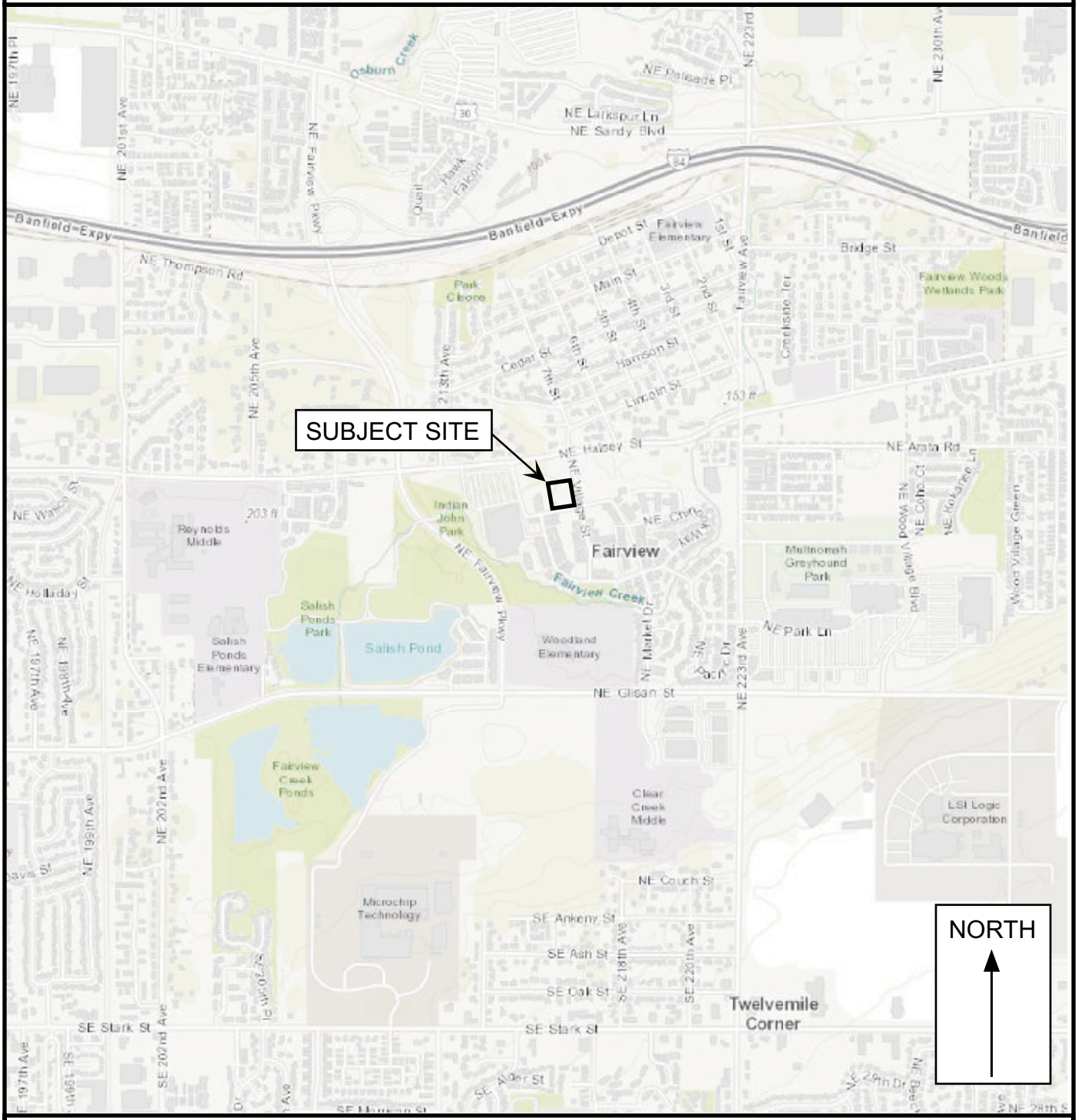
CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site and/or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (90% of Modified Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 linear feet	Soil Technician	
6	Street Subgrade Inspection (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
7	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 linear feet	Soil Technician	
8	Asphalt Compaction (92% Rice Value)	During paving, tested every 100 linear feet	Soil Technician	
9	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	

FIGURES

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

VICINITY MAP



LEGEND

APPROXIMATE SCALE: 1 in = 2,000 ft

DATE: 02/20/18
DRAWN BY: TJT

1:24,000

0 0.2 0.4 0.8 mi

0 0.225 0.45 0.9 km

Base map: Oregon SLIDO (http://www.oregongeology.org/slido/index.html)

PROJECT: Fairview Apartments Fairview, Oregon	PROJECT NO. 18-4838	FIGURE 1

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

SITE AERIAL AND EXPLORATION LOCATIONS

LEGEND: **TP-1** TEST PIT EXPLORATIONS AND APPROXIMATE LOCATION
(3.0') DEPTH TO PRACTICAL REFUSAL, FEET
[Fill] **[2.5']** DEPTH OF OBSERVED UNDOCUMENTED FILL, FEET
(Refusal)

Base Map Obtained From Google Earth 2018

0 75'
APPROXIMATE SCALE 1"=75'

DATE: 02/13/18
DRAWN BY: TJT

PROJECT: Fairview Apartments Fairview, Oregon	PROJECT NO. 18-4838	FIGURE 2

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
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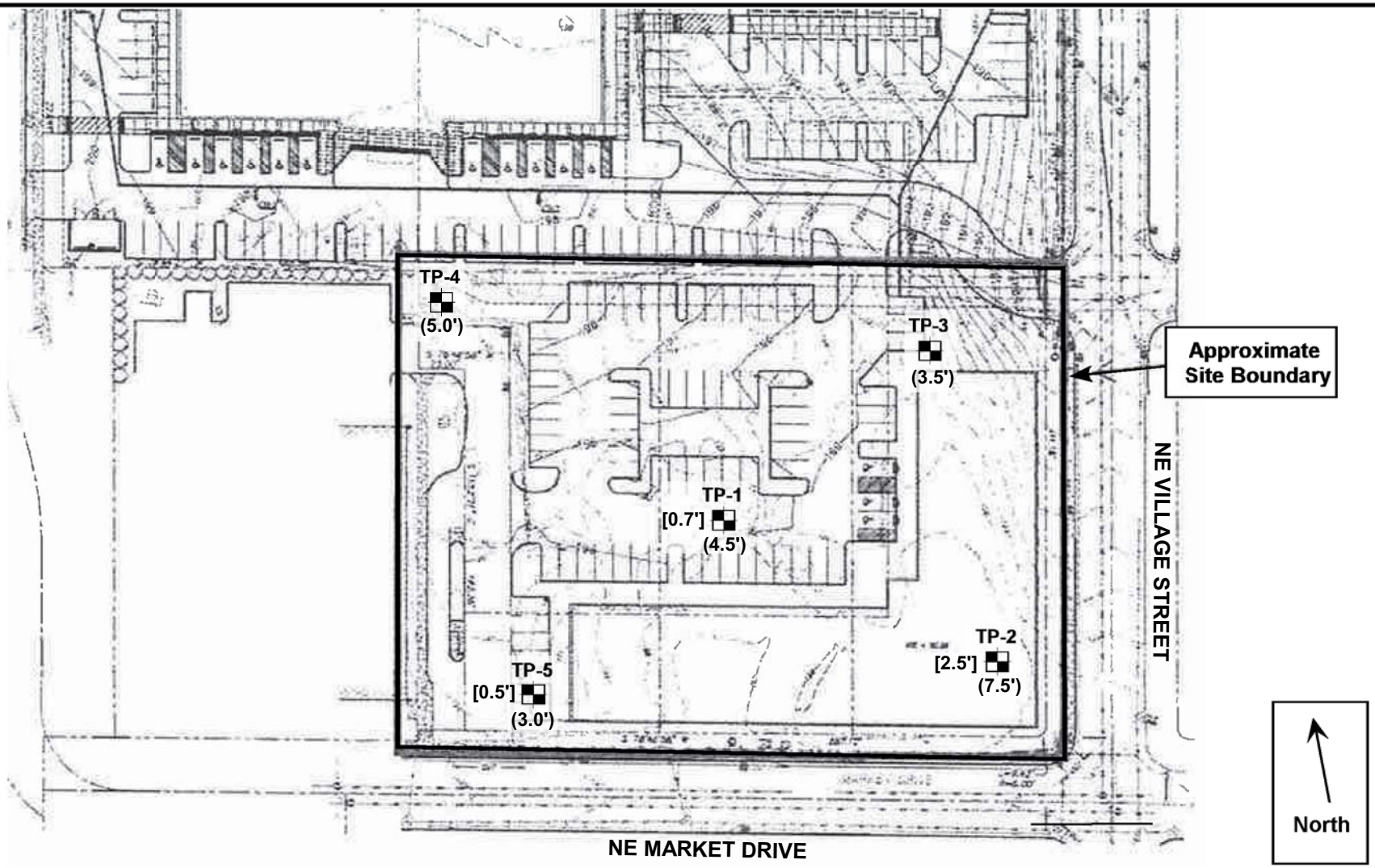
SITE PLAN AND EXPLORATION LOCATIONS



Legend: TP-1 TEST PIT EXPLORATIONS AND APPROXIMATE LOCATION
(3.0') DEPTH TO PRACTICAL REFUSAL, FEET
[Fill] (Refusal) [2.5'] DEPTH OF OBSERVED UNDOCUMENTED FILL, FEET

0 50'
APPROXIMATE SCALE 1"=50'

DATE: 02/13/18
DRAWN BY: TJT

PROJECT: Fairview Apartments Fairview, Oregon	PROJECT NO. 18-4838	FIGURE 3

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EXPLORATION LOGS

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TEST PIT LOG

Project: Fairview Apartments
Fairview, Oregon

Project No. 18-4838

Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						0-8" GRAVEL (GP), dense, moist, recycled concrete up to 1 inch in diameter. (Fill).
1, 2, 3, 4		100 to 1,000 g		15.7		Silty GRAVEL, COBBLES, and BOULDERS with sand (GM), medium dense to dense, moist, contains sub-rounded and angular gravel to boulder sized rock up to 25 inches in diameter, micaceous, fine and medium roots throughout. (Catastrophic Flood Deposits).
5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17						Test pit terminated at 4.5 feet due to practical refusal on very dense gravel, cobbles and boulders. No seepage or groundwater encountered. No caving observed.

LEGEND

Bag Sample (100 to 1,000 g) | Bucket Sample (5 Gal. Bucket) | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 02/13/2018
Logged By: TJT
Surface Elevation: 198 amsl

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TEST PIT LOG

Project: Fairview Apartments
Fairview, Oregon

Project No. 18-4838

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						0-8" GRAVEL (GP), dense, moist, recycled concrete up to 1 inch in diameter, , with fine grass roots throughout. (Fill).
1	2.50					6-30" SILT (OL-ML), loose, moist, dark brown, moderately to highly organic, with tree and root debris. (Undocumented Fill).
2	2.75	100 to 1,000 g		34.4		10.7% organic content observed at a depth of 2 feet bgs.
3	>4.5					SILT with sand (ML), medium stiff, moist, brown, low plasticity with very strong orange and grey mottling, micaceous, trace medium tree roots to a depth of 5 feet bgs. (Catastrophic Flood Deposits).
4	3.25	100 to 1,000 g		28.2		
5						
6						
7						Silty GRAVEL, COBBLES, and BOULDERS with sand (GM), medium dense to dense, moist, contains sub-rounded and angular gravel to boulder sized rock up to 30 inches in diameter.(Catastrophic Flood Deposits).
8						Test pit terminated at 7.5 feet due to practical refusal on very dense gravel, cobbles and boulders.
9						No seepage or groundwater encountered.
10						No caving observed.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 02/13/2018
Logged By: TJT
Surface Elevation: 197 amsl

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TEST PIT LOG

Project: Fairview Apartments Fairview, Oregon	Project No. 18-4838	Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						0-6" Moderately organic SILT (OL-ML), loose, moist, low plasticity, fine grass roots throughout. (Topsoil).
1						Silty GRAVEL, COBBLES, and BOULDERS with sand (GM), medium dense to very dense, moist, contains sub-rounded gravel to boulder sized rock up to 48 inches in diameter. (Catastrophic Flood Deposits).
2						
3						
4						Test pit terminated at 3.5 feet due to practical refusal on very dense gravel, cobbles and boulders. No seepage or groundwater encountered. No caving observed.
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Date Excavated: 02/13/2018
Logged By: TJT
Surface Elevation: 196 amsl

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TEST PIT LOG

Project: Fairview Apartments
Fairview, Oregon

Project No. 18-4838

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						0-6" Moderately organic SILT (OL-ML), loose, moist, low plasticity, fine grass roots throughout. (Topsoil).
1						Silty GRAVEL, COBBLES, and BOULDERS with sand (GM), medium dense to very dense, moist, contains sub-rounded gravel to boulder sized rock up to 36 inches in diameter. (Catastrophic Flood Deposits).
2						
3						
4						
5						Test pit terminated at 5 feet due to practical refusal on very dense gravel, cobbles and boulders. No seepage or groundwater encountered. No caving observed.
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 02/13/2018
Logged By: TJT
Surface Elevation: 201 amsl

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TEST PIT LOG

Project: Fairview Apartments
Fairview, Oregon

Project No. 18-4838

Test Pit No. **TP-5**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						0-6" GRAVEL (GP), dense, moist, compacted recycled concrete up to 1 inch in diameter, with fine grass rots throughout. (Fill).
1						Silty GRAVEL, COBBLES, and BOULDERS with sand (GM), dense to very dense, moist, contains sub-rounded and angular gravel to boulder sized rock up to 30 inches in diameter, micaceous. (Catastrophic Flood Deposits).
2						
3						Test pit terminated at 3 feet due to practical refusal on very dense gravel, cobbles and boulders. No seepage or groundwater encountered. No caving observed.
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 02/13/2018
Logged By: TJT
Surface Elevation: 199 amsl

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LABORATORY TEST RESULTS

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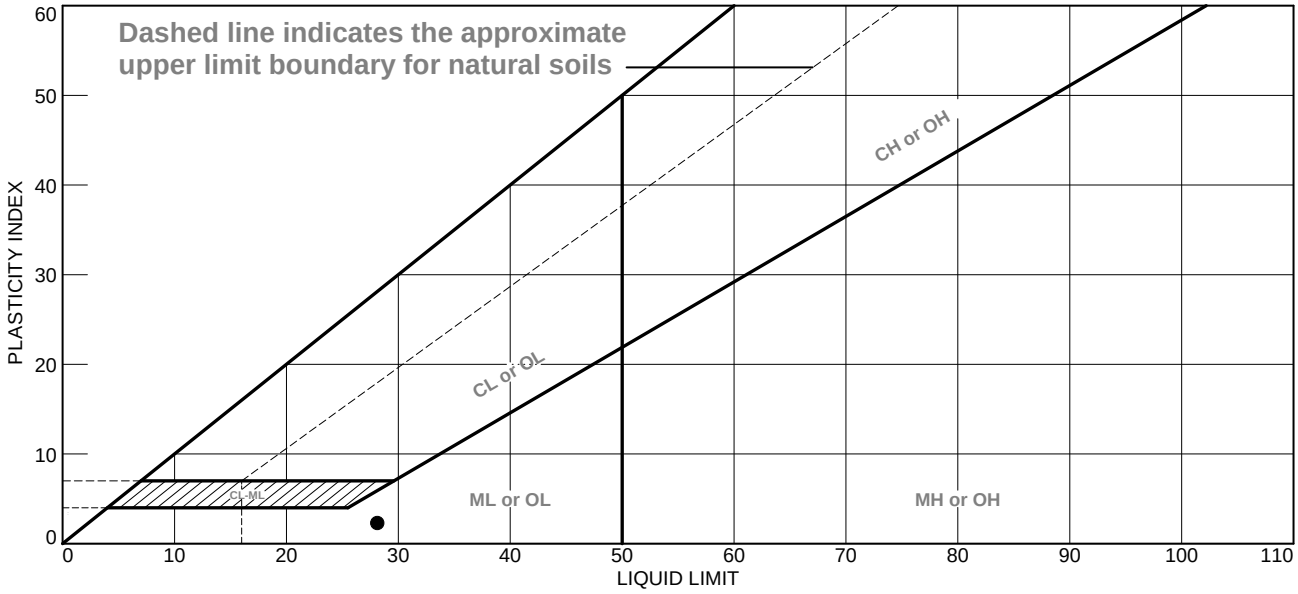
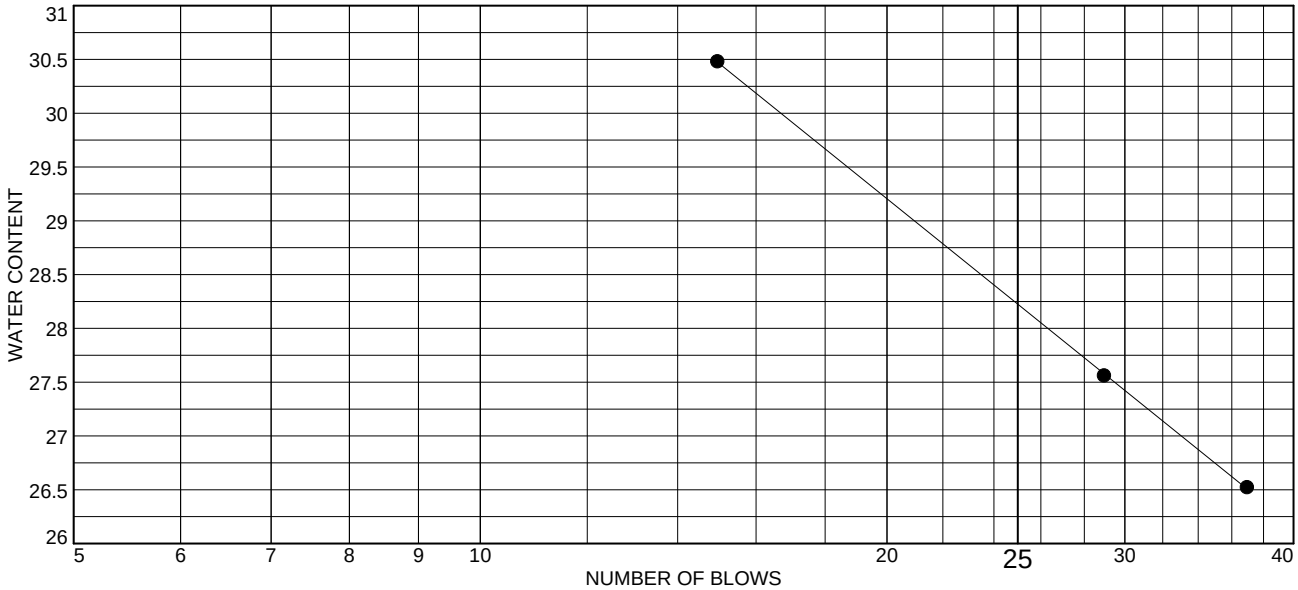
LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silt with Sand	28.2	26.0	2.2	91.5	78.0	ML

Project No. 18-4838 **Client:** Parker Development NW, Inc.

Project: Fairview Apartments

Location: TP-2 Sample 1
Sample Number: S18-055 **Depth:** 4'

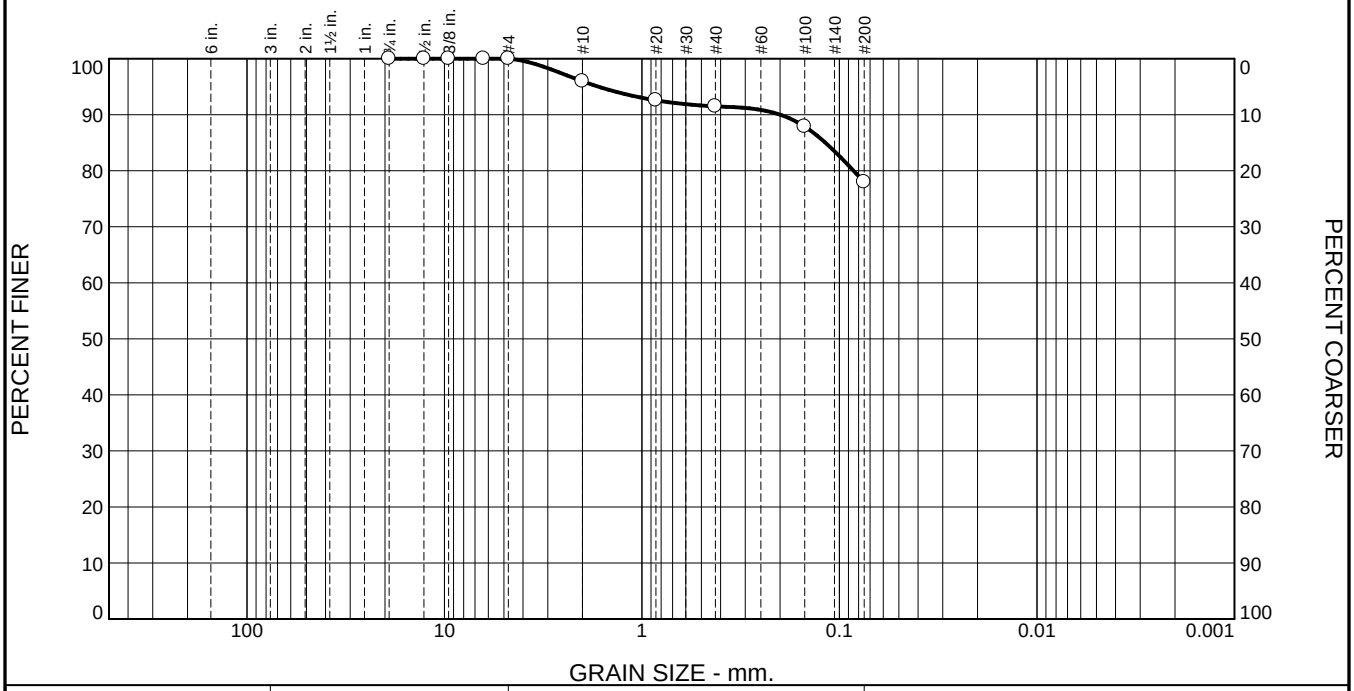
Remarks:

GEOPACIFIC ENGINEERING, INC.

Figure

Tested By: SJC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	4.0	4.5	13.5	78.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	96.0		
#20	92.6		
#40	91.5		
#100	87.9		
#200	78.0		

* (no specification provided)

Material Description

Silt with Sand

Atterberg Limits (ASTM D 4318)

PL= 26.0 **LL=** 28.2 **PI=** 2.2

Classification

USCS (D 2487)= ML **AASHTO (M 145)=** A-4(1)

Coefficients

D_{90}= 0.1997 D_{85}= 0.1177 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture 28.2%

Date Received: **Date Tested:** 2/14/2018

Tested By: SJC

Checked By:

Title:

Location: TP-2 Sample 1
Sample Number: S18-055 **Depth:** 4'

Date Sampled: 2/13/2018

GEOPACIFIC ENGINEERING, INC.

Client: Parker Development NW, Inc.
Project: Fairview Apartments

Project No: 18-4838 **Figure**

Project Name:	Fairview Apartments		Project No.: 18-4838	Sampled By:	TJT
Sample ID: S18-056	Depth:	2'		Sample Date:	2/13/2018
Location:		#2		Tested By:	SJC
Material Type:		Top Soil		Tested Date:	2/14/2018

Moisture

Tare Number:	25
Tare Wt.:	259.3
Tare + Wet Soil:	762.3
Tare + Dry Soil:	633.6
Percent Moisture:	34.4

Organic Content ASTM D 2974 at 440°F

Tare Number:	8	5
Tare Wt.:	22.67	25.8
Tare + Pre-Oven:	50.14	52.66
Tare + Post-Oven:	47.37	49.63
Percent Organic:	10.1	11.3
	Average:	10.7

No. 200 Wash Data

Tare Number	
Tare Wt:	
Tare+Pre-Wash:	
Tare+Post-Wash:	
-#200 From Wash:	
Pre-Wash Mass:	
% Passing No. 200	

Grain Size Data

Sieve Size /(max wt individually retained)	Individual Weight Retained	Individual Weight Retained
3"		
1.5"		
1"		
3/4 / 900		
1/2 / 570		
3/8 / 550		
1/4		
#4 / 325		
#8		
#10 / 180		
#16		
#30		
#40 / 75		
#50		
#100 / 40		
#200 / 20		
Pan		

Atterberg Analysis Ll

	Point 1	Point 2	Point 3	Point 4	Point 5
Tare #					
Tare Wt.					
Wet Wt					
Dry Wt					
# of Blows					

Atterberg Analysis Pl

Point 1	Point 2	Point 3

SITE RESEARCH

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Fairview Apartments 18-4838

Observed Strippings from 04/03/2015

USGS Design Maps Summary Report

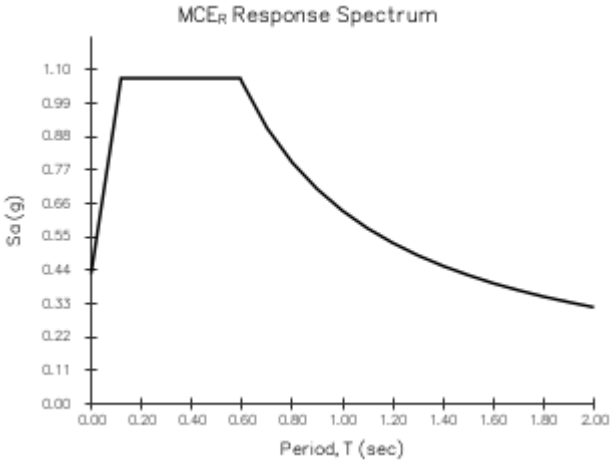
User–Specified Input

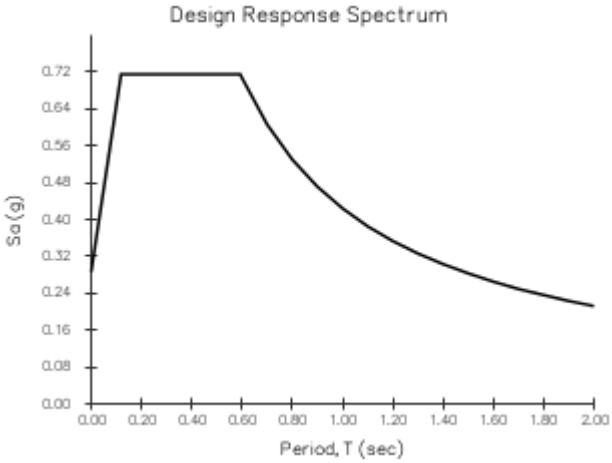
Report Title	18-4838 Fairview Apartments Fri February 23, 2018 22:59:45 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	45.53271°N, 122.43952°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

S_S =	0.962 g	S_{MS} =	1.073 g	S_{DS} =	0.715 g
S_1 =	0.395 g	S_{M1} =	0.636 g	S_{D1} =	0.424 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (45.53271°N, 122.43952°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 0.962 g

From Figure 22-2 [2] S_1 = 0.395 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 0.962 g, F_a = 1.115

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.395 g, F_v = 1.610

Equation (11.4–1): $S_{MS} = F_a S_S = 1.115 \times 0.962 = 1.073$ g

---

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.610 \times 0.395 = 0.636$ g

---

Section 11.4.4 — Design Spectral Acceleration Parameters

Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.073 = 0.715$ g

---

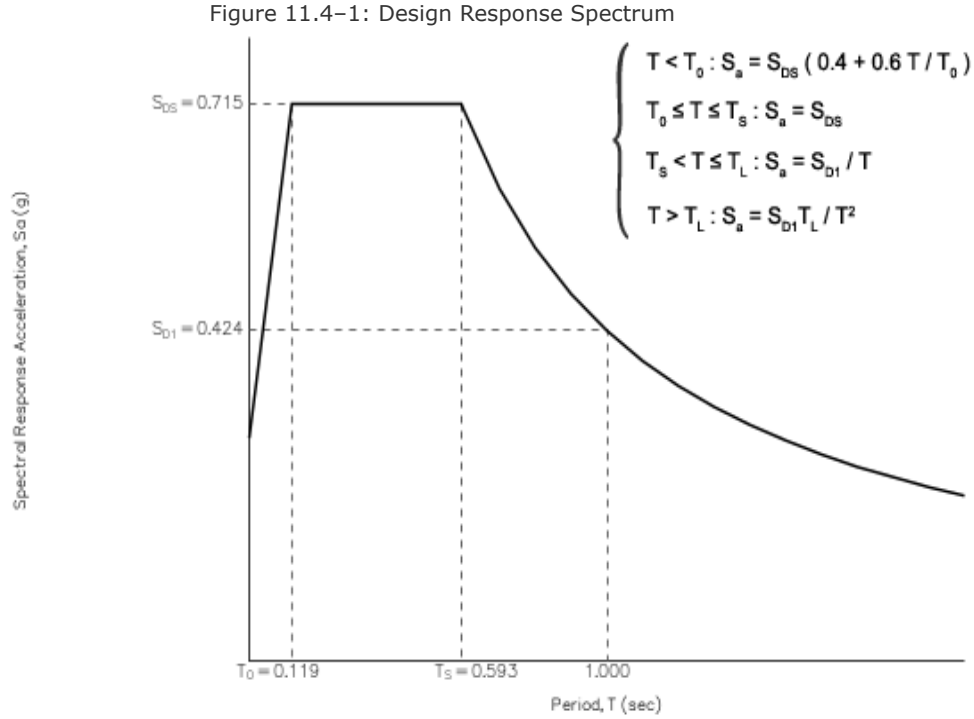
Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.636 = 0.424$ g

---

Section 11.4.5 — Design Response Spectrum

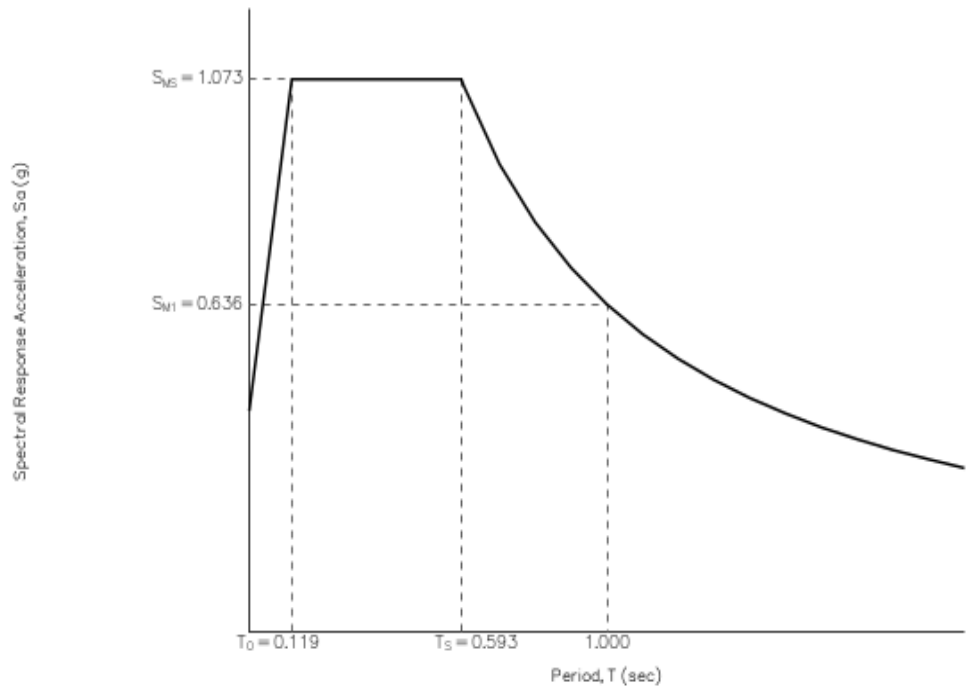
From Figure 22-12 [3] $T_L = 16$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.419

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.081 \times 0.419 = 0.453$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.419 g, F_{PGA} = 1.081

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.894

From Figure 22-18 [6] C_{R1} = 0.873

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	**RISK CATEGORY**		
	I or II	**III**	**IV**
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 0.715 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	**RISK CATEGORY**		
	I or II	**III**	**IV**
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.424 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

United States Department of Agriculture

NRCS

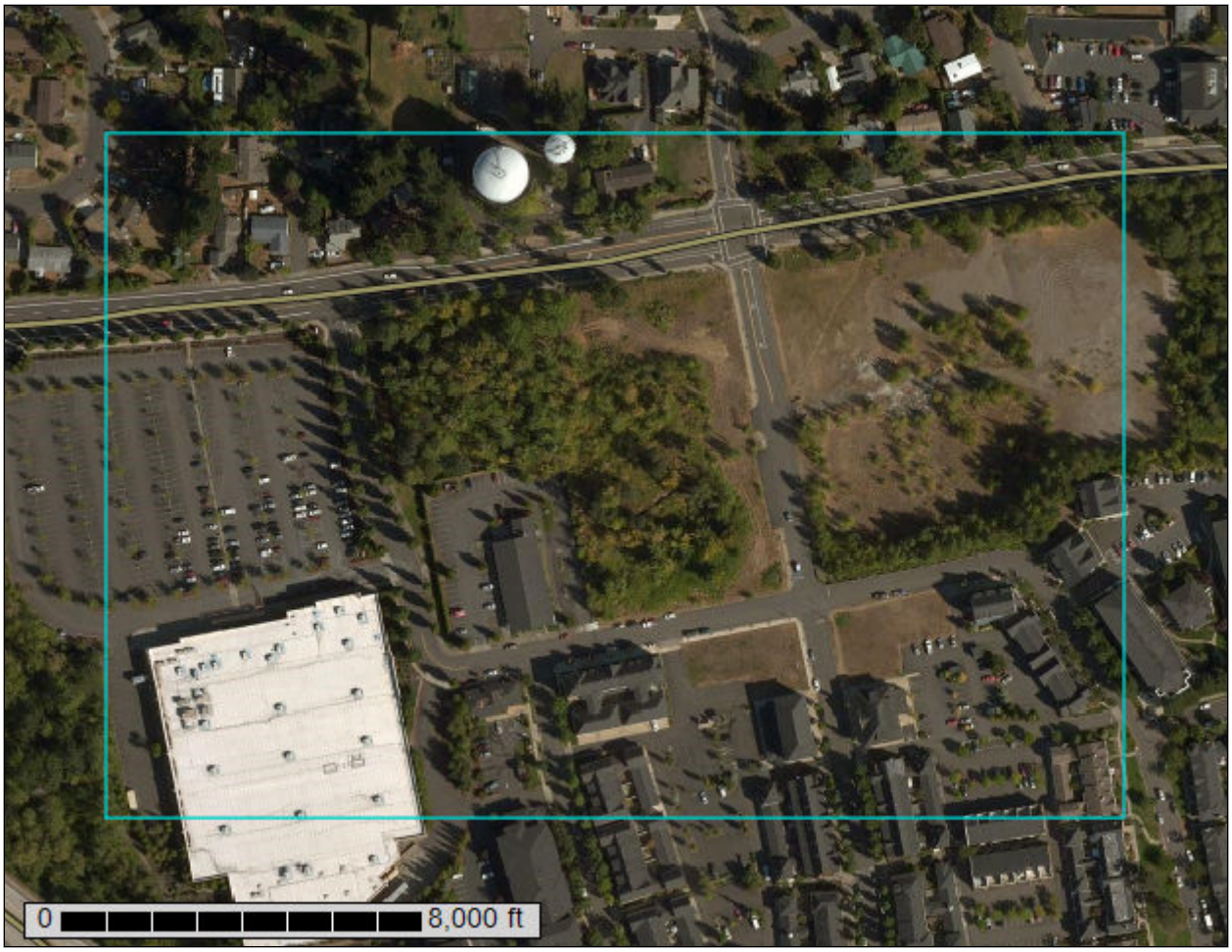
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Multnomah County Area, Oregon

18-4838 Fairview Apartments



February 27, 2018

Custom Soil Resource Report
Soil Map (Fairview Apartments)

Map Scale: 1:2,430 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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 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: Multnomah County Area, Oregon
Survey Area Data: Version 15, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2014—Sep 5, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Fairview Apartments)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
37B	Quatama loam, 3 to 8 percent slopes	4.9	16.2%
37C	Quatama loam, 8 to 15 percent slopes	2.8	9.3%
54B	Urban land-Quatama complex, 3 to 8 percent slopes	0.7	2.4%
57	Wollent silt loam	22.0	72.2%
Totals for Area of Interest		**30.5**	**100.0%**

Map Unit Descriptions (Fairview Apartments)

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, 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.

Multnomah County Area, Oregon

37B—Quatama loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 22b5
Elevation: 80 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Quatama and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quatama

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old alluvium

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 33 inches: clay loam
H3 - 33 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural 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 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

37C—Quatama loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 22b6
Elevation: 80 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Quatama and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quatama

Setting

Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old alluvium

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 33 inches: clay loam
H3 - 33 to 60 inches: sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural 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 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

54B—Urban land-Quatama complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 22c7
Elevation: 80 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent
Quatama and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Quatama

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old alluvium

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 33 inches: clay loam
H3 - 33 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural 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 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

57—Wollent silt loam

Map Unit Setting

National map unit symbol: 22cc
Elevation: 100 to 600 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

Wollent and similar soils: 90 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wollent

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old alluvium

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: 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 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Wapato

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

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FAIRVIEW APARTMENTS
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

View of Property From Northeast Market Drive, Facing North

View of Property From Northeast Village Street, Facing West

FAIRVIEW APARTMENTS
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Dense Boulders and Cobbles in Test Pit TP-1, Facing Southwest

Dense Boulders and Cobbles in Test Pit TP-1, Facing Southwest

FAIRVIEW APARTMENTS
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Undocumented Fill in Test Pit TP-2, Facing West

Organic Debris from Test Pit TP-2

FAIRVIEW APARTMENTS
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Shallow Boulders and Cobbles in Test Pit TP-3, Facing Northeast

Test Pit TP-3, Facing Northeast

FAIRVIEW APARTMENTS
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Large Boulders from Test Pit TP-4, Facing Southwest

Large Boulders from Test Pit TP-4, Facing Northeast

FAIRVIEW APARTMENTS
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Contact with Boulders, Test Pit TP-5, Facing North

Broken Excavator Tooth from Excavating Test Pit TP-5

WALL MOUNTED
BLADE SIGN
CEILING MOUNTED
SIGN SIMILAR

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THE SOL

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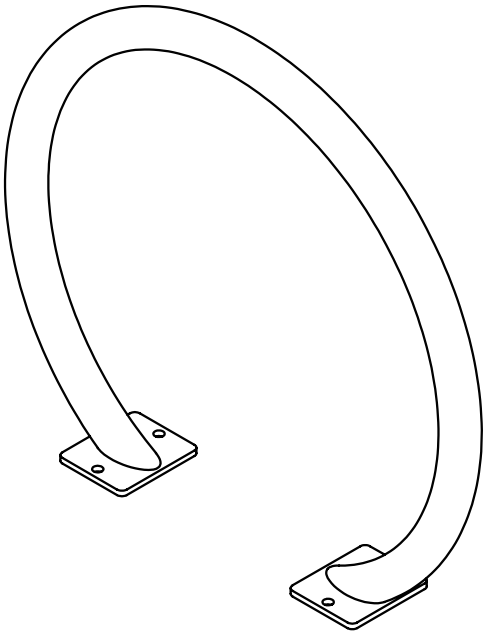
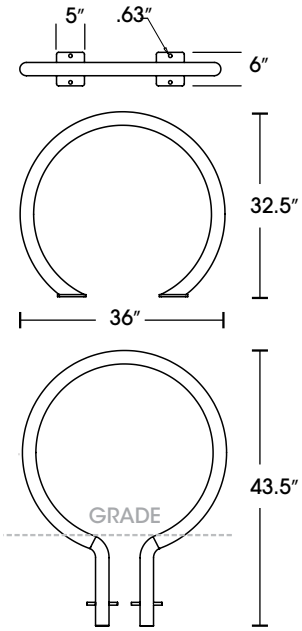




CONSTRUCTION/MATERIAL

- ☐ 2" Sch. 40 Round Steel Tubing (shown)
- ☐ 2" × 2" Square Steel Tubing (Pipecutter Proof)
- 5"× 6" Steel Flanges

DIMENSIONS

- 36" Length
- 6" Width
- 32.5" Height

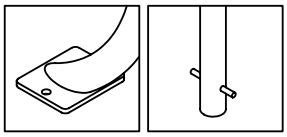
MOUNTING OPTIONS

- ☐ Flange Mount (Shown) (4) .63" Mounting Holes
- ☐ In-Ground 11" Leg Extensions

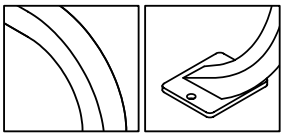
FINISH OPTIONS

- ☐ T304 Stainless Steel #4 Satin Finish
- ☐ Hot Dipped Galvanized
- ☐ Powder Coating #
- ☐ Thermoplastic Coating #

Flange or In-Ground



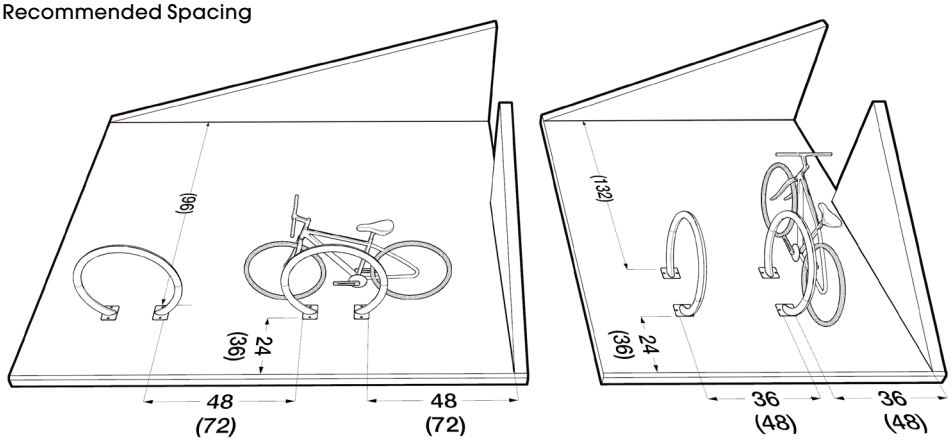
Square Tubing & Flange



RECOMMENDED LAYOUT

NOTES:

"Bike" is 70"
Minimum Spacing
(#) Recommended Spacing



CONTRACTOR:

JOB:

NOTES:

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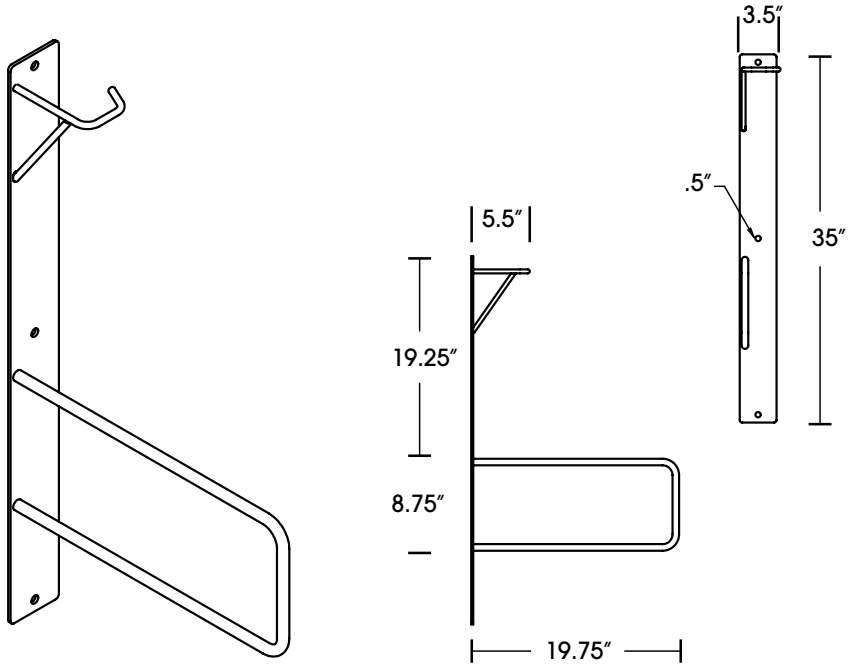
THE STIRRUP

An economical space saver, the Stirrup tidies cluttered bike rooms, keeping bikes out of the way and secure.



CONSTRUCTION/MATERIAL

- .25" Plate Steel Backer
- .375" Solid Steel Hook
- .625" Solid Steel Lock bar

DIMENSIONS

- 3.5" Width
- 35" Length
- 19.75" Depth (from wall)

MOUNTING

(3) .5" Mounting Holes

FINISH OPTIONS

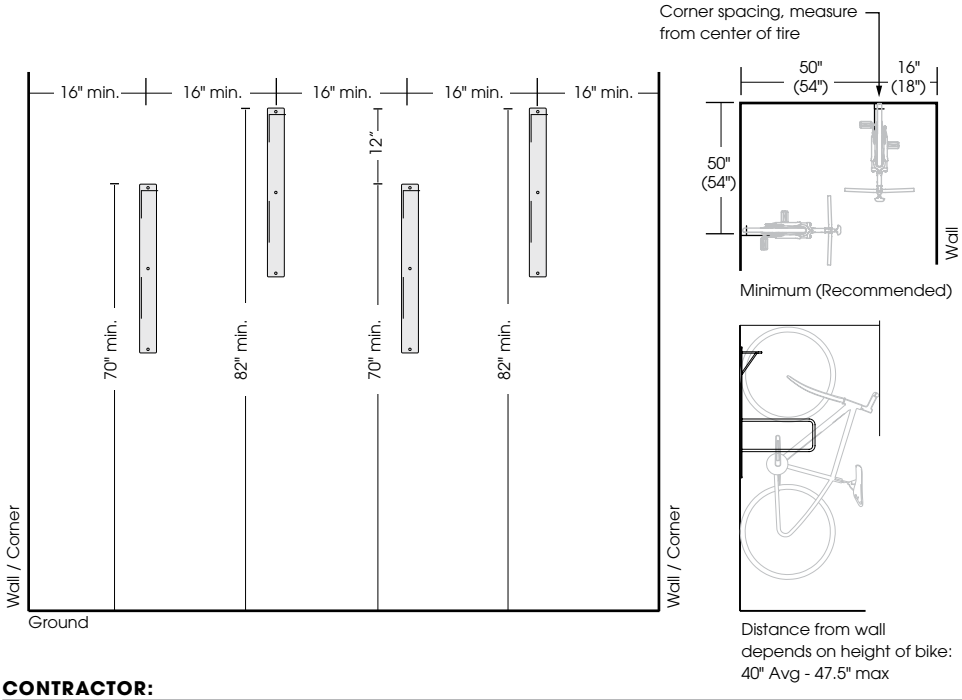
☐ Hot Dipped Galvanized
☐ Powder Coating
#
☐ Thermoplastic Coating
#

FEATURES

- U-Lock Compatible

RECOMMENDED LAYOUT

\\\ **NOTE:** Wall mount bike racks can be installed non-staggered at 20"-24" spacing.



CONTRACTOR:

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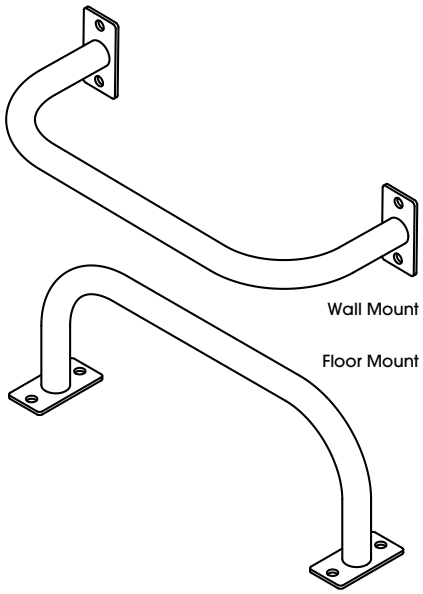
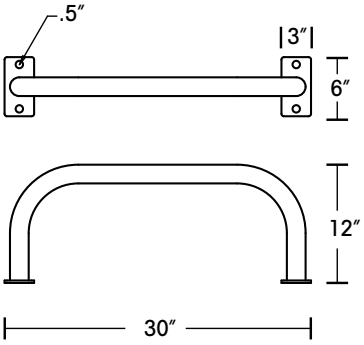
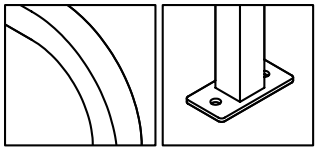
THE STAPLE WALL/FLOOR

The ever-classic "Staple" style rack is Portland City Code approved. This version works for Bakfiets style bikes on the ground or as a space-saver mounted on the wall.





Square Tubing & Flange



CONSTRUCTION/ MATERIAL OPTIONS

- ☐ 1.5" Sch. 40 Round Steel Pipe (shown)
- ☐ 2" × 2" Square Steel Tubing (Pipecutter Proof)
- 3" x 6" Steel Flanges

DIMENSION OPTIONS

- 30" Length
- 6" Width
- 12" Height
- ☐ Custom Size Height/Length _____

MOUNTING OPTIONS

- Flange Mount (Shown)
  (4) .5" Mounting Holes

FINISH OPTIONS

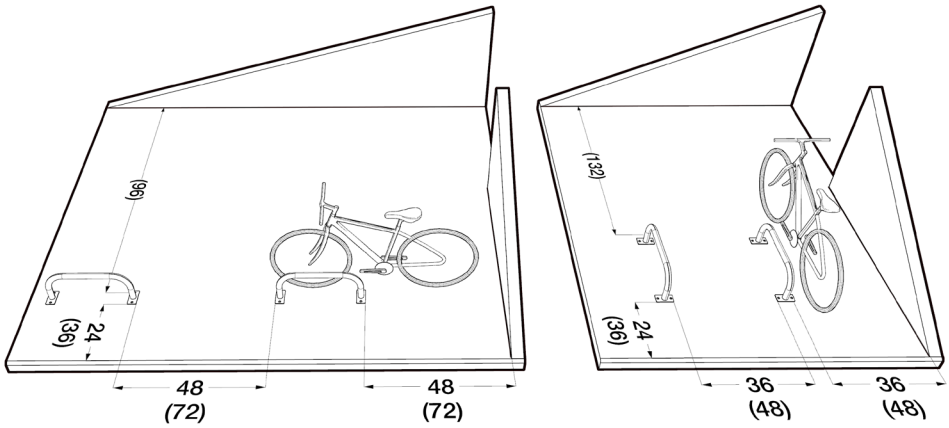
- ☐ T304 Stainless Steel
  #4 Satin Finish
- ☐ Hot Dipped Galvanized
- ☐ Powder Coating
  # _____
- ☐ Thermoplastic Coating
  #

Manufactured in the Pacific Northwest

RECOMMENDED LAYOUT

NOTES:

"Bike" is 70"
Minimum Spacing
(#) Recommended Spacing



CONTRACTOR: _____

JOB: _____

NOTES: _____

LUMARK®

energy solutions

DESCRIPTION

The Ridgeview™ LED area luminaire is the compact, efficient, economical approach to LED area lighting. A pure blend of traditional form and LED efficiency; Ridgeview provides functional, low-profile design with excellent operating performance. Patented modular LightBAR™ technology delivers uniform and energy-conscious illumination to parking lots and perimeter security lighting applications.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Rugged one-piece, die-cast aluminum housing secures the thermally conductive LED panel and electrical chamber. Low profile, 3G vibration rated compact design minimizes wind load requirements. Extruded aluminum frame secured with stainless steel hardware confines the LightBAR panel to the thermally conductive housing. The unique glide bracket LightBAR panel allows for easy access to the electrical chamber.

Optics
Choice of twelve (12) patented, high efficiency AccuLED Optics™ manufactured from injection-molded acrylic. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000°K (+/- 275K) CCT and nominal 70 CRI.

Electrical
LED drivers are hard-mounted to die-cast aluminum back casting for optimal heat sinking and operation efficiency. 120-277V 50/60Hz, 347V 60Hz, 480V 50/60Hz operation. Shipped standard with Cooper Lighting proprietary circuit module designed to withstand 10kV of transient line surge. 90% lumen maintenance expected at 60,000 hours per IESNA TM-21. The Ridgeview LED luminaire is suitable for operating temperatures from -30°C to 40°C. LightBARs feature IP66 enclosure rating.

Mounting
Cast aluminum 6" arm includes bolt guides allowing for easy position of the fixture during installation to pole. Standard single carton packaging of housing, square pole arm and round pole adapter provide contractor-friendly installation. Wall mount models feature a cast aluminum arm that is directly mounted to a 4" supplied wall plate secured with set screws.

Finish
Components finished in a 5-stage Super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard color is bronze. Optional colors include black, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year limited warranty.

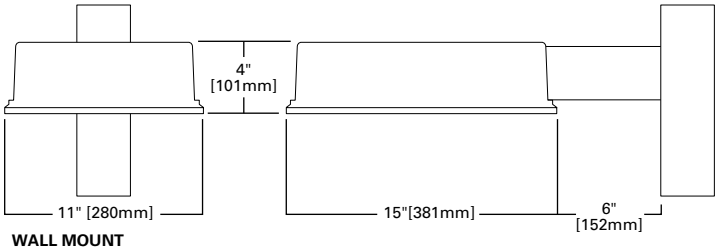
RV RIDGEVIEW

1 - 4 LightBARs
Solid State LED

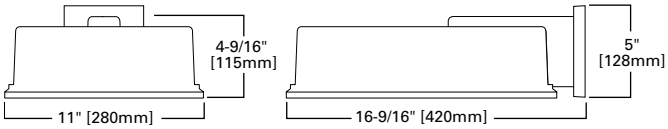
AREA LUMINAIRE

DIMENSIONS

POLE MOUNT

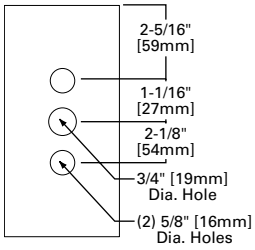


WALL MOUNT

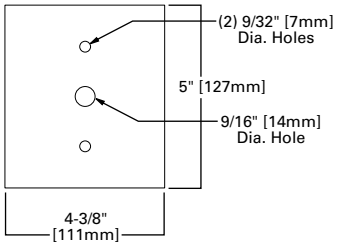


DRILLING PATTERNS

TYPE "R"



WALL MOUNT (WM)



CERTIFICATIONS

UL/cUL Listed
LM79 / LM80 Compliant
3G Vibration Rated
IP65 Fixture Rating, IP66 LightBARs
ARRA Compliant
ISO 9001
DesignLights Consortium® Qualified*

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating
50°C (Optional) Ambient Temperature Rating

EPA

Effective Projected Area: (Sq. Ft.)
Without Arm: 0.48
With Arm: 0.67

SHIPPING DATA

Approximate Net Weight:
12.5 lbs. (5.8 kgs.)

Cooper Lighting
by EATON

*www.designlights.org

ADH092075
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POWER AND LUMENS BY BAR COUNT

Number of LightBARs	Power (Watts)	Current @ 120V (A)	Current @ 277V (A)	DISTRIBUTION T2	T3	T4	SL2	SL3	SL4	5MQ	5WQ	5XQ	RW	SLR/SLL
	7 LED LIGHTBAR													
C01	27	0.23	0.13	1,886	1,858	1,842	1,869	1,895	1,842	1,959	1,929	1,965	1,866	1,742
C02	54	0.46	0.21	3,743	3,687	3,655	3,708	3,761	3,655	3,886	3,827	3,899	3,702	3,457
C03	77	0.65	0.29	5,514	5,431	5,385	5,463	5,540	3,655	5,725	5,638	5,744	5,454	5,093
C04	101	0.86	0.37	7,334	7,224	7,163	7,266	7,369	7,161	7,615	7,499	7,640	7,254	6,774
	21 LED LIGHTBAR													
B01	27	0.23	0.13	2,320	2,285	2,266	2,299	2,331	2,266	2,409	2,373	2,417	2,295	2,143
B02	51	0.43	0.20	4,604	4,534	4,496	4,561	4,625	4,495	4,780	4,707	4,796	4,554	4,252
B03	73	0.62	0.28	6,782	6,680	6,624	6,719	6,814	6,622	7,042	6,935	7,065	6,708	6,264
B04	95	0.81	0.35	9,021	8,885	8,810	6,719	9,064	8,808	9,366	9,224	9,397	8,923	8,332

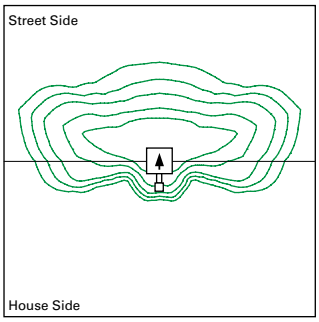
LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
10°C	1.04
15°C	1.03
25°C	1.00
40°C	0.96
50°C	0.92

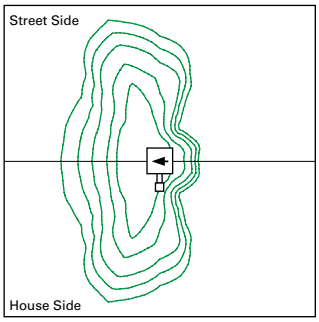
LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Theoretical L70 (Hours)
25°C	> 94%	> 350,000
40°C	> 93%	> 250,000
50°C	> 90%	> 170,000

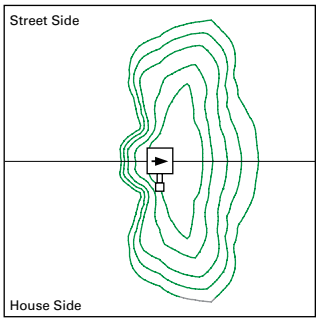
OPTIC ORIENTATION



Standard



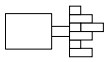
Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

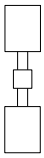
MOUNTING CONFIGURATIONS

Wall Mount

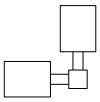


Arm Mount Single
EPA: 0.67

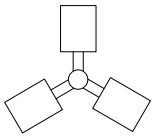
Arm Mount 2 @ 180
EPA: 1.34



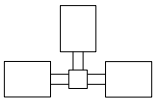
Arm Mount 2 @ 90
EPA: 1.34



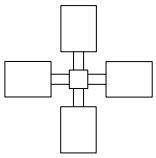
Arm Mount 3 @ 120
EPA: 1.72



Arm Mount 3 @ 90
EPA: 1.72



Arm Mount 4 @ 90
EPA: 1.94



ORDERING INFORMATION

Sample Number: LDRV-T2-B02-E-DP

Lamp Type	Series [1]	Distribution [2]	Number of LightBARs [3, 4]	Voltage
LED=Solid State Light Emitting Diodes	**RV**=Ridgeview	**T2**=Type II **T3**=Type III **T4**=Type IV **SL2**=Type II with Spill Control **SL3**=Type III with Spill Control **SL4**=Type IV with Spill Control **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **5XQ**=Type V Square Extra Wide **RW**=Rectangular Wide **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right	**B01**=(1) 21 LED LightBAR **B02**=(2) 21 LED LightBARs **B03**=(3) 21 LED LightBARs **B04**=(4) 21 LED LightBARs **C01**=(1) 7 LED LightBAR **C02**=(2) 7 LED LightBARs **C03**=(3) 7 LED LightBARs **C04**=(4) 7 LED LightBARs	**E**=Universal (120-277V) **347**=347V [5] **480**=480V [5]

Options (Add as Suffix)	**Color**	**Accessories** (Order Separately) [14]
HA=50°C High Ambient Temperature Rating [6] **WM**=Wall Mount Arm and Mounting Plate [7] **R90**=Optics Rotated Right 90° **L90**=Optics Rotated Left 90° **PC**=Button Type Photocontrol [8] **PER**=NEMA Twistlock Photocontrol Receptacle [8] **2L**=Two Circuits [9] **7060**=70 CRI 6000K CCT [10] **8030**=80 CRI 3000K CCT [10] **LCF**=LightBAR Cover Plate Matches Housing Finish **MS-LXX**=Motion Sensor for ON/OFF Operation [11] **MS/X-LXX**=Motion Sensor for Bi-Level Switching [12] **BBLEDCLD**=UL924 Cold Battery Backup (Specify Voltage) [13]	**AP**=Grey **BZ**=Bronze (Standard) **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**MA1175-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon **MA1176-XX**=2 @ 180° Tenon Adapter for 3-1/2" O.D. Tenon **MA1177-XX**=3 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon **MA1178-XX**=4 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1179-XX**=2 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1180-XX**=2 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon **MA1181-XX**=3 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1182-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon **MA1183-XX**=2 @ 180° Tenon Adapter for 2-3/8" O.D. Tenon **MA1184-XX**=3 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1185-XX**=4 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1186-XX**=2 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1187-XX**=3 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon **OA/RA1013**=Photocontrol Shorting Cap **RV/WG**=Field Installed Wire Guard **MA1300-XX**=Wall Mount Plate (Type R Drill Pattern) **MA1305-XX**=R to M Square Pole Adapter **MA1306-XX**=R to M Round Pole Adapter **MA1253**=10kV Circuit Module Replacement **OA/RA1014**=NEMA Twistlock Photocontrol - 120V **OA/RA1016**=NEMA Twistlock Photocontrol - Multi-Tap **OA/RA1027**=NEMA Twistlock Photocontrol - 480V **OA/RA1201**=NEMA Twistlock Photocontrol - 347V

NOTES:

1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. 6" Arm and round pole adapter included with fixture.
3. 21 LED LightBAR powered at 350mA, 7 LED LightBAR powered at 1A.
4. Lumen values based upon 4000°K CCT, 350mA drive current, 25°C ambient operating temperature.
5. Not available with Two Circuit Option.
6. HA not available with BLBLEDCLD options.
7. Wall mount arm and mounting plate included with fixture.
8. Specify voltage. Available in 120, 208, 240 or 277V. Not available with HA option.
9. Low-level output varies by bar count, consult factory. Not available with 347V or 480V.
10. Consult factory for lead time and lumen multiplier.
11. Sensor housed in external box mounted to the luminaire. Replace XX with mounting height in feet for proper lens selection (e.g., MS-L20). Not available with HA option. Consult factory for additional information.
12. Motion sensor for bi-level switching. Sensor housed in external box mounted to the luminaire. Available in B02 - B04 and C02 -C04 configurations. Replace X with number of bars operating in low output mode and replace XX with fixture mounting height for proper lens selection (e.g., MS/3-L20). Not available with HA option. Consult factory of additional information.
13. Specify 120V or 277V. Available with B01 or C01 configurations only. 25°C ambient operating temperature.
14. Replace XX with color designation.

Lumière

DESCRIPTION

The Lumiere Eon LED 303-S1-LEDB1 is a compact, low profile, dimmable LED sign lighting luminaire. It attaches to a wall or ceiling mounted straight arm and delivers full vertical adjustment (180°) for easy aiming. The 303-S1-LEDB1 provides either uplight or downlight depending upon how mounted or aimed. It mounts directly to any wall or ceiling surface over a standard 4″ square junction box and comes standard with a universal input LED driver (120 - 277V, 50/60 Hz). Dimming is achieved with a standard ELV, reverse phase dimming driver or an optional 0-10V dimming driver. 303-S1-LEDB1 may be used indoors or outdoors and carries an IP66 rating.

		Type
Catalog #		
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Head and back plate are precision machined from corrosion-resistant 6061-T6 aluminum. A standard 12″ or optional 24″ and 36″length extruded straight arm provides 180° of vertical adjustment for easy aiming. Consult factory for additional lengths. A universal mounting plate and one piece silicone key hole gasket is provided for adaption to junction box or surface. Stainless steel hardware is included.

Mounting
The luminaire mounts directly to a standard 4″ square junction box. For further mounting information see technical notes section on page 2.

Optical
LightBAR™ and optical assembly are sealed by a diffused, impact resistant tempered glass lens. The optical assembly is available in three distributions: T2 (lateral throw), T4 (forward throw) and T5X (Extra Wide Flood). Available in several color temperatures: 2700K, 3000K, 3500K, 4000K and TSAM (Amber). Both color temperature and distribution must be specified when ordering – see catalog logic for details. An edge-lit option is available.

Electrical
The 8.5W 303-S1-LEDB1 is standard with an ELV trailing edge phase dimmable driver that accepts a universal input (120-277, 50/60Hz). It will operate in -40°C to 50°C [-40°F to 122°F]. The driver incorporates surge protection. An optional 0-10V dimming driver is also available.

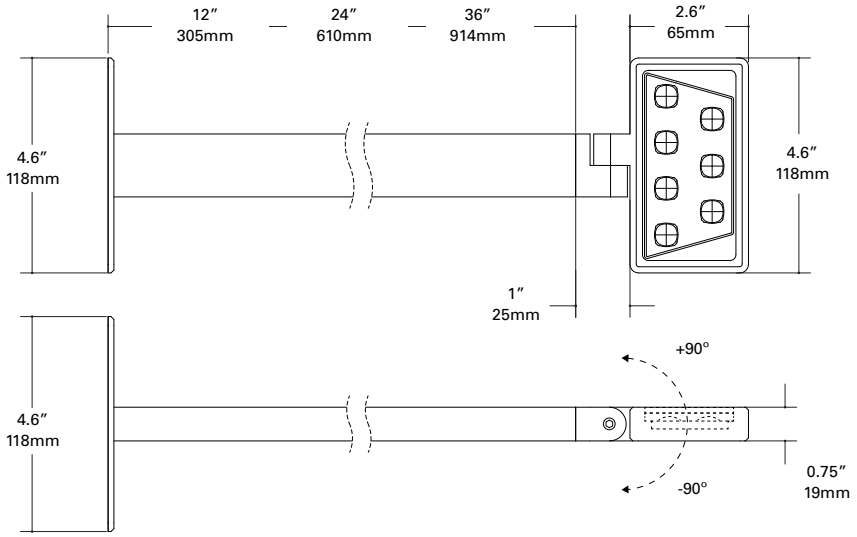
Finish
The luminaires are double protected by a RoHS compliant chemical film undercoating and polyester powder coat paint finish, surpassing the rigorous demands of the outdoor environment. The LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing (LCF). A variety of standard colors are available. RAL and custom color matches available upon request. Luminaries can also be brushed with a clear coat finish.

Warranty
Lumiere warrants the EON series of fixtures against defects in material and workmanship for five (5) years. Auxiliary equipment such as LED drivers carries the original manufacturer's warranty.

303-S1-LEDB1

EON LED

APPLICATIONS:
CEILING / WALL MOUNT



CERTIFICATION DATA
UL and cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
IP66 Ingressed Protection Rated

TECHNICAL DATA
40°C Maximum Temperature Rating
External Supply Wiring 90°C Minimum

ORDERING INFORMATION

Sample Number: 303-S1-LEDB1-2700-UNV-T2-DIM10-BK-12-EDGE

Series [5]	Color Temperature	Input Voltage	Optics	Dimming	Finish [1]	Stem Length [2]	Options [3,4]
303-S1-LEDB1 Head contains one (1) Mini LightBAR™	**2700**=2700K **3000**=3000K **3500**=3500K **4000**=4000K **TSAM** =Turtle Safe Amber (585-595nm)	**UNV**=Universal 120-277, 50/60Hz	**T2**=Type II, Lateral Throw **T4**=Type IV, Forward Throw **T5X**=Type V, Extra Wide Flood	**DIMELV**=Trailing Edge Phase **DIM10**=0-10V Dimming	**Painted** **BK**=Black **BZ**=Bronze **CS**=City Silver **WT**=White **Premium Finish** **BA**=Brushed	**12**=12″ Stem **24**=24″ Stem **36**=36″ Stem	**EDGE**=Edge lit glass lens **LCF**=LightBAR cover plate matches housing finish

NOTES: 1 Custom and RAL color matching available upon request. Consult factory for further information. **2** Stem lengths are nominal (shown in inches). **3** Add suffix in the order shown. **4** LCF option not available when WT (white) finish is selected. **5** DesignLights Consortium™ Qualified and classified for DLC Standard. Refer to www.designlights.org for details on exact qualified EON 303-S1-LEDB1 product as not all configurations are DLC classified.

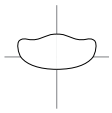
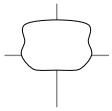
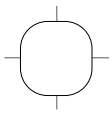
LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (72,000 Hours)	TM-21 Reported L70(10k) (Hours)	Theoretical L70 (Hours)
25°C	> 94%	> 60,000	365,000
40°C			
50°C			

CURRENT DRAW

Model	Line Voltage	Current Draw
303-S1-LEDB1	120-277V, 50/60Hz	0.13A

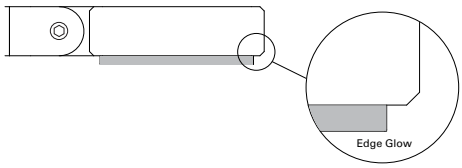
LUMENS - CRI/CCT TABLE

Optic Type	Distribution	Watts	Delivered Lumens	LPW	CCT (K) / Color	CRI nom. / Wavelength
T2 (Lateral Throw)		8.5	354	42	2700	95
			588	71	3000	75
			411	50	3500	85
			648	77	4000	75
		6.5	180	28	TSAM (Amber)	585-595nm
T4 (Forward Throw)		8.5	310	37	2700	95
			541	65	3000	75
			360	43	3500	85
			568	67	4000	75
		6.5	158	24	TSAM (Amber)	585-595nm
T5X (Extra Wide Flood)		8.5	381	46	2700	95
			663	80	3000	75
			443	53	3500	85
			698	83	4000	75
		6.5	194	30	TSAM (Amber)	585-595nm

NOTES: 1 When the LCF option is selected use a lumen multiplier of .85

OPTIONS

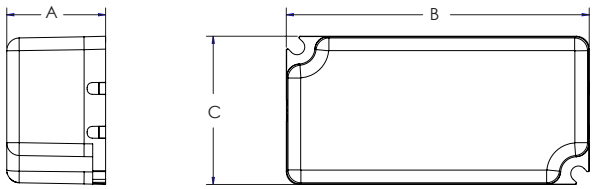
Edge



When specifying with the EDGE option, the diffuse glass lens is replaced with a thicker diffuse glass lens adding a visible line of light around the edge accentuating the luminaries' aesthetics and styling.

TECHNICAL NOTES

1. Junction box size and depth is important when specifying product. Recommended junction boxes include 2-1/8" deep, 4" square weld/drawn Crouse Hinds part numbers TP403, TP434, TP494, TP196, TP395 or equivalent. Use with included universal mounting plate or with Crouse-Hinds part number TP480 or equivalent cover with similar fixture mounting locations.
2. The universal wall plate provided with all EON wall mount fixtures can be used with an outdoor rated two gang 30.5 cubic inch capacity outlet box. Cooper Crouse-Hinds part numbers TP7086 – TP7122 or equivalent. The universal mounting plate will attach with four (4) 6-32 pan head/flat stainless steel screws (not provided).
3. Driver can be remote mounted in a junction box a max distance of 25 feet (voltage drop needs to be considered) or placed in the junction box behind the luminaire.
4. When specifying with the EDGE option, the diffused glass becomes thicker adding a visible line of light around the edge accentuating the luminaries' aesthetics and styling.
5. If Luminaire will not be dimmed, the Luminaire must be ordered with DIMELV option, but does not have to be dimmed.
6. Driver Dimensions:



Luminaire Type	Dimming Type	Driver Dimensions in [mm]		
		A	B	C
303-S1-LEDB1	DIMELV	.98 [25.0]	2.78 [70.5]	1.14 [28.9]
	DIM10	.98 [25.0]	3.36 [85.3]	1.49 [37.9]

Powering Business Worldwide

Eaton
18001 East Colfax Avenue
Aurora, CO 80011
P: 303-393-1522
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.

Lumière

DESCRIPTION

The Lumiere Eon LED 303-W1-LEDB1 is a compact, low profile, dimmable LED direct/indirect luminaire. The luminaire features full vertical adjustment (180°) for easy aiming and mounts directly to any wall or ceiling surface over a standard 4″ square junction box. It is standard with a universal input LED driver (120 - 277V, 50/60 Hz). Dimming is achieved with a standard ELV, reverse phase dimming driver or an optional 0-10V dimming driver. 303-W1-LEDB1 may be used indoors or outdoors and carries an IP66 rating.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Head and back plate are precision machined from corrosion-resistant 6061-T6 aluminum. A universal mounting plate and one piece silicone key hole gasket is provided for adaption to junction box or surface. Stainless steel hardware is included.

Mounting
The luminaire mounts directly to a standard 4″ square junction box. For further mounting information see technical notes section on page 2.

Optical
LightBAR™ and optical assembly are sealed by a diffused, impact resistant tempered glass lens. The optical assembly is available in three distributions: T2 (lateral throw), T4 (forward throw) and T5X (Extra Wide Flood). Available in several color temperatures: 2700K, 3000K, 3500K, 4000K and TSAM (Amber). Both color temperature and distribution must be specified when ordering – see catalog logic for details. An edge-lit option is available.

Electrical
The 8.5W 303-W1-LEDB1 is standard with an ELV trailing edge phase dimmable driver that accepts a universal input (120-277, 50/60Hz). It will operate in -40°C to 50°C [-40°F to 122°F]. The driver incorporates surge protection. An optional 0-10V dimming driver is also available.

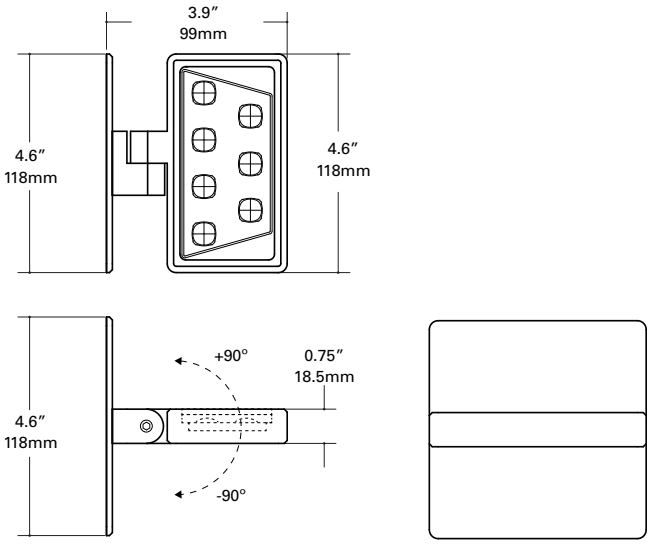
Finish
The luminaires are double protected by a RoHS compliant chemical film undercoating and polyester powder coat paint finish, surpassing the rigorous demands of the outdoor environment. A variety of standard colors are available. RAL and custom color matches available upon request. Luminaries can also be brushed with a clear coat finish. The LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing (LCF).

Warranty
Lumiere warrants the EON series of fixtures against defects in material and workmanship for five (5) years. Auxiliary equipment such as LED drivers carries the original manufacturer's warranty.

303-W1-LEDB1

EON LED

APPLICATIONS:
CEILING / WALL MOUNT
DIRECT
INDIRECT



CERTIFICATION DATA
UL and cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
IP66 Ingressed Protection Rated

TECHNICAL DATA
50°C Maximum Temperature Rating
External Supply Wiring 90°C Minimum

ORDERING INFORMATION

Sample Number: 303-W1-LEDB1-2700-UNV-T2-DIM10-BK-EDGE

Series [4]	Color Temperature	Input Voltage	Optics	Dimming	Finish [1]	Options [2,3]
303-W1-LEDB1 Head contains one (1) Mini LightBAR™	**2700**=2700K **3000**=3000K **3500**=3500K **4000**=4000K **TSAM** =Turtle Safe Amber (585-595nm)	**UNV**=Universal 120-277, 50/60Hz	**T2**=Type II, Lateral Throw **T4**=Type IV, Forward Throw **T5X**=Type V, Extra Wide Flood	**DIMELV**=Trailing Edge Phase **DIM10**=0-10V Dimming	**Painted** **BK**=Black **BZ**=Bronze **CS**=City Silver **WT**=White **Premium Finish** **BA**=Brushed **NSS**=Solid Stainless Steel	**EDGE**=Edge lit glass lens **LCF**=LightBAR cover plate matches housing finish

NOTES: 1 Custom and RAL color matching available upon request. Consult factory for further information. **2** Add suffix in the order shown. **3** LCF option not available when WT (white) finish is selected. **4** DesignLights Consortium™ Qualified and classified for DLC Standard. Refer to www.designlights.org for details on exact qualified EON 303-W1-LEDB1 product as not all configurations are DLC classified.

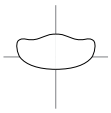
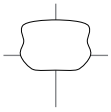
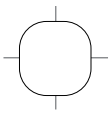
LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (72,000 Hours)	TM-21 Reported L70(10k) (Hours)	Theoretical L70 (Hours)
25°C	> 94%	> 60,000	365,000
40°C			
50°C			

CURRENT DRAW

Model	Line Voltage	Current Draw
303-W1-LEDB1	120-277V, 50/60Hz	0.068A

LUMENS - CRI/CCT TABLE

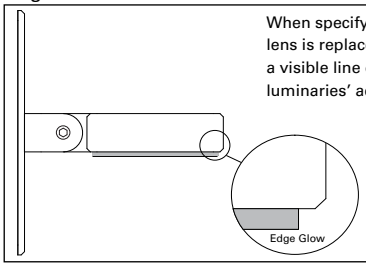
Optic Type	Distribution	Watts	Delivered Lumens	LPW	CCT (K) / Color	CRI nom./ Wavelength
T2 (Lateral Throw)		8.5	354	42	2700	95
			588	71	3000	75
			411	50	3500	85
			648	77	4000	75
		6.5	180	28	TSAM (Amber)	585-595nm
T4 (Forward Throw)		8.5	310	37	2700	95
			541	65	3000	75
			360	43	3500	85
			568	67	4000	75
		6.5	158	24	TSAM (Amber)	585-595nm
T5X (Extra Wide Flood)		8.5	381	46	2700	95
			663	80	3000	75
			443	53	3500	85
			698	83	4000	75
		6.5	194	30	TSAM (Amber)	585-595nm

NOTES: 1 When the LCF option is selected use a lumen multiplier of .85

OPTIONS

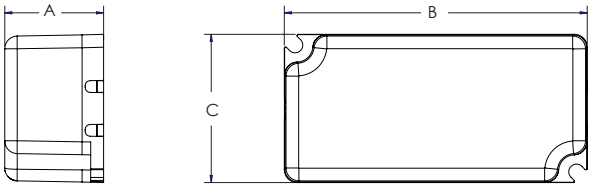
Edge

When specifying with the EDGE option, the diffuse glass lens is replaced with a thicker diffuse glass lens adding a visible line of light around the edge accentuating the luminaries' aesthetics and styling.



TECHNICAL NOTES

1. Junction box size and depth is important when specifying product. Recommended junction boxes include 2-1/8" deep, 4" square weld/drawn Crouse Hinds part numbers TP403, TP434, TP494, TP196, TP395 or equivalent. Use with included universal mounting plate or with Crouse-Hinds part number TP480 or equivalent cover with similar fixture mounting locations.
2. The universal wall plate provided with all EON wall mount fixtures can be used with an outdoor rated two gang 30.5 cubic inch capacity outlet box. Cooper Crouse-Hinds part numbers TP7086 – TP7122 or equivalent. The universal mounting plate will attach with four (4) 6-32 pan head/flat stainless steel screws (not provided).
3. Driver can be remote mounted in a junction box a max distance of 25 feet (voltage drop needs to be considered) or placed in the junction box behind the luminaire.
4. When specifying with the EDGE option, the diffused glass becomes thicker adding a visible line of light around the edge accentuating the luminaries' aesthetics and styling.
5. If Luminaire will not be dimmed, the Luminaire must be ordered with DIMELV option, but does not have to be dimmed.
6. Driver Dimensions:



Luminaire Type	Dimming Type	Driver Dimensions in [mm]		
		A	B	C
303-W1-LEDB1	DIMELV	.98 [25.0]	2.78 [70.5]	1.14 [28.9]
	DIM10	.98 [25.0]	3.36 [85.3]	1.49 [37.9]

Powering Business Worldwide

Eaton
18001 East Colfax Avenue
Aurora, CO 80011
P: 303-393-1522
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.

LUMARK®

energy solutions

DESCRIPTION

The patent pending Lumark Crosstour™ MAXX LED Wall Pack Series of luminaries provides low-profile architectural style with super bright, energy-efficient LEDs. The rugged die-cast aluminum construction, back box with secure lock hinges, stainless steel hardware along with a sealed and gasketed optical compartment make Crosstour impervious to contaminants. The Crosstour MAXX wall luminaire is ideal for wall/surface, inverted mount for facade/canopy illumination, perimeter and site lighting. Typical applications include pedestrian walkways, building entrances, multi-use facilities, industrial facilities, perimeter parking areas, storage facilities, institutions, schools, and loading docks.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Low-profile LED design with rugged one-piece, die-cast aluminum back box and hinged removable door. Matching housing styles incorporate both a full cutoff and refractive lens design. Full cutoff and refractive lens models are available in 50W and 85W. Patent pending secure lock hinge feature allows for safe and easy tool-less electrical connections with the supplied push-in connectors. Back box includes four (4) 1/2" NPT threaded conduit entry points. The back box is secured by four (4) lag bolts (supplied by others). External fin design extracts heat from the fixture surface. One-piece silicone gasket seals door and back box. Not recommended for car wash applications.

Optical
Silicone sealed optical LED chamber incorporates a custom engineered reflector providing high-efficiency illumination. Full cutoff models integrate an impact-resistant molded refractive prism optical lens assembly meeting requirements for Dark Sky compliance. Refractive lens models incorporate a molded lens assembly designed for maximum forward throw. Solid state LED Crosstour luminaries are thermally optimized with two (2) lumen packages in cool 5000K or neutral warm 3500K LED color temperature (CCT).

Electrical
LED driver is mounted to the die-cast aluminum housing for optimal heat sinking. LED thermal management system incorporates both conduction and natural convection to transfer heat rapidly away from the LED source. 50W and 85W models operate in -40°C to 40°C [-40°F to 104°F]. High ambient 50°C [122°F] models available. Crosstour MAXX luminaires maintain greater than 85% of initial light output after 60,000 hours of operation. Four (4) half-inch NPT threaded conduit entry points allow for thru-branch wiring. Back box is an authorized electrical wiring compartment. Integral LED electronic driver incorporates surge protection. 120-277V 50/60Hz, 480V 60Hz, or 347V 60Hz electrical operation.

Emergency Egress
Optional integral cold weather battery emergency egress includes emergency operation test switch, an AC-ON indicator light and a premium extended rated sealed maintenance-free nickel-metal hydride battery pack. The separate emergency lighting LEDs are wired to provide redundant emergency lighting. Listed to UL Standard 924, Emergency Lighting.

Area and Site Pole Mounting
Optional extruded aluminum 6-1/2" arm features internal bolt guides for supplied twin support rods, allowing for easy positioning of the fixture during installation to pole. Supplied with round plate adapter plate. Optional tenon adapter fits 2-3/8" or 3-1/2" O.D. Tenon.

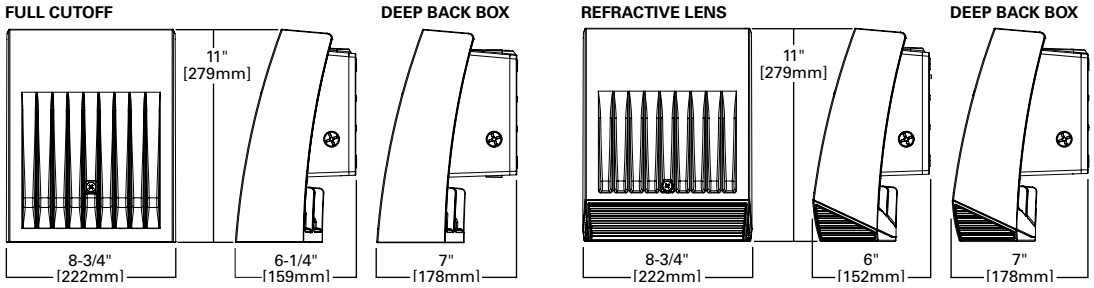
Finish
Crosstour MAXX is protected with a Super TGIC carbon bronze or summit white polyester powder coat paint. Super TGIC powder coat paint finishes withstand extreme climate conditions while providing optimal color and gloss retention of the installed life.

Warranty
Five-year warranty.

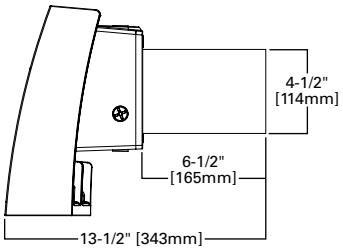
XTOR
CROSSTOUR MAXX LED

APPLICATIONS:
WALL / SURFACE
INVERTED
SITE LIGHTING

DIMENSIONS

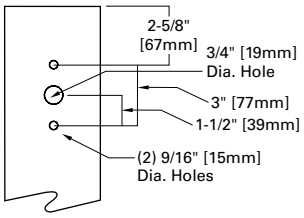


OPTIONAL POLE MOUNT ARM

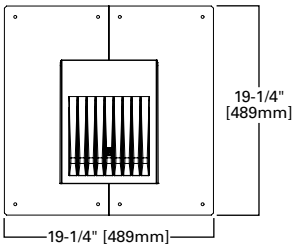


ARM DRILLING

TYPE "C"



ESCUTCHEON PLATES



CERTIFICATION DATA
UL/cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
ARRA Compliant
NOM Compliant Models
3G Vibration Tested
UL924 Listed (CBP Models)
IP66 Rated
Lighting Facts® Registered
DesignLights Consortium® Qualified*

TECHNICAL DATA
40°C Ambient Temperature
External Supply Wiring 90°C Minimum

EPA
Effective Projected Area (Sq. Ft.):
XTOR5A/XTOR9A = 0.54
With Pole Mount Arm = 0.98

SHIPPING DATA:
Approximate Net Weight:
12-15 lbs. [5.4-6.8 kgs.]

Cooper Lighting
by EATON

* www.designlights.org

POWER AND LUMENS BY FIXTURE MODEL

50W LED Information	XTOR5A	XTOR5ARL	XTOR5A-N	XTOR5ARL-N
Delivered Lumens	4,282	4,553	3,532	3,830
B.U.G. Rating	B1-U0-G1	B1-U3-G2	B1-U0-G1	B1-U3-G2
CCT (Kelvin)	5000K	5000K	3500K	3500K
CRI (Color Rendering Index)	65	65	68	68
Power Consumption (Watts)	50W	50W	50W	50W

85W LED Information	XTOR9A	XTOR9ARL	XTOR9A-N	XTOR9ARL-N
Delivered Lumens	7,192	7,416	5,456	5,702
B.U.G. Rating	B1-U0-G1	B1-U3-G3	B1-U0-G1	B1-U3-G2
CCT (Kelvin)	5000K	5000K	3500K	3500K
CRI (Color Rendering Index)	65	65	68	68
Power Consumption (Watts)	86W	85W	84W	82W

EGRESS Information	50W and 85W Full Cutoff CBP Egress LED	50W and 85W Refractive Lens CBP Egress LED
Delivered Lumens	509	468
B.U.G. Rating	N.A.	N.A.
CCT (Kelvin)	4000K	4000K
CRI (Color Rendering Index)	65	65
Power Consumption (Watts)	1.8W	1.8W

CURRENT DRAW

Current (A)	Model Series			
	XTOR5A	XTOR9A	XTOR5A-CBP (Fixture/Battery)	XTOR9A-CBP (Fixture/Battery)
120V	0.43	0.72	0.68/0.25	0.97/0.25
208V	0.25	0.41	--	--
240V	0.22	0.36	--	--
277V	0.20	0.32	0.41/0.21	0.53/0.21
347V	0.16	0.26	--	--
480V	0.12	0.19	--	--

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance	Theoretical L70 (Hours)
50W Model	72,000 Hours	
25°C	> 91%	> 332,000
40°C	> 91%	> 324,000
50°C	> 91%	> 324,000
85W Model	36,000 Hours	
25°C	> 92%	> 157,000
40°C	> 91%	> 134,000
50°C	> 86%	> 85,000

ORDERING INFORMATION

Sample Number: XTOR5A-N-WT-PC1

Series [1]	**LED Kelvin Color**	**Housing Color**	**Options** (Add as Suffix)
Full Cutoff **XTOR5A**=50W **XTOR9A**=85W **Refractive Lens** **XTOR5ARL**=50W **XTOR9ARL**=85W	**[Blank]**=Bright White (Standard) 5000K **N**=Neutral Warm White, 3500K	**[Blank]**=Carbon Bronze (Standard) **WT**=Summit White	**347V**=347V [2, 3, 4, 5] **480V**=480V [2, 3, 4, 5] **PC1**=Photocontrol 120V [6] **PC2**=Photocontrol 208-277V [6, 7] **DIM**=0-10V Dimming Driver [2] **PMA**=Pole Mount Arm (C Drilling) with Round Adapter [3] **HA**=50°C High Ambient [5] **MS-L20**=Motion Sensor for ON/OFF Operation [2, 3, 8, 11] **MS/DIM-L20**=Motion Sensor for Dimming Operation [2, 3, 8, 9, 10, 11] **CBP**=Cold Weather Battery Pack [2, 3, 9, 12]

Accessories (Order Separately)	
WG-XTORMX=Crosstour MAXX Wire Guard **PB120V**=Field Installed 120V Photocontrol **PB277V BUTTON PC**=Field Installed 208-277V Photocontrol [7] **VA1040-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon [13] **VA1041-XX**=2 @ 180° Tenon Adapter for 3-1/2" O.D. Tenon [13] **VA1042-XX**=3 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon [13] **VA1043-XX**=4 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon [13] **VA1044-XX**=2 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon [13] **VA1045-XX**=3 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon [13]	**VA1046-XX**=2 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon [13] **VA1033-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon [13] **VA1034-XX**=2 @ 180° Tenon Adapter for 2-3/8" O.D. Tenon [13] **VA1035-XX**=3 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon [13] **VA1036-XX**=4 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon [13] **VA1037-XX**=2 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon [13] **VA1038-XX**=3 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon [13] **VA1039-XX**=2 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon [13] **EWP/XTORMX**=Escutcheon Wall Plate, Carbon Bronze **EWP/XTORMX-WT**=Escutcheon Wall Plate, Summit White

NOTES: 1 DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. **2** Not available with HA option. **3** Deep back box is standard for 347V, 480V, CBP, PMA, MS-L20 and MS/DIM-L20. **4** Not available with CBP option. **5** Thru-branch wiring not available with HA option or with 347V. **6** Not available with MS-L20 and MS/DIM-L20 options. **7** Use PC2 with 347V or 480V option for photocontrol. Factory wired to 208-277V lead. **8** For use in downlight orientation only. Optimal coverage at mounting heights of 9'-20'. **9** 120V or 277V only. **10** Factory set to 50% power reduction after 15 minutes of inactivity. Dimming driver included. **11** Includes integral photo sensor. **12** Operating temperatures -20°C to 25°C. **13** Replace "XX" with CB for carbon bronze or WT for summit white.

STOCK ORDERING INFORMATION

50W Series	**85W Series**
Full Cutoff	
XTOR5A=50W, 5000K, Carbon Bronze	XTOR9A=85W, 5000K, Carbon Bronze
XTOR5A-PC1=50W, 5000K, 120V PC, Carbon Bronze	XTOR9A-PC1=85W, 5000K, 120V PC, Carbon Bronze
XTOR5A-WT= 50W, 5000K, Summit White	XTOR9A-WT=85W, 5000K, Summit White
XTOR5A-N=50W, 3500K, Carbon Bronze	XTOR9A-PC2=85W, 5000K, 208-277V PC, Carbon Bronze
	XTOR9A-480V=85W, 5000K, 480V, Carbon Bronze
	XTOR9A-PMA=85W, 5000K, Pole Mount Arm, Carbon Bronze
Refractive Lens	
XTOR5ARL=50W, 5000K, Refractive Lens, Carbon Bronze	XTOR9ARL=85W, 5000K, Refractive Lens, Carbon Bronze
XTOR5ARL-PC1=50W, 5000K, Refractive Lens, 120V PC, Carbon Bronze	XTOR9ARL-PC1=85W, 5000K, Refractive Lens, 120V PC, Carbon Bronze
XTOR5ARL-WT=50W, 5000K, Refractive Lens, Summit White	XTOR9ARL-WT=85W, 5000K, Refractive Lens, Summit White
XTOR5ARL-N=50W, 3500K, Refractive Lens, Carbon Bronze	XTOR9ARL-PC2=85W, 5000K, Refractive Lens, 208-277V PC, Carbon Bronze
	XTOR9ARL-480V=85W, 5000K, Refractive Lens, 480V, Carbon Bronze
	XTOR9ARL-PMA=85W, 5000K, Refractive Lens, Pole Mount Arm, Carbon Bronze

5 Days Quick-Ship

5-DAY QUICK SHIP ORDERING INFORMATION

50W Series	**85W Series**
Full Cutoff	
XTOR5A-CBP=50W, 5000K, Carbon Bronze, Cold Weather Battery Pack	XTOR9A-CBP=85W, 5000K, Carbon Bronze, Cold Weather Battery Pack
XTOR5A-480V=50W, 5000K, Carbon Bronze, 480V	XTOR9A-N=85W, 3500K, Carbon Bronze
XTOR5A-PC2=50W, 5000K, Carbon Bronze, 208-277V PC	
Refractive Lens	
XTOR5ARL-PC2=50W, Refractive Lens, 5000K, Carbon Bronze, 208-277V PC	XTOR9ARL-CBP=85W, Refractive Lens, 5000K, Carbon Bronze, Cold Weather Battery Pack
XTOR5ARL-CBP=50W, Refractive Lens, 5000K, Carbon Bronze, Cold Weather Battery Pack	XTOR9ARL-N=85W, Refractive Lens, 3500K, Carbon Bronze
XTOR5ARL-480V=50W, Refractive Lens, 5000K, Carbon Bronze, 480V	

vpi Quality Windows

Endurance Series

Commercial Mid-rise Windows Designed to Outlast the Rest

Endurance–the Optimum in Mid-rise Performance

If you are building a mid-rise structure in the Western United States, you are probably specifying the *Endurance Series by VPI Quality Windows*. In a world where demanding specifications and uncompromising job site testing is the way of life, a commercially rated window is the only acceptable solution, as residential windows leave room for unwanted risk. VPI prides itself on superior product performance ratings in the lab and the field. These are the result of our engineering centric organization that is obsessive with safety, quality & customer service, day-in and day-out.

- Commercial profile design coupled with industry leading glazing system delivers the right balance of aesthetics & performance, at a great value
- Our manufacturing process is systematic, documented, controlled and constantly improving
- Structural performance & deflection are enhanced by commercial grade metal reinforcements interconnected throughout the window assembly
- Endless configuration possibilities with fixed, awning and/or casement windows, thanks to an intersecting integral bar system, all assembled within continuous frames – no mulling nightmares!
- Durable, co-extruded acrylic exterior finishes allow for color diversity without compromising structural and thermal performance
- Panel level window design that optimizes water intrusion and air infiltration/ex-filtration

The evolution is complete for mid and high rise commercial and mixed use applications, the future belongs to the Endurance Series window system!

ENDURANCE SERIES

Specify the ideal mix of strength, energy performance and aesthetics with Endurance!

WE SELL ENERGY STAR

VPI Quality Windows manufactures ENERGYSTAR® qualified products, that use less energy.

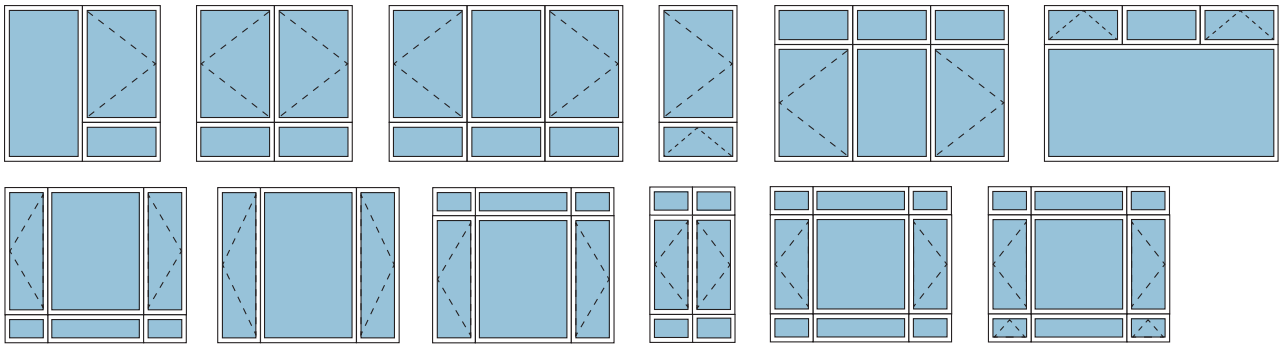
Commercial-Rated Performance:

Engineered for Mid-Rise Construction

PRODUCT	PERFORMANCE							
Casement/Awning	**Test Size**	**AAMA**	**Infil**	**Exfil**	**Water**	**U-Factor***	**SHGC***	**VT***
Awning	46” x 32”	CW-PG60	<0.01	<0.01	9.20	0.26	0.18	0.42
Casement	36” x 60”	CW-PG70	<0.01	<0.01	10.66	0.26	0.18	0.42
Fixed	72” x 96”	CW-PG40	<0.01	<0.01	15.04	0.26	0.22	0.51
CPC	96” x 66”	CW-PG70	0.06	0.06	15.04	0.26	0.18	0.42
CPC-AT	108” x 96”	CW-PG40	0.16	0.11	15.04	0.26	0.18	0.42
CP-UT	72” x 78”	LC-PG60	<0.01	<0.01	15.04	0.26	0.18	0.42
Sliding	**Test Size**	**AAMA**	**Infil**	**Exfil**	**Water**	**U-Factor**	**SHGC**	**VT**
XO	71” x 56”	LC-PG50	0.08	0.07	7.52	0.28	0.22	0.51
XOX	108” x 66”	LC-PG50	0.05	0.04	7.52	0.28	0.22	0.51
XOXAT	108” x 96”	LC-PG50	0.05	0.04	7.52	0.28	0.22	0.51
SH	56” x 96”	CW-PG30	0.09	0.07	5.43	0.27	0.22	0.51
SH-AU	44” x 108”	LC-PG55	0.04	0.03	8.36	0.27	0.22	0.51
SH-PW-SH	108” x 96”	CW-PG30	0.06	0.05	6.90	0.27	0.22	0.51

* Assumes Cardinal LoE 366

Some select configurations. Bring us your designs.



PRODUCT						
Window Type	**Glass Configuration**	**Spacer Size**	**Argon**	**Lami**	**STC**	**OITC**
AWN/CAS	1” - (1/4” - 0.030” - 1/2” AS - 1/4”)	0.500	Yes	0.030	36	30
PW	1-3/8” - (1/4” - 0.030” - 13/16” AS - 9/32” - 0.060”)	0.813	Yes	0.030/0.060	38	29
AWN-U	1-3/8” - (1/4” - 0.030” - 7/8” AS - 1/4” - 0.030”)	0.875	Yes	0.030	41	33
XO	1” - (3/16” - 9/16” AS - 1/4” - 0.030”)	0.563	Yes	0.030	36	29
SH	1” - (1/4” - 0.030” - 9/16” AS - 3/16”)	0.563	Yes	0.030	35	29

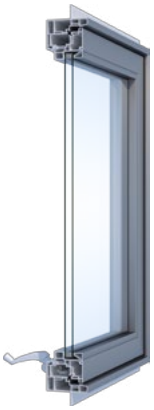
Standard Configuration Features:

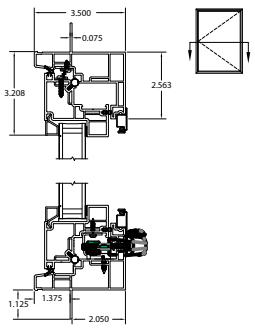
- **COMPRESSION-SEAL DESIGN** enhances protection against water intrusion, air infiltration, and allows ease of glass replacement
- **VINYL FRAMES** Increase thermal performance, add color options, and reduce condensation
- **FRAME AND SASH** have hollow compartments that allow for optimal reinforcement required in heavy commercial applications
- **FUSION WELDED CORNERS** provide environmental comfort and protect against leaks
- **AVAILABLE MULTIPLE LOCKING POINTS** ensure security and provide a triple weather seal for superior air and water resistance
- **EASY TO OPERATE HARDWARE** delivers a wide opening for emergency egress and cleaning
- **T-BAR** allows for freedom of design while maintaining structural and thermal performance

Selected CAD Details

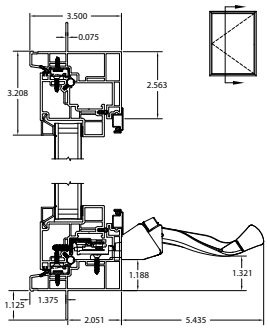
CAD files in DWG and PDF format and specifications for most products can be downloaded from www.VPIwindows.com/cad

Casement Awning 3½" Frame Depth

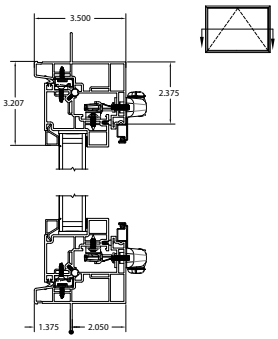




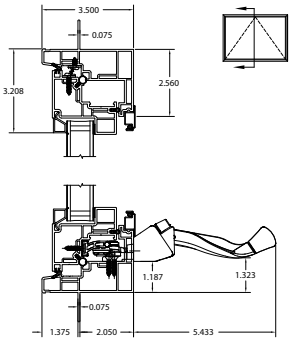
Casement Horizontal



Casement Vertical

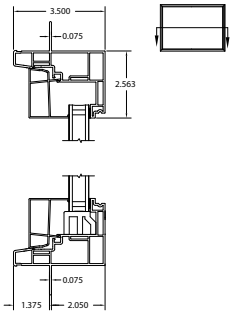


Awning Horizontal

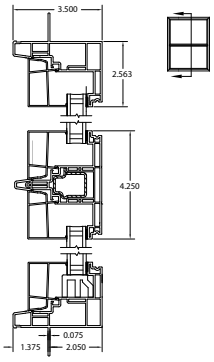


Awning Vertical

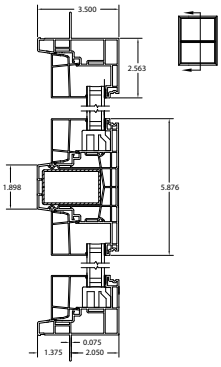
Fixed Window 3½" Frame Depth



Picture Window Vertical
Available with IGUs 3/4"–1-1/4"OA

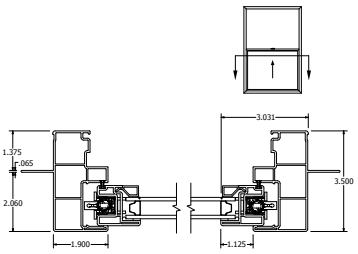


Picture Window Vertical
with Narrow T-bar

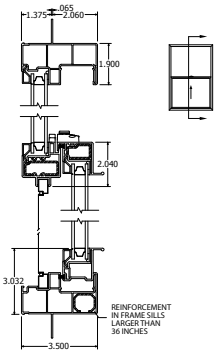


Picture Window Vertical
with Wide T-bar

Single Hung 3½" Frame Depth

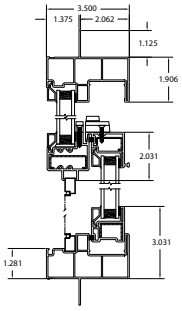


Single Hung Upper Horizontal Section

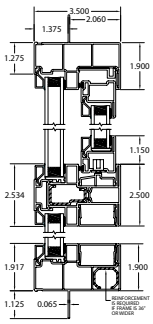


Single Hung Operable Vertical Section

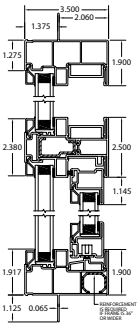
Horizontal Slider 3½" Frame Depth



Horizontal Slider



Horizontal Slider
Above Fixed



Horizontal Slider
Below to Fixed

Performance that Exceeds Expectations

Just Ask Our Customers

"VPI performance is better and more consistent than any of the vinyl window products we've used."
Lake Washington Windows.

"Thornton Place was the largest project to date for Walsh Seattle and was full of challenges. Your dedication and collaboration were instrumental... On behalf of a grateful Company, we thank you."
Walsh Construction.

"We are very satisfied with VPI. VPI window products demonstrate a blend of solid performance, high quality manufacturing and color options that are unique in the industry."
The Soltner Group, Architects Inc.

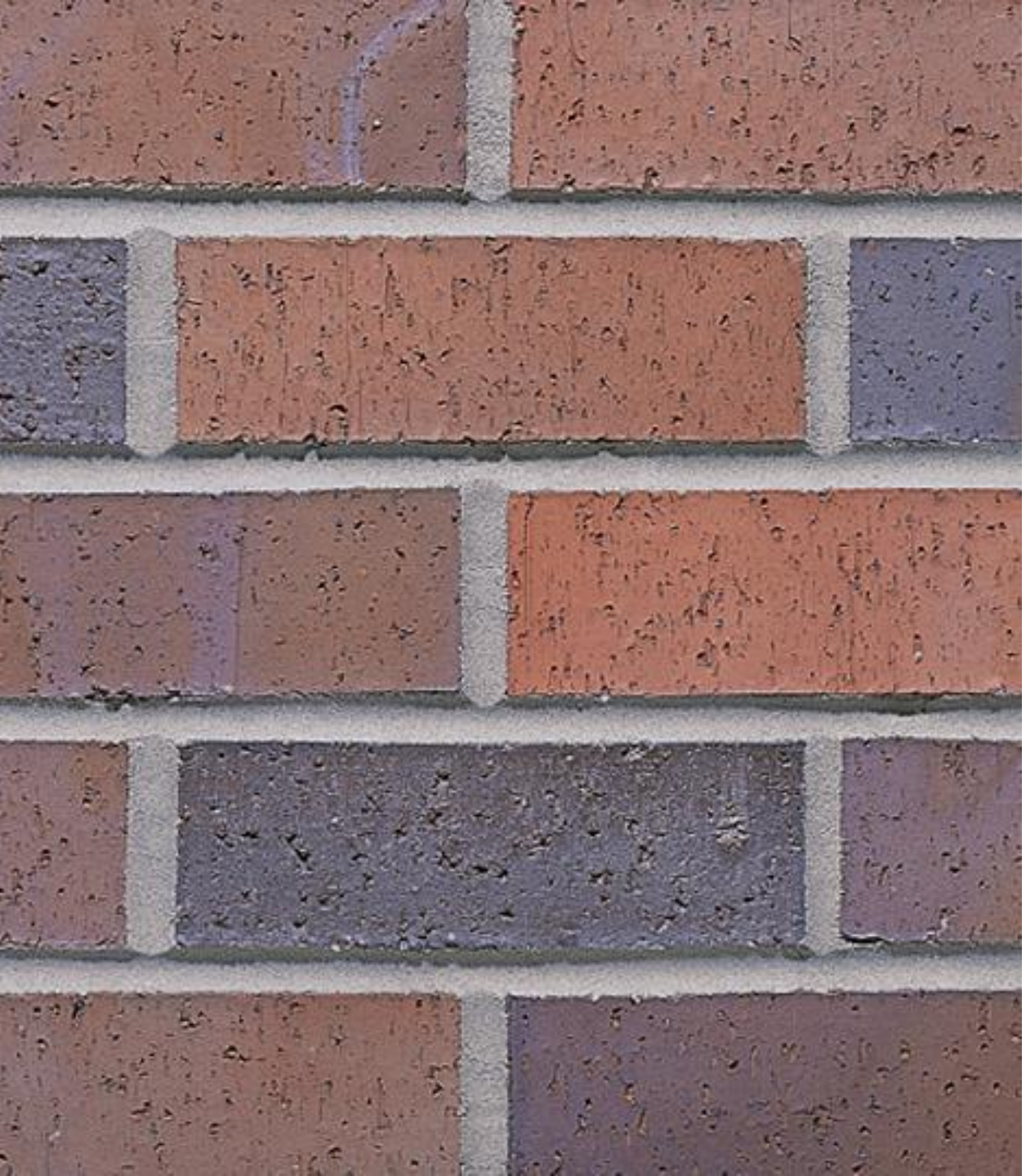
The Proof is in Our Performance

Backed by one of the strongest warranties in the business including twenty year seal failure coverage, project owners can be confident that the Endurance Series™ will stand the test of time.

ENDURANCE SERIES

vpi Quality Windows

www.vpiwindows.com
(800) 634-1478 | info@vpiwindows.com
3420 E. Ferry, Spokane, WA 99202



THE BRICK BOOK

COLORS | TEXTURES | ASTM

Reds and Browns

COLOR*: Mountain Blend
TEXTURE: Mission, Smooth, Rug
TYPE: Stocking
PLANT: Columbia, OR
COLLECTION: The Heritage Collection
ASTM: ASTM C-216, SW, FBX

- *Due to the limitations of photography, the actual product shipped is not guaranteed to duplicate the image shown here. Final color and product selection should be made from actual samples.*
- *Special Order Texture. May require a minimum order. Additional production time should be allowed.*

Considering brick for your project?

For samples and ordering information contact your Mutual Materials Sales Representative or call (888) 688-8250.

MUTUALMATERIALS®
www.mutualmaterials.com

Precast Concrete Arch
Decorative Corbel
Panels between windows
Gutter and Downspout
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Vinyl Window with trim at Residential
Lap Siding
Asphalt Single Roofing
Decorative vent

Metal Gutter and Downspout
Metal Balcony and Railing
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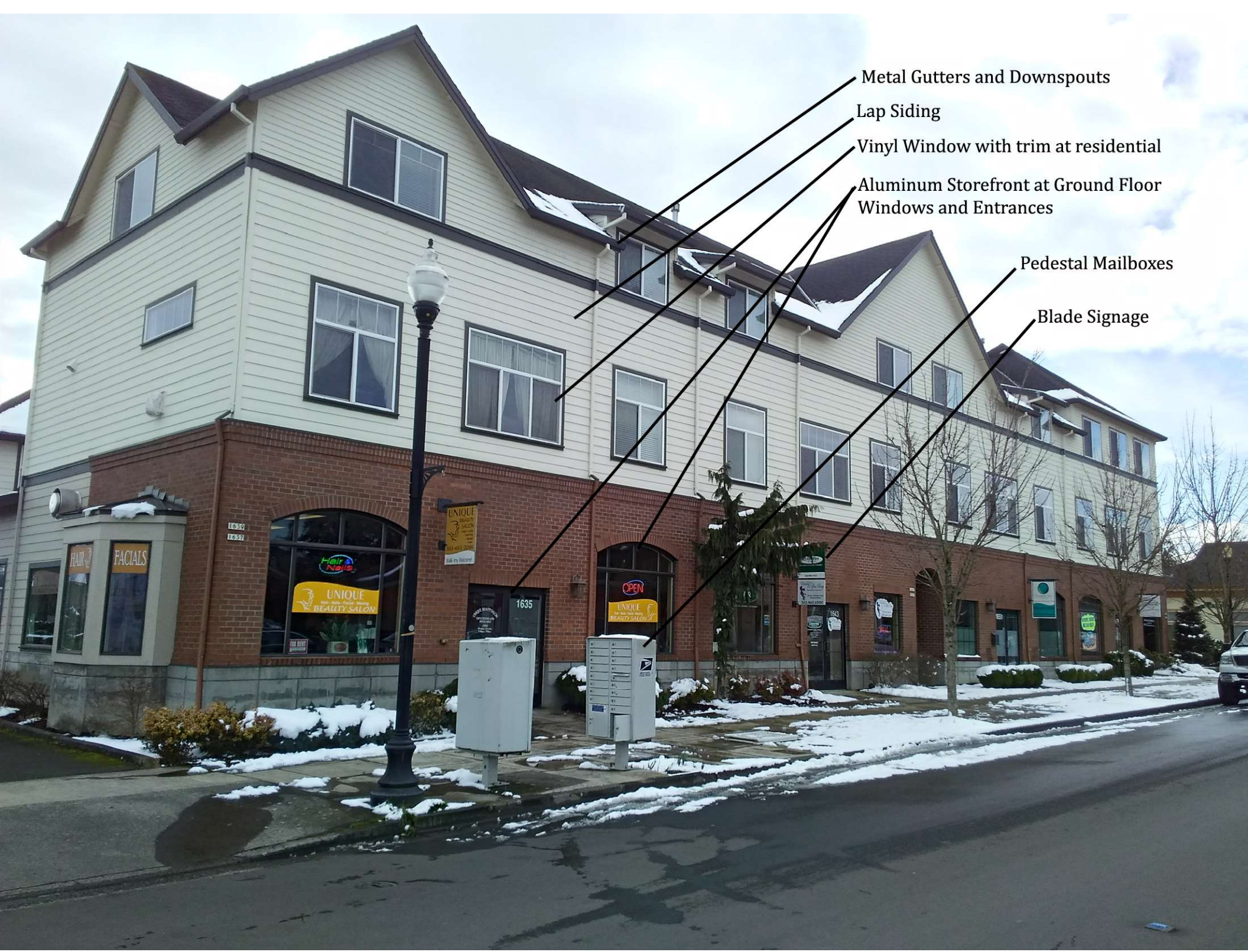
Metal Railing
Lap Siding and Trim


Metal Gutters and Downspouts
Lap Siding
Vinyl Window with trim at residential
Aluminum Storefront at Ground Floor Windows and Entrances
Pedestal Mailboxes
Blade Signage
HAIR
FACIALS
UNIQUE
BEAUTY SALON
1635
OPEN

Painted Wood Canopy with
Metal Roofing
Match Brick Color
Blade Signage
1505

Metal Roofing
Blade Signage
1537
1525
Storefront Entrance and Windows

Precast Concrete
Panels Siding at Windows
FAIRVIEW·COLUMBIA·LIBRARY
1520

TAYLOR METAL PRODUCTS

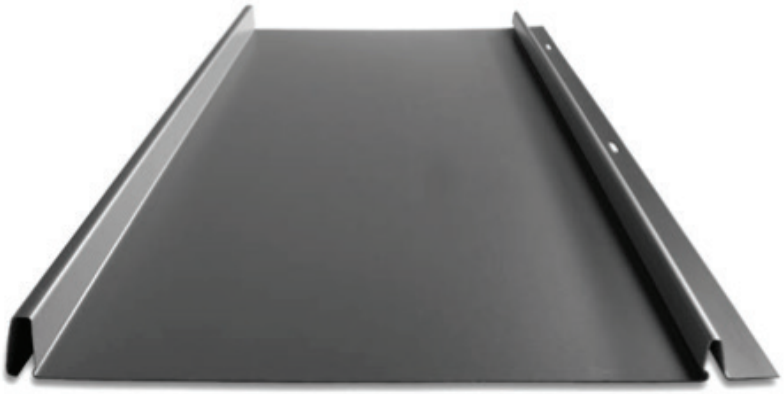
Easy-Lock™ STANDING SEAM

The Easy-Lock™ Standing Seam is the only metal roofing panel with a patented no-siphon dry lock seam, with a unique reversing feature to allow installation of panels from both directions starting at any location. The panel is designed with softer, less industrial lines to provide an architecturally pleasing appearance.

KEY FEATURES

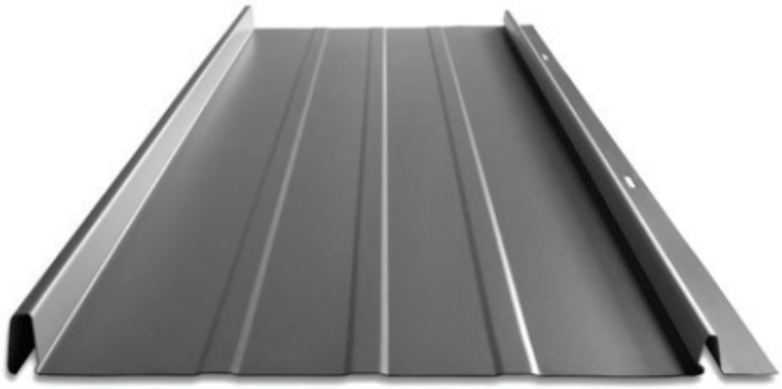
- 12”, 16” and 18” coverage options
- 26, 24 & 22 gauge Tru-Gauge™, .032 Aluminum and 24 gauge Bonderized (G-90)
- 16 & 20 oz. Copper *(inquire)*
- Factory-notched panels available
- Vertical interlocking application: allows installation from both directions starting at any location
- Patented no-siphon lock seam
- 1-1/8” vertical rib with 3/8” flat top for ease of flashing attachment
- Concealed fasteners: fasteners cannot leak
- Pre-slotted fastener flange: allows expansion/ contraction of panel
- - Code compliance UL Evaluation Report UL ER 25913-01
- UL580 Class 90 wind uplift, UL Class A fire rated
- UL Construction No. 529
- 3:12 minimum pitch recommended *for lower pitches, please inquire*
- Standard panel lengths 2’ to 35’ *for longer lengths, please inquire*
- Pan options: Flat pan, Accent ribs, Striations

PANEL PROFILES

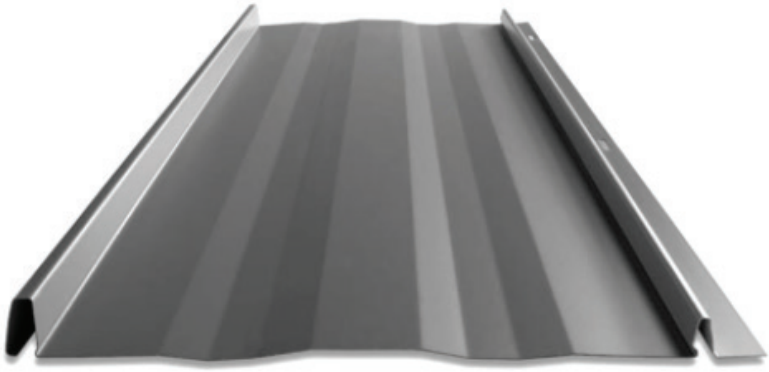


FLAT PAN

12”, 16” and 18” coverage options



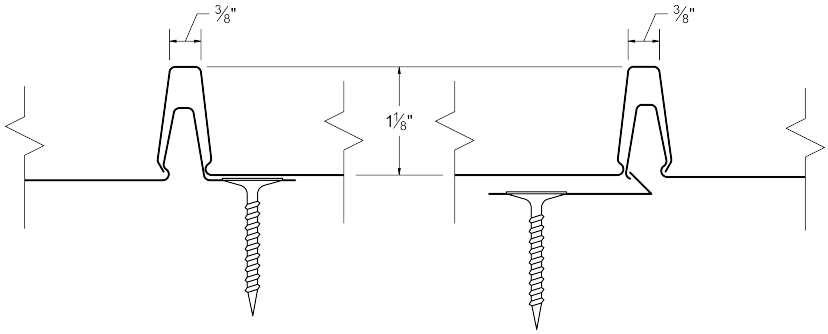
ACCENT RIBS 3 Accent ribs for 12” panel
4 Accent ribs for 16” & 18” panel



STRIATED

LOCK SEAM DETAL

REVERSE LAP DETAIL



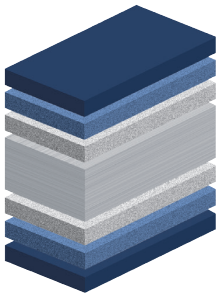
TAYLOR METAL PRODUCTS

MATERIAL SPECIFICATIONS

- 26 gauge Kynar 500® Painted Steel .019" (thickness prior to painting) G-90 Galvanized or AZ-50
- 24 gauge Kynar 500® Painted Steel .0236" (thickness prior to painting) G-90 Galvanized or AZ-50
- 24 & 22 gauge bare Zincalume® Plus with Clear Acrylic Coating AZ-55
- ▲ 22 gauge Kynar 500® Painted Steel .029" (thickness prior to painting) G-90 Galvanized o AZ-50
- ✦ .032 Kynar 500® Painted Aluminum *(inquire)*
- 22 gauge Rusteel™ (cold-rolled)
- 22 gauge Rusteel Plus™ (A606)
- 24 gauge Bonderized (G-90)
- 16 and 20 oz. Copper *(inquire)*
- Kynar and substrate testing data available *(see website)*

KEY FEATURES

- 21 Standard Colors, 5 Metallic Colors and 5 Specialized Colors
- Kynar 500® Paint System - the ultimate in exterior durability and color retention
- "Cool" color pigments are specially designed to reflect infrared light, reducing heat gain to dwelling, and conform with ENERGY STAR® criteria
- Superior quality, two coat, 70% resin finish, applied at a 1mm thickness
- 40 year residential paint warranty
- 20 and 30 year commercial paint warranty *(contact TMP for warranty specifications)*



40-Year Residential/20 and 30 Year Commercial Manufacturer's Limited Warranty

STANDARD 24g COOL KYNAR 500® COLORS

Color	SRI	Gauge
Glacier White	85	1,2,3,4 ▲
Sierra Tan	59	1,3,4
Parchment	58	2,4
Sterling Grey	44	1,3,4 ✦
Zinc Grey	40	1,2,3,4 ▲✦
Charcoal Grey	25	1,2,3,4 ▲✦
Saddle Tan	37	1,3,4
Medium Bronze	33	1,2,3,4 ▲✦
Musket	31	3,4
Dark Bronze	27	1,2,3,4 ▲✦
Black	29	1,2,3,4
Tahoe Blue	28	1,2,4
Pacific Blue	28	2,3,4
Hemlock Green	36	1,3,4
Forest Green	25	1,2,3,4
Pine Green	26	1,2,3,4
Burgundy	25	1
Terra Cotta	42	3,4
Tile Red	36	1,3,4
Colonial Red	38	1,4
Retro Red	41	4

PREMIUM METALLIC COOL KYNAR® COLORS

Color	SRI	Gauge
Metallic Silver	58	3,4 ▲
Champagne	46	3
Antique Patina	40	3
Copper Penny	48	3,4
Weathered Zinc	35	1,2,3,4 ▲✦

SPECIALIZED MATERIAL

Material	Gauge
16 oz. and 20 oz. Copper *please inquire*	
Zincalume® Plus	2,3,4 ▲
Bonderized	2,3,4
Vintage®	2,3,4
22g Rusteel™ (cold-rolled) Rusteel Plus™ (A606)	2,3,4 ▲

These printed chips provide a close representation of the colors.

Metal samples are available upon request. Coatings are low gloss 10-15% sheen.

*SRI = Solar Reflective Index. SRI values listed above are in accordance with ASTM E 1980 and are based on actual testing.***Oil canning is not a cause for material rejection****

Standard Panels				
Width	Gauge	Color	LBS SGFT	LBS LF
12"	26	1	1.13	1.13
12"	24	2	1.33	1.33
16"	24	3	1.24	1.65
18"	24	4	1.21	1.82
16"	0.032	✦	0.58	0.78
16"	22	▲	2.07	2.75

steelscape PPG ENERGY STAR CRRC MEMBER

9-17

LANDMARK® TL

Luxury Roofing Shingles
Triple Laminate

Landmark TL, shown in Shenandoah

CertainTeed
SAINT-GOBAIN

Shown in Shenandoah

Your Home Deserves the Triple Crown.

Three laminated layers of the industry's most durable materials, providing a dramatically thick roofing product styled with the classic appeal of wood shakes.

Landmark® TL is the triple performance shake that has the hand-split look of cedar and the durable dimension of tri-laminate technology.

The New American Landscape

See it for yourself. The thickness that gives Landmark TL unmatched durability also ensures a stunning natural appearance. Like a real wood shake, it's truly dimensional in shape, with distinct butted edges and long-lasting curb appeal.

Triple-play Construction

TL is triple-layer, the secret behind beauty with performance. Landmark TL features three laminated layers of the industry's strongest materials to produce a thick, dimensional shake that endures, commanding attention wherever it goes.

The Look of Wood (Minus the Worry)

Landmark TL costs a fraction of natural wood shakes, but the benefits don't end there. Unlike wood, it won't rot or decay, and it offers excellent wind and fire resistance. Plus, with StreakFighter® (available in most areas), it will protect your roof from the streaking caused by airborne algae.

Landmark TL. Don't just choose it for the triple-layer durability, originality, or even the cost advantages. Choose it for the power of its position... high above all the rest.

The Ultimate Power Shake

- Three-piece laminated fiber glass construction
- Rustic appearance of hand-split wood shakes
- 305 lbs. per square

CertainTeed products are tested to ensure the highest quality and comply with the following industry standards:

Fire Resistance:
- UL Class A
- UL certified to meet ASTM D3018 Type 1

Wind Resistance:
- UL certified to meet ASTM D3018 Type 1
- ASTM D3161 Class F

Tear Resistance:
- UL certified to meet ASTM D3462
- CSA standard A123.5

Wind Driven Rain Resistance:
- Miami-Dade Product Control Acceptance: Please reference www.certainteed.com to determine approved products by manufacturing location.

Quality Standards:
- ICC-ES-ESR-1389 & ESR-3537

WARRANTY

- Lifetime limited transferable warranty against manufacturing defects on residential applications
- 50-year limited transferable warranty against manufacturing defects on group-owned or commercial applications
- 15-year StreakFighter® algae-resistance warranty (where available)
- 10-year SureStart™ protection
- 15-year 110 mph wind-resistance warranty
- Wind warranty upgrade to 130 mph available. CertainTeed starter and CertainTeed hip and ridge required

See actual warranty for specific details and limitations.

LANDMARK® TL COLOR PALETTE

Aged Bark

Country Gray

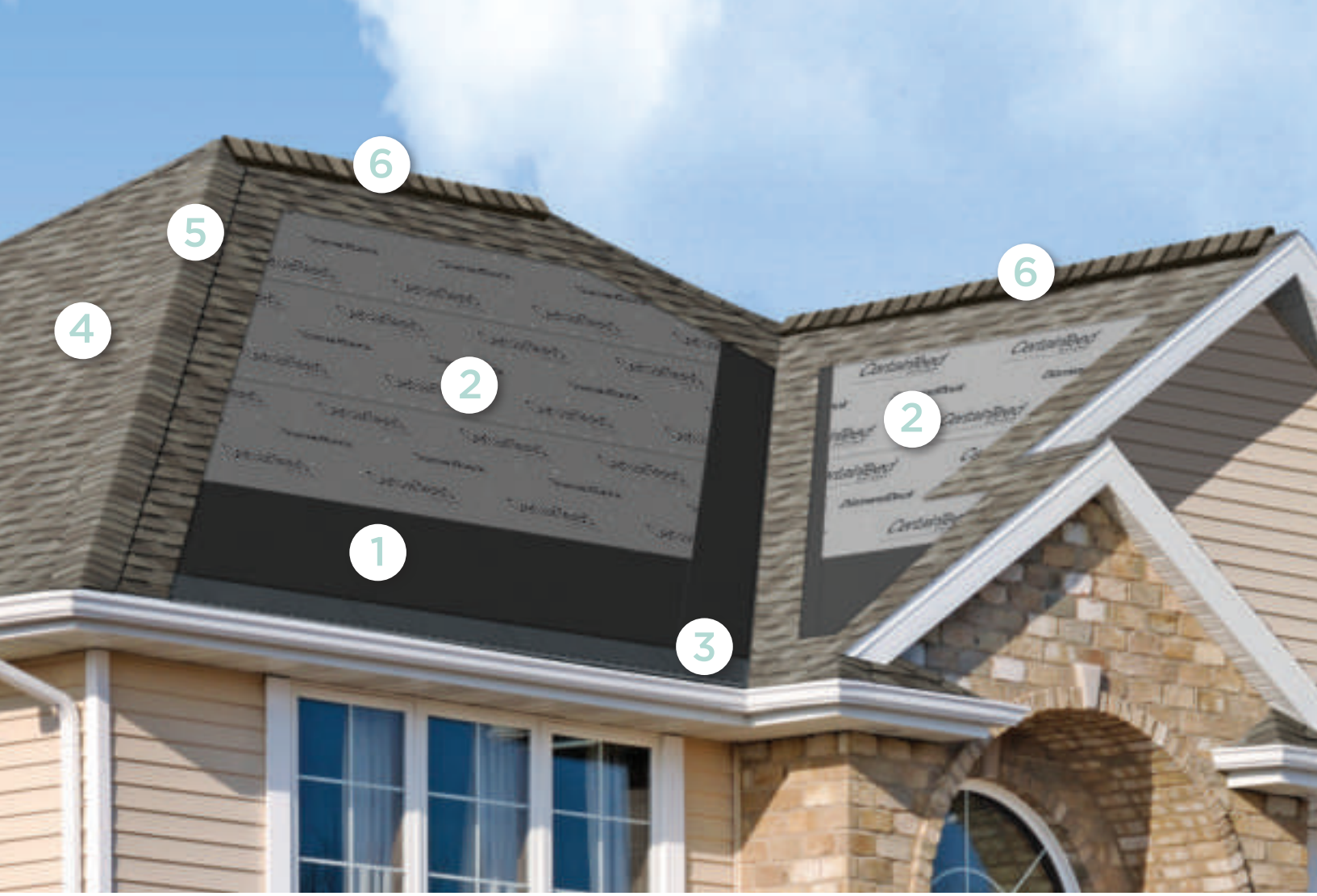
Max Def Black Walnut

Moiré Black

Old Overton

Platinum

Shenandoah



Integrity Roof System™

Integrity is built from the bottom up. Layer-on-layer, only CertainTeed provides the peace of mind that comes with the best components performing together for peak efficiency.

1. Waterproof Underlayment

Waterproofing shingle underlayment prevents leaks from wind-driven rain and ice dams

2. Water-Resistant Underlayment

High-performance underlayment provides a water-resistant layer over the roof deck and a secondary barrier against leaks

3. Starter Shingles

Perfect starts every time and designed to work in tandem with the roof shingles above

4. Roof Shingles

Choose the best, covered by the strongest warranty in the business

5. Hip & Ridge Caps

Perfect finish for hip and ridge lines, complementing all CertainTeed shingles

6. Roof Ventilation

Engineered for ideal roof ventilation especially when matched with CertainTeed Intake Vents

Add a Little Accent to Your Roof.

For a finishing touch to cap hips and ridges, use Cedar Crest®— available in colors to coordinate with your Landmark TL shingles. CertainTeed also offers other accessory products for capping hips and ridges— available in colors to match your Landmark TL shingles. CertainTeed Swiftstart is recommended to be used as the starter course.

Color Companion Products™ for Flat Roof Areas

With CertainTeed Flintlastic® SA, you can coordinate flat roof areas like carports, canopies and porches with your main roof. Flintlastic SA is a self-adhering low slope roofing product available in eight colors that complement some of the most popular CertainTeed shingles.

NOTE: Due to limitations of printing reproduction, CertainTeed can not guarantee the identical match of the actual product color to the graphic representations throughout this publication.

RESIDENTIAL ROOFING

The best formula under one roof.

We start with the highest-quality raw materials and add state-of-the art technology to monitor our manufacturing process and test our finished products. The result is superior performance from beginning to end.

SUPERIOR THROUGH SCIENCE

Landmark® TL available in areas shown

NOTE: Due to limitations of printing reproduction, CertainTeed can not guarantee the identical match of the actual product color to the graphic representations throughout this publication.

learn more at: certainteed.com/roofing

SAINT-GOBAIN

CertainTeed Corporation

ROOFING • SIDING • TRIM • DECKING • RAILING • FENCE • GYPSUM • CEILINGS • INSULATION

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WEST
Product Catalog

Achieve authentic character and
UNCOMPROMISING PERFORMANCE.

JamesHardie
Siding | Trim

It's time to
BUILD SOMETHING TIMELESS.

JamesHardie®

Installed on over 8 million homes* from coast to coast, James Hardie® fiber cement siding products are designed to resist the most extreme conditions while romancing the senses. Enjoy the warm, natural character of wood with unprecedented peace of mind. It's easy to see what makes James Hardie the market leader.

UNIQUE FORMULATION
We use the highest quality raw materials and proprietary additives for enhanced strength and moisture protection.

FINISHING TECHNOLOGY
Baked-on color delivers a beautiful finish that resists fading and makes a lasting impression.

COMPLETE EXTERIOR™
Offers homeowners an unrivaled collection of design options with exceptional warranties through a single, trusted manufacturer.

*Estimate based on total James Hardie siding sales through 2016 and average housing unit size.

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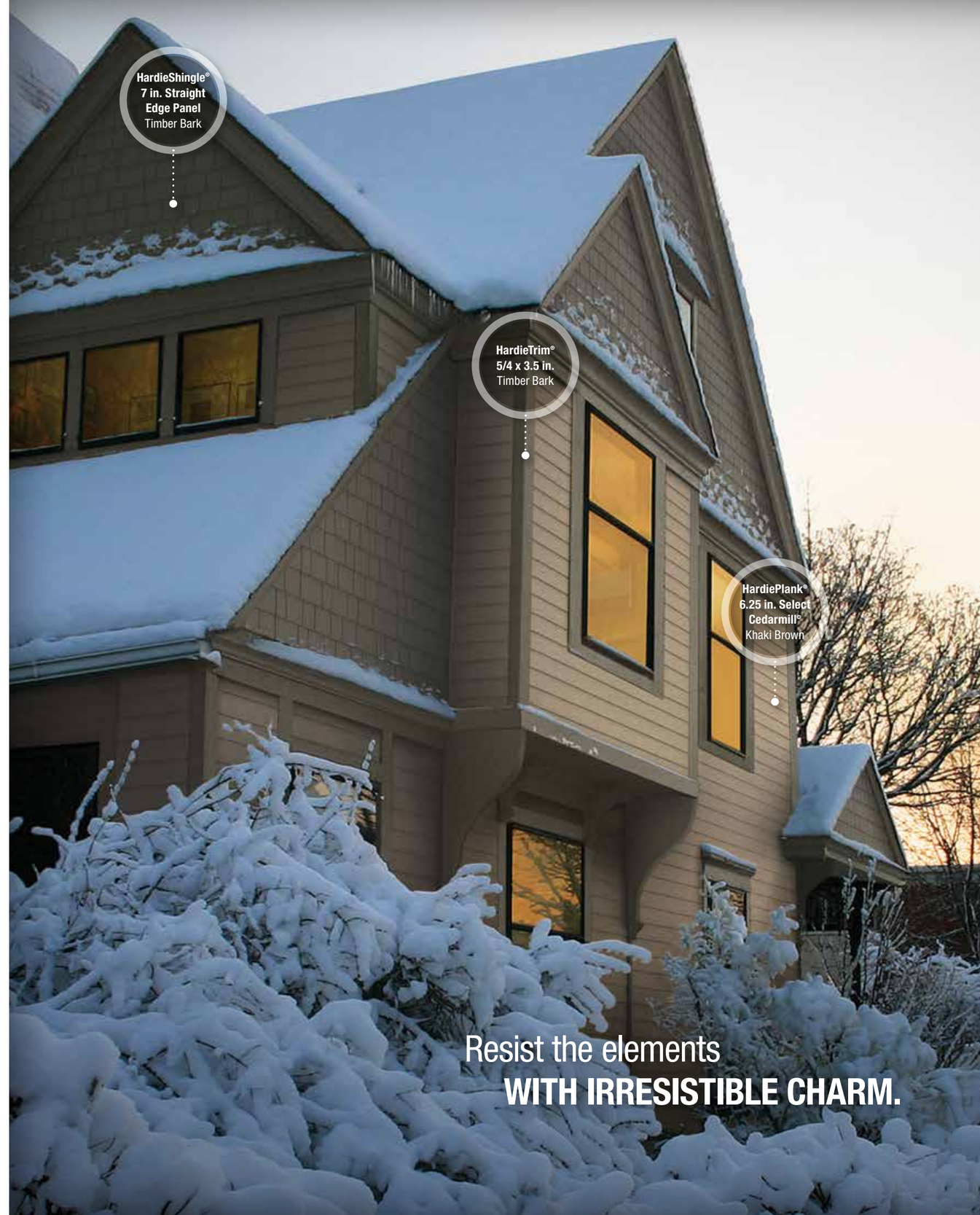
HardieZone® System

Only James Hardie fiber cement products are Engineered for Climate®. In the northern U.S. and Canada, HZ5® products resist shrinking, swelling and cracking even after years of wet or freezing conditions. HZ10® products help protect homes from hot, humid conditions, blistering sun and more.

With James Hardie siding and trim, homeowners have an exterior that's tougher than the elements and easy on the eyes.

NO MATTER WHAT NATURE BRINGS



Resist the elements
WITH IRRESISTIBLE CHARM.

TOUGHER THAN THE ELEMENTS

- Stands up to storms and harsh weather
- Water resistant to protect against swelling, warping and cracking; also resists mold damage
- Won't be eaten by animals or insects
- Fire resistant
- Helps reduce time and money spent on maintenance

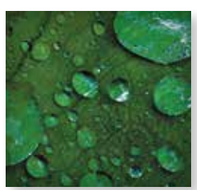
Unique Formulation
HZ5® AND HZ10® Substrate

Not all fiber cement is the same. The James Hardie HZ5 and HZ10 products contain the highest quality raw materials. Our unique formulations, combined with innovative product design and manufacturing processes, create two distinct substrates. Each substrate is precisely engineered to resist moisture, cracking, shrinking and swelling in the specific region for which it is designed.

PROPRIETARY ENHANCEMENTS CREATE **DURABLE JAMES HARDIE® SIDING**

Perfect balance of strength and workability

Our balance of high-quality Portland cement, sand and cellulose fiber delivers the best combination of strength and workability.



Enhanced moisture resistance for unmatched durability

Patented and proprietary additives are chemically bonded within the substrate matrix to provide durable moisture resistance.

Increased dimensional stability

Our siding is engineered at the microscopic level to create a fiber cement composite with superior dimensional stability that helps protect against shrinking and splitting.

Integrity is ingrained
IN EVERYTHING WE DO.

UNMATCHED INVESTMENT IN MANUFACTURING SCALE AND PRODUCT INNOVATION

- Largest manufacturer of fiber cement in North America
- 5x more capacity than our largest competitor
- More than 100 process and product quality checks
- 100+ scientists and engineers provide dedicated resources for continuous innovation in manufacturing and product development
- More U.S. fiber cement patents than any competitor

YOUR RETURNS ON OUR INVESTMENT

- Superior siding and trim performance for beauty that lasts
- Consistency in appearance from board to board
- Natural-looking profiles for authentic character

Finishing Technology

Primer

A quality primer is the first step to ensuring that the paint color you select beautifully expresses a home's true character now – and for years to come. Our distinctive primers – green for HZ5 and gold for HZ10 – are engineered for climate and for use with paint on James Hardie fiber cement siding products. It helps to provide consistent, long-lasting paint adhesion, even in the most demanding conditions.

ColorPlus® Technology

Our advanced ColorPlus® Technology finishes deliver the ultimate in aesthetics and performance. Our products aren't simply painted at the factory. Multiple coats of color are baked onto the board, giving homes a durable, rich and consistent color no field-applied house paint can match.

- Superior finish adhesion
- Superior color retention
- Superior UV resistance
- Year-round installation

James Hardie Complete Exterior™

Top to bottom, our exterior product line is defined by excellent performance, aesthetics and design options.

Provide protection from the elements, showcase a homeowner's individual style and install peace of mind with exceptional warranties through a single, trusted manufacturer.

Exceptional warranties through a
SINGLE, TRUSTED MANUFACTURER.

HardiePlank®

Sleek and strong, HardiePlank® lap siding is not just our best-selling product – it's the most popular brand of siding in America.

With a full spectrum of colors and textures, homeowners can enjoy protection from the elements and the versatility to make their dream home a reality. From Victorians to Colonials, HardiePlank lap siding sets the standard in exterior cladding.

A classic look for
THE HOME OF THEIR DREAMS.

PROJECT LAP SIDING

SELECT CEDARMILL©
Woodstock Brown

SMOOTH
Countrylane Red

Thickness	5/16 in.					
Length	12 ft. planks					
Width	5.25 in.*	6.25 in.	7.25 in.	8.25 in.	9.25 in.*	12 in.*
Exposure	4 in.	5 in.	6 in.	7 in.	8 in.	10.75 in.
ColorPlus Pcs./Pallet		280	252	210		
Prime Pcs./Pallet	360	308	252	230	190	152
Pcs./Sq.	25.0	20.0	16.7	14.3	12.5	9.3

BEADED CEDARMILL©
Khaki Brown

BEADED SMOOTH
Heathered Moss

Thickness	5/16 in.
Length	12 ft. planks
Width	8.25 in.
Exposure	7 in.
ColorPlus Pcs./Pallet	210
Prime Pcs./Pallet	240
Pcs./Sq.	14.3

CUSTOM COLONIAL ROUGHSAWN®
Mountain Sage

CUSTOM COLONIAL SMOOTH®
Timber Bark

Thickness	5/16 in.
Length	12 ft. planks
Width	8 in.
Exposure	6.75 in.
ColorPlus Pcs./Pallet	216
Prime Pcs./Pallet	240
Pcs./Sq.	14.9

RUSTIC CEDAR**
Not available with ColorPlus Technology

Thickness	5/16 in.	
Length	12 ft. planks	
Width	6.25 in.	8.25 in.
Exposure	5 in.	7 in.
Pcs./Pallet	308	230
Pcs./Sq.	20	14.3

*These 5.25 in., 9.25 in. and 12 in. are only available primed.
**Rustic Cedar available exclusively in Washington and Oregon districts.

Products are available primed or with ColorPlus Technology finishes. All sizes and textures not available in all areas.
For more details, visit **jameshardiepros.com**

HardiePanel®

HardiePanel® vertical siding delivers style and substance. When combined with HardieTrim® boards, it achieves the rustic board-and-batten look that defines cottage charm. The covered seams contribute to a well-insulated home.

Its crisp, clean lines make HardiePanel vertical siding a smart choice for strong, contemporary designs.

SELECT CEDARMILL®
Navajo Beige

Thickness	5/16 in.		
Size	4 ft. x 8 ft.	4 ft. x 9 ft.*	4 ft. x 10 ft.
Pcs./Pallet	50	50	50
Pcs./Sq.	3.2	2.8	2.5

SMOOTH
Evening Blue

Thickness	5/16 in.		
Size	4 ft. x 8 ft.	4 ft. x 9 ft.*	4 ft. x 10 ft.
Pcs./Pallet	50	50	50
Pcs./Sq.	3.2	2.8	2.5

PROJECT PANEL SIDING

STUCCO
Navajo Beige

Thickness	5/16 in.		
Size	4 ft. x 8 ft.	4 ft. x 9 ft.*	4 ft. x 10 ft.
Pcs./Pallet	50	50	50
Pcs./Sq.	3.2	2.8	2.5

SIERRA 8
Not available with ColorPlus Technology

Thickness	5/16 in.		
Size	4 ft. x 8 ft.	4 ft. x 9 ft.*	4 ft. x 10 ft.
Pcs./Pallet	50	50	50
Pcs./Sq.	3.2	2.8	2.5

*All 4 ft. x 9 ft. HardiePanel vertical siding only available primed.

Products are available primed or with ColorPlus Technology finishes. For more details, visit **jameshardiepros.com**

HardieTrim®

Form meets function at every angle with HardieTrim® boards. With an authentic look, HardieTrim boards provide design flexibility for columns, friezes, doors, windows and other accent areas.

Better than wood, it will complement your long-lasting, lower maintenance James Hardie siding – adding punctuation to your design statement.

The performance you require
THE DISTINCTIVENESS YOU DESIRE.

HARDIETRIM® BOARDS

4/4 RUSTIC GRAIN®
Autumn Tan

4/4 SMOOTH
Autumn Tan

Thickness	.75 in.				
Length	12 ft. boards				
Width	3.5 in.	5.5 in.	7.25 in.	9.25 in.	11.25 in.
Primed Pcs./Pallet	322	184	138	115	92

5/4 RUSTIC GRAIN®
Autumn Tan

5/4 SMOOTH
Autumn Tan

Thickness	1 in.				
Length	12 ft. boards				
Width	3.5 in.	5.5 in.	7.25 in.	9.25 in.	11.25 in.
Primed Pcs./Pallet	238	136	120	85	68

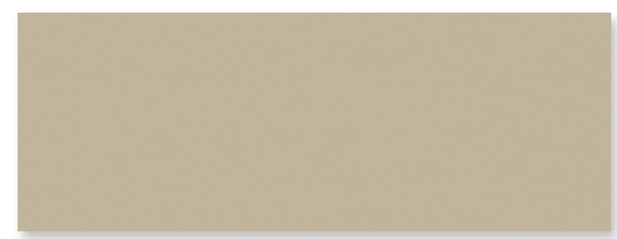
PROJECT TRIM

Pallet counts shown are for primed HZ10® products.
For information on other products, visit jameshardie.com/trim.

HARDIETRIM® BATTEN BOARDS

RUSTIC GRAIN®
Autumn Tan

Thickness	.75 in.
Length	12 ft. boards
Width	2.5 in.
Pcs./Pallet	437



SMOOTH
Autumn Tan

Thickness	.75 in.
Length	12 ft. boards
Width	2.5 in.
Pcs./Pallet	437

Products are available primed or with ColorPlus Technology finishes. All sizes and textures not available in all areas.
For more details, visit **jameshardiepros.com**

HardieSoffit®

A home is only as strong as its weakest point. HardieSoffit® panels reinforce your work by protecting the vulnerable gap between eaves and exterior walls.

Available in vented, non-vented and a range of pre-cut sizes, these panels complete your design and help protect it from moisture and pests.

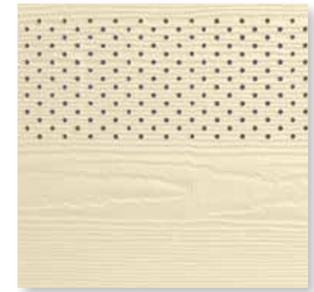
VENTILATION BENEFITS

Using vented soffit improves ventilation in the attic space and reduces the chance of water vapor condensation that can lead to issues such as mold and mildew growth, stained ceilings and damage to the framing of the house.

In warm climates, HardieSoffit panels allow hot, humid air to escape, which not only helps prevent condensation in the attic, but can also help reduce air conditioning costs.

In cool climates, HardieSoffit panels help prevent condensation from forming on the interior side of the roof sheathing and reduce the chances of roof-damaging ice dams.

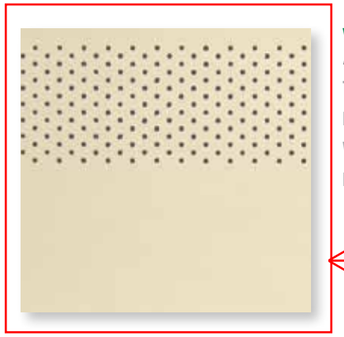
For complete confidence
EVERY DETAIL MATTERS.



VENTED CEDARMILL©

Sail Cloth

Thickness	1/4 in.		
Length	12 ft.	12 ft.	8 ft.
Width	12 in.	16 in.	24 in.
ColorPlus Pcs./Pallet	216	156	108
Prime Pcs./Pallet	200	150	100



VENTED SMOOTH

Not available with ColorPlus Technology

Thickness	1/4 in.		
Length	12 ft.	12 ft.	8 ft.
Width	12 in.	16 in.	24 in.
Pcs./Pallet	200	150	100

PROJECT SOFFITT

NON-VENTED CEDARMILL©

Sail Cloth

Thickness	1/4 in.			
Length	12 ft.	12 ft.	8 ft.	8 ft.*
Width	12 in.	16 in.	24 in.	48 in.
ColorPlus Pcs./Pallet	216	156	108	
Prime Pcs./Pallet	200	150	100	50

NON-VENTED SMOOTH

Not available with ColorPlus Technology

Thickness	1/4 in.			
Length	12 ft.	12 ft.	8 ft.	8 ft.*
Width	12 in.	16 in.	24 in.	48 in.
Pcs./Pallet	200	150	100	50

Using the proper amount of vented HardieSoffit panels is crucial to a building's ventilation performance. James Hardie has taken the guess work out of soffit ventilation by providing the table below illustrating the minimum amount of vented HardieSoffit panels recommended for your attic space.**

ATTIC SQ. FT.	LINEAR FT. OF VENTED SOFFIT
200	10
300	14
400	19
500	24
600	29
700	34
800	38
900	43
1000	48
1100	53
1200	58
1300	62
1400	67
1500	72
1600	77
1700	82
1800	86
1900	91
2000	96
2100	101
2200	106
2300	110
2400	115
2500	120
2600	125
2700	130
2800	134
2900	139
3000	144
3100	149

*These 48 in. x 8 ft. panels only available primed.
**Linear Feet of Vented Soffit calculation is based on 2012 International Residential Code (IRC) Section 806.2, Exception 2, with a 50% upper attic and 50% lower attic split of required ventilation, using soffit with a net free ventilation of 5 square inches per linear foot. This Exception is also approved in 2015 IRC Section 806.2. Always consult a building design professional to confirm attic ventilation meets local building code requirements.

Products are available primed or with ColorPlus Technology finishes. For more details, visit **jameshardiepros.com**

As unforgettable
AS IT IS UNCOMPROMISING.

See the James Hardie Difference

JAMES HARDIE • PROTECT & BEAUTIFY •
8 MILLION HOMES
AND COUNTING

James Hardie invented fiber cement. Over 8 million homes* later, we continue to set the standard in premium, high-performance exterior cladding. Our products deliver uncompromising durability and finish quality for a beautiful, lower maintenance exterior.

Our unrivaled investment in R&D and constant innovations in product design, manufacturing and distribution allow us to remain steps ahead of the competition. With the support of our employees, partners and exceptional warranties, we're committed to protecting your customers' homes while helping your business grow.

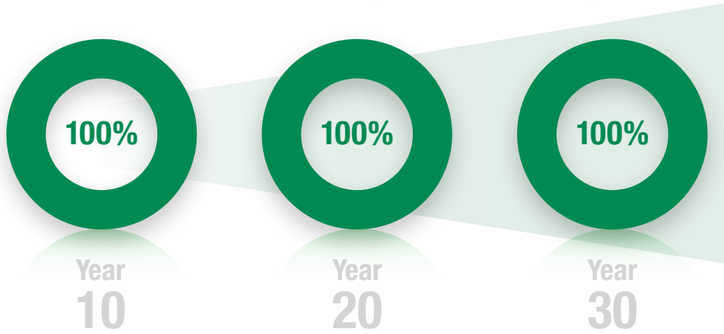
*Estimate based on total James Hardie siding sales through 2016 and average housing unit size.

Warranty

Protect your homes with North America's #1 brand of siding backed by exceptional warranties. Unlike other brands, James Hardie doesn't prorate our siding and trim warranty coverage. We stand behind our siding 100% for 30 years and trim for 15 years.

ColorPlus Technology finishes come with a 15-year limited warranty.

James Hardie Non-Prorated Siding Substrate Warranty Coverage



Endorsements – a reputation built on trust

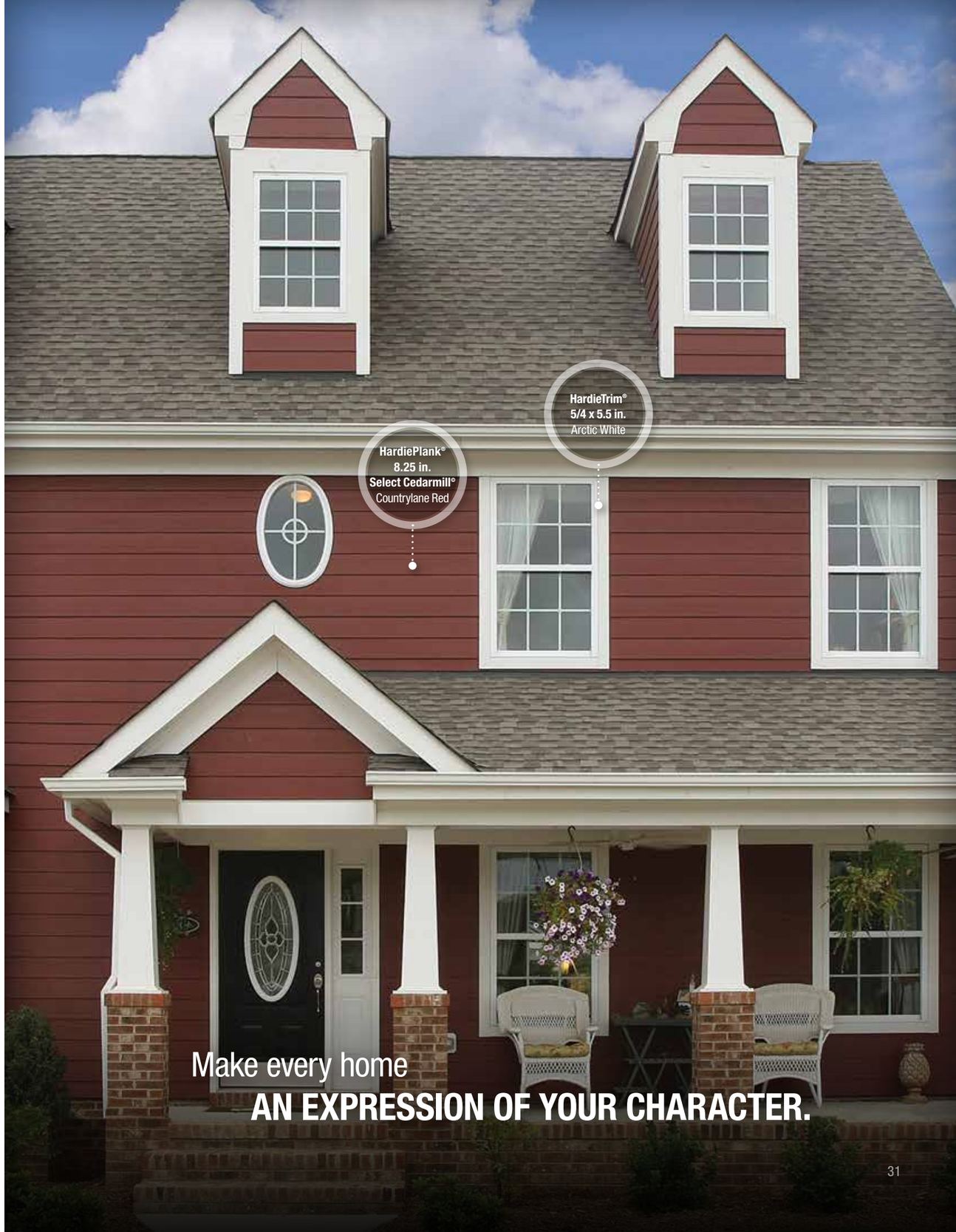
For decades, our fiber cement products have been used to create better places to live. Each new home stands as a testament to our uncompromising quality. That proven track record has earned the loyalty of millions of homeowners and the endorsements of trusted authorities across the building industry.*

Featured on the **DIY Network's Blog Cabin** since 2012

Chosen by builders as a **Brand Leader** in **Builder Magazine** since 2009

HardiePlank lap siding is backed by the **Good Housekeeping Seal**

*Endorsements accurate as of 2017.



HUNTCO
SITE FURNISHINGS

Bike racks, lockers, benches and architectural site furnishings since 1980.

Tradition & Innovation

PHONE 503.224.8700
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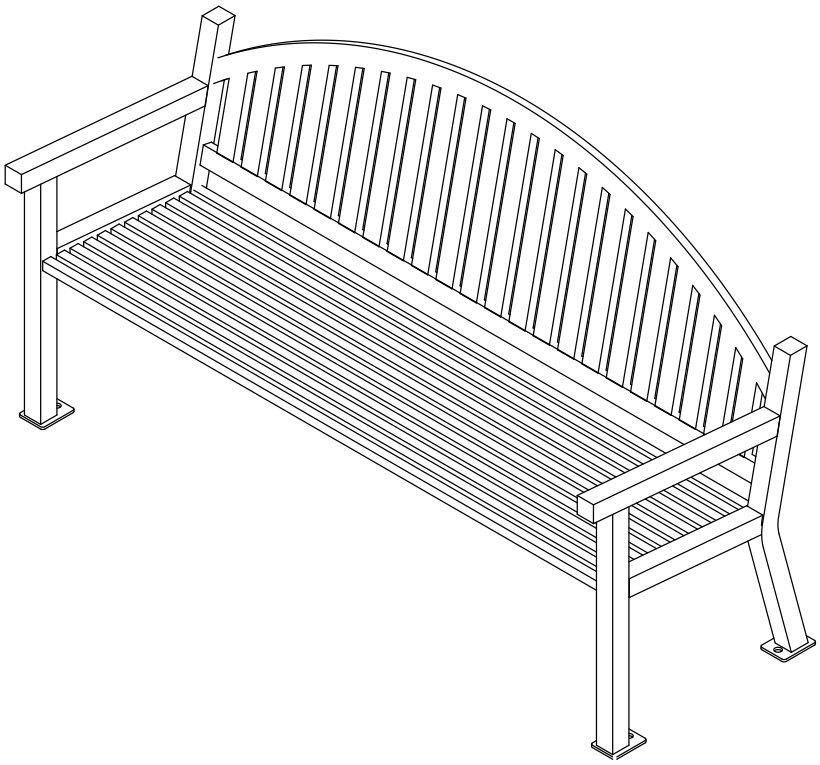
Portland, Or. 97296-0385

× 3

CASCADIA LINE

NEHALEM BENCH



Part of the "modern classic" Cascadia line, the Nehalem has a modern-vintage look that blends with a wide variety of design eras.

CONSTRUCTION/MATERIAL

Seat: 1" x 1" Square Steel Tubing

Legs: 2" x 2" Square Steel Tubing

Back: 2" x 1" Steel Rectangular Tubing

Flanges: 1.5" x 3" Steel

DIMENSIONS

- 72" Length
- 24" Width
- 40" Height

MOUNTING OPTIONS

☐ Flange Mount (Shown)
(4) .5" Mounting Holes

☐ In-Ground
11" Leg Extensions

BACK OPTIONS

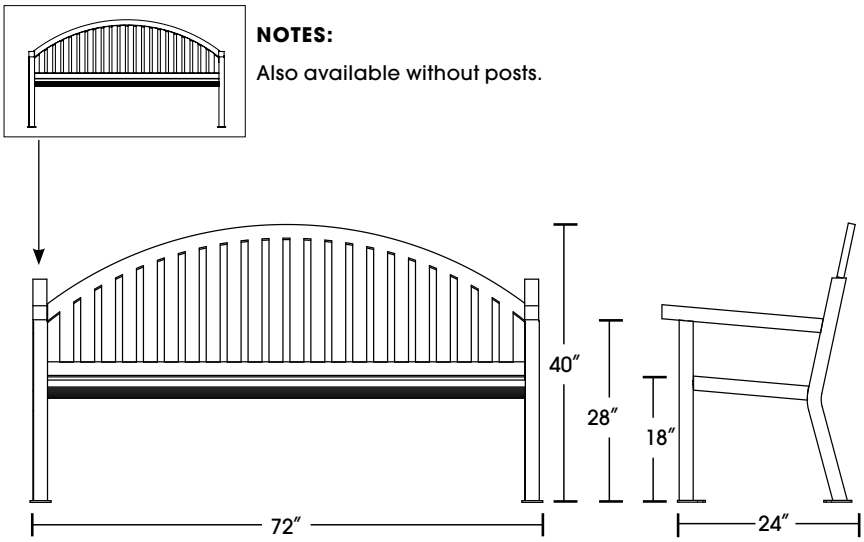
☐ Posts (Shown at top)

☐ No Posts (Inset below)

FINISH OPTIONS

☐ Powder Coating
#

☐ Thermoplastic Coating
#



NOTES:

Also available without posts.

CONTRACTOR:

JOB:

NOTES:

Manufactured in the Pacific Northwest

Trifab™ VG (VersaGlaze™)

Trifab™ VG 450, 451 & 451T (Thermal) Framing Systems & Trifab™ 451UT (Ultra Thermal) Framing System

Design + Performance Versatility with Unmatched Fabrication Flexibility

Preston Pointe, Louisville, KY
Architect: Potter & Associates Architects PLLC, Louisville, KY
Glazing Contractor: Kentucky Mirror & Plate Glass Company, Louisville, KY

Trifab™ VersaGlaze™ is built on the proven and successful Trifab™ platform – with all the versatility its name implies. There are enough framing system choices, fabrication methods, design options and performance levels to please the most discerning building owner, architect and installer. The Trifab™ VersaGlaze™ family's newest addition, Trifab™ 451UT (Ultra Thermal) framing system, is designed for the most demanding thermal performance and employs a "dual" Isolock™ Thermal Break.

Aesthetics

Trifab™ VersaGlaze™ framing systems offer designers a choice of front-, center-, back- or multi-plane glass applications. Structural silicone glazing (SSG) and Weatherseal glazing options further expand the designers' choices, allowing for a greater range of design possibilities for specific project requirements and architectural styles. All systems have a 4-1/2" frame depth – Trifab™ VersaGlaze™ 450 has 1-3/4" sightlines, while Trifab™ VersaGlaze™ 451/451T and Trifab™ 451UT have 2" sightlines.

KAWNEER
AN ARCONIC COMPANY

With seamless incorporation of Kawneer entrances or windows, including GLASSvent™ visually frameless ventilators, Trifab™ VersaGlaze™ can be used on almost any project. These framing systems can also be packaged with Kawneer curtain walls and overhead glazing, thereby providing a full range of proven, and tested, quality products for the owner, architect and installer from a single source supplier.

Economy

Trifab™ VersaGlaze™ 450/451/451T framing systems offer four fabrication choices to suit your project (Trifab™ 451UT available as screw spline fabrication only):

- **Screw Spline** – for economical continuous runs utilizing two piece vertical members that provide the option to pre-assemble units with controlled shop labor costs and smaller field crews for handling and installation.
- **Shear Block** – for punched openings or continuous runs using tubular moldings with shear block clips that provide tight joints for transporting large pre-assembled multi-lite units.
- **Stick** – for fast, easy field fabrication. Field measurements and material cuts can be done when metal is on the job.
- **Type B** – Same fabrication benefits as shear block except head and sill run through.

All systems can be flush glazed from either the inside or outside. The Weatherseal option provides an alternative to SSG vertical mullions for Trifab™ VersaGlaze™ 450/451/451T. This ABS/ASA rigid polymer extrusion allows complete inside glazing and creates a flush glass appearance on the building exterior without the added labor of scaffolding or swing stages. Additionally, High-Performance (HP) Flashing options are engineered to eliminate perimeter sill fasteners and associated blind seals.

Brighton Landing, Cambridge, MA
Architects: ADD Inc., Cambridge, MA
Glazing Contractors: Ipswich Bay Glass Company,Inc., Rowley, MA

For the Finishing Touch

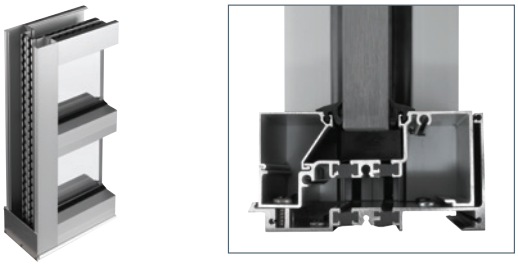
Architectural Class I anodized aluminum finishes are available in clear and Permanodic™ color choices.

Painted finishes, including fluoropolymer, that meet AAMA 2605 are offered in many standard choices and an unlimited number of specially designed colors.

Solvent-free powder coatings add the green element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.

Performance

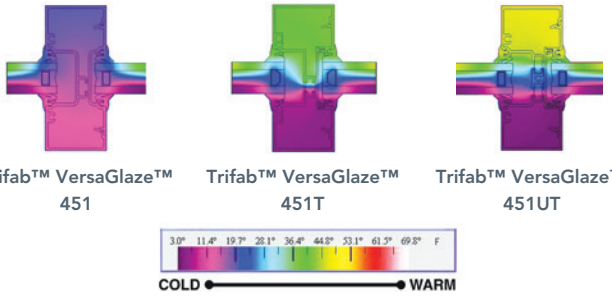
Kawneer's Isolock™ Thermal Break process creates a composite section, prevents dry shrinkage and is available on Trifab™ VersaGlaze™ 451T. For even greater thermal performance, a "dual" Isolock™ Thermal Break is used on Trifab™ 451UT.



Trifab™ 451UT uses a "dual" Isolock™ Thermal Break (right) and features a new HP (High Performance) sill design, which incorporates a screw-applied end dam (left), ensuring positive engagement and tight joints between the sill flashing and end dam.

U-factor, CRF values and STC ratings for Trifab™ VersaGlaze™ vary depending upon the glass plane application. Project specific U-factors can be determined for each individual project. (See the Kawneer Architectural Manual or Kawneer.com for additional information).

Thermal simulations showing temperature variations from exterior/cold side to interior/warm side.

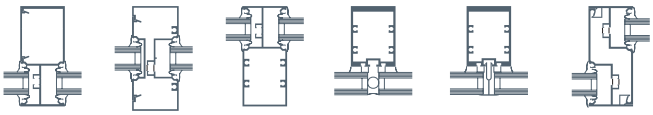


Trifab™ VersaGlaze™ 451 | **Trifab™ VersaGlaze™ 451T** | **Trifab™ VersaGlaze™ 451UT**

PERFORMANCE TEST STANDARDS

Air Infiltration	ASTM E 283
Water	AAMA 501, ASTM E 331
Structural	ASTM E 330
Thermal	AAMA 1503
Thermal Break	AAMA 505, AAMA TIR-A8
Acoustical	AAMA 1801, ASTM E 1425

Trifab™ VersaGlaze™ 450/451/451T glazing options
(note: Trifab™ 451UT available as center set glass plane only).



Front | **Center** | **Back** | **SSG** | **Weatherseal** | **Multi-Plane**

Kawneer Company, Inc.
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092

kawneer.com
770 . 449 . 5555

KAWNEER
AN ARCONIC COMPANY

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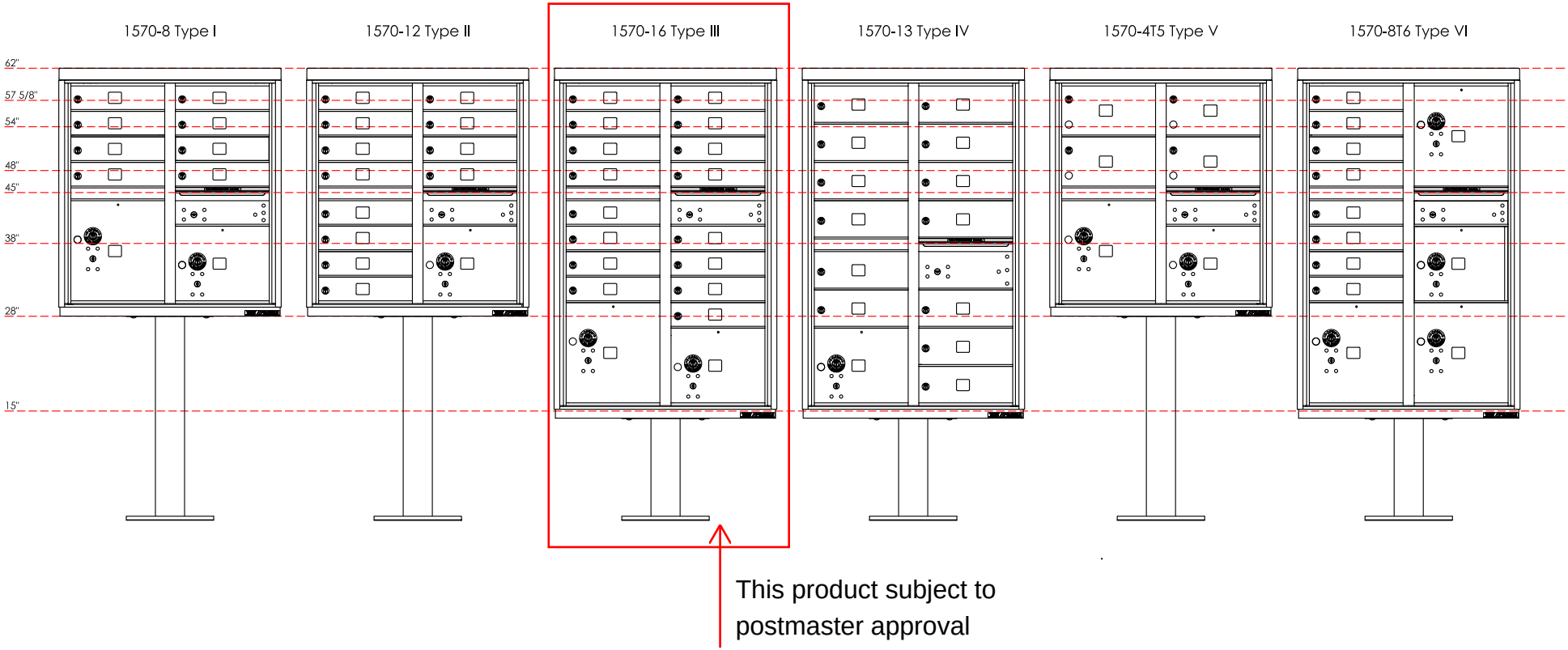
Trifab™, VersaGlaze™, Insulclad™ and Permanodic™ are trademarks of Kawneer Company, Inc.

vital™ Cluster Box Unit



NOTES:
ALL CBU Types have a pedestal designed to ensure installed height meets all USPS installation requirements without additional adjustment.

ALL CBU Types include sufficient compartments to comply with the new March 15, 2012 ADA unobstructed reach stands which were lowered from 54" to 48" and include 5% of all mailboxes to be compliant.

Sequential numbering of mailbox compartments (in lieu of house numbers) may allow greater flexibility in providing accessible tenant compartments to meet applicable regulations.

Consult local authorities for applicable accessibility requirements related to mailbox project.

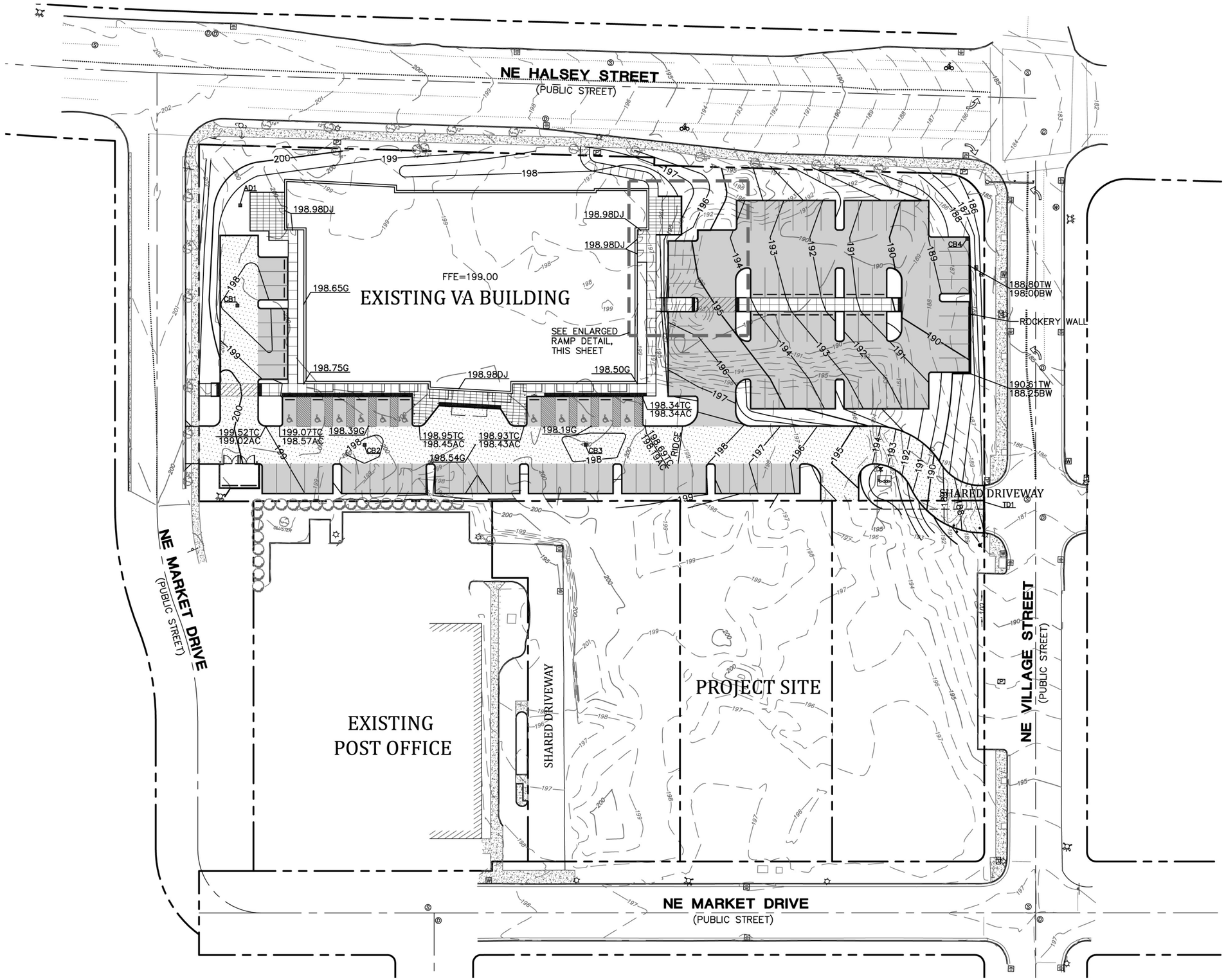
PRODUCT SERIES: vital™ CBU HEIGHT LAYOUT

FLORENCE manufacturing company
5935 Corporate Drive • Manhattan, KS 66503
www.florencemailboxes.com • (800) 275-1747
A GIBRALTAR INDUSTRIES COMPANY

MODEL CBU	REV A
SCALE 3:64	LAST REV DATE 9/26/2012
DRAWING NUMBER 1570CS	DRAWN BY AFD

Exhibit B-1

NE Weidler Cir
NE 213th Ave
NE Halsey St
NE Barr Rd
PROJECT SITE
Salish Pond City Trail
Fairview Pkwy
NE Village St
NE Park Ln
E Chinook Way
NE Market Dr
NE Charles Ct
NE Multnomah Dr
Google earth
© 2018 Google
500 ft
N

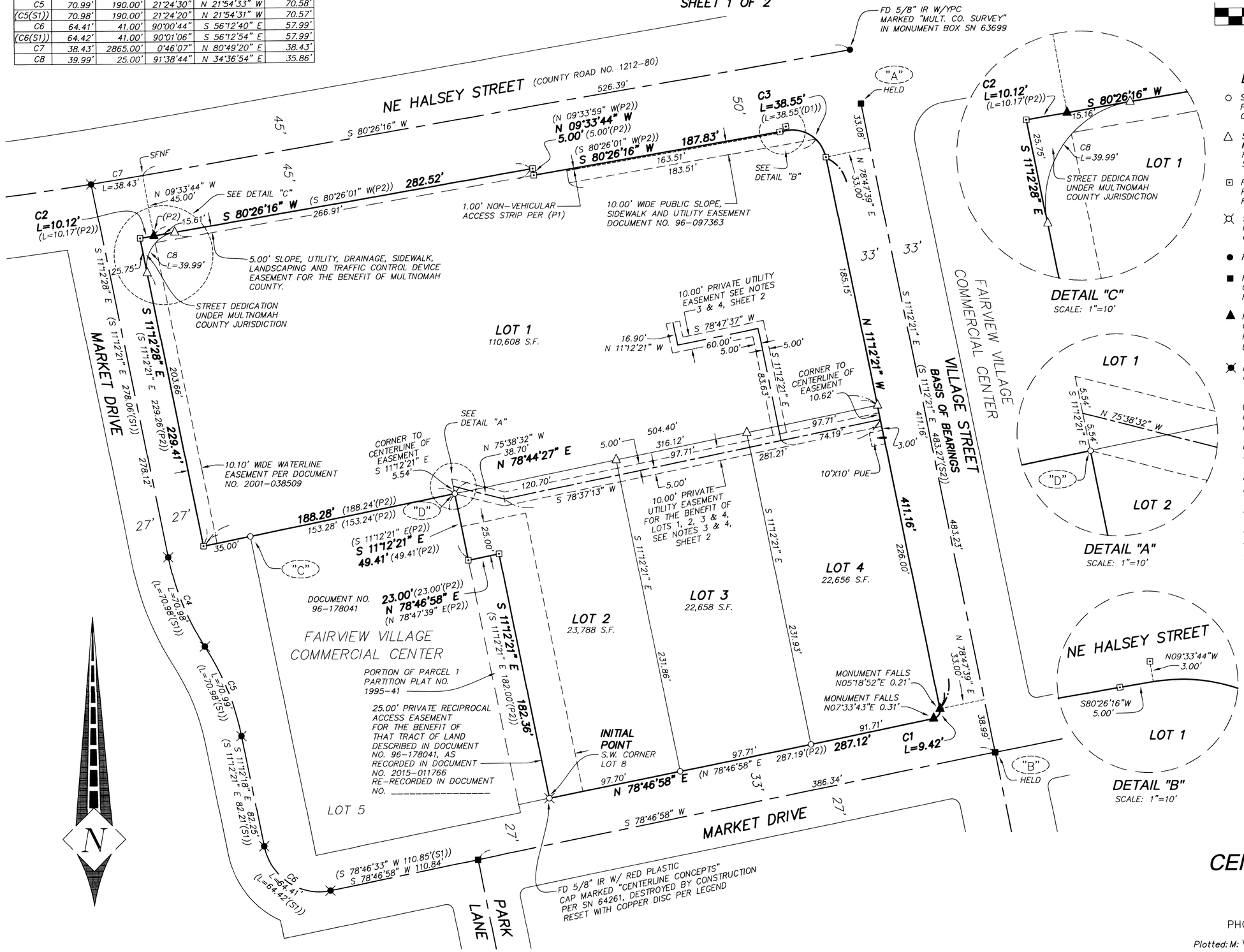

NE HALSEY STREET
(PUBLIC STREET)
NE MARKET DRIVE
(PUBLIC STREET)
NE VILLAGE STREET
(PUBLIC STREET)
EXISTING VA BUILDING
FFE=199.00
SEE ENLARGED RAMP DETAIL, THIS SHEET
ROCKERY WALL
SHARED DRIVEWAY
EXISTING POST OFFICE
PROJECT SITE
AD1
CB1
CB2
CB3
CB4
TD1
198.98DJ
198.65G
198.75G
198.50G
188.80TW
198.00BW
190.81TW
188.25BW
199.52TC
199.02AC
199.07TC
198.57AC
198.39G
198.95TC
198.45AC
198.93TC
198.43AC
198.19G
198.54G
198.34TC
198.34AC
198.69TC
198.19AC
RIDGE
NORTH
CONTEXT MAP
GRAPHIC SCALE
40
0
20
40
80
160
(IN FEET)
1 inch = 40 ft.

PLAT BOOK 1306 PAGE 32

VILLAGE PLACE

A REPLAT OF A PORTION OF LOT 4, FAIRVIEW VILLAGE COMMERCIAL CENTER,
AND ALL OF LOTS 6–8, FAIRVIEW VILLAGE COMMERCIAL CENTER NO. 2,
LOCATED IN THE N.E. 1/4 OF SECTION 33, T.1N., R.3E., W.M.,
CITY OF FAIRVIEW, MULTNOMAH COUNTY, OREGON
DECEMBER 29, 2014 SCALE 1"=50'
PLANNING FILE NO. 2015–09–REPLAT
SHEET 1 OF 2

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD
C1	9.42'	6.00'	89°59'19"	N 33°47'19" E	8.48'
(C1(P2))	9.42'	6.00'	90°00'00"	N 33°47'39" E	8.49'
C2	10.12'	2910.00'	0°11'57"	S 80°32'15" W	10.12'
(C2(P2))	10.17'	2910.00'	0°12'01"	N 80°32'01" E	10.17'
C3	38.55'	25.00'	88°21'23"	N 55°23'02" W	34.84'
(C3(D1))	38.55'	25.00'	88°21'38"	N 55°23'10" W	34.85'
C4	70.98'	190.00'	21°24'20"	S 21°54'38" E	70.57'
(C4(S1))	70.98'	190.00'	21°24'20"	S 21°54'31" E	70.57'
C5	70.99'	190.00'	21°24'30"	N 21°54'33" W	70.58'
(C5(S1))	70.98'	190.00'	21°24'20"	N 21°54'31" W	70.57'
C6	64.41'	41.00'	90°00'44"	S 56°12'40" E	57.99'
(C6(S1))	64.42'	41.00'	90°01'06"	S 56°12'54" E	57.99'
C7	38.43'	2865.00'	0°46'07"	N 80°49'20" E	38.43'
C8	39.99'	25.00'	91°38'44"	N 34°36'54" E	35.86'



GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50ft.

LEGEND:

- ○ SET 5/8" x 30" IRON ROD W/ RED PLASTIC CAP MARKED "CENTERLINE CONCEPTS" ON DECEMBER 29, 2014
- △ 5/8" x 30" IRON ROD W/ 2" ALUMINUM CAP MARKED "CENTERLINE CONCEPTS" TO BE SET DURING REMAINING MONUMENTATION. SET ON _____
- ⊡ FOUND AND HELD 5/8" IRON ROD W/ RED PLASTIC CAP MARKED "CENTERLINE CONCEPTS", FROM SN 64261
- ⌧ SET 1–3/16" COPPER DISC MARKED "CENTERLINE CONCEPTS" ON DECEMBER 29, 2014
- ● FOUND MONUMENT AS NOTED
- ■ FOUND AND HELD 5/8" IRON ROD W/ 1–1/4" ALUMINUM CAP MARKED "ALPHA ENG. INC.", FROM THE PLAT OF "FAIRVIEW VILLAGE COMMERCIAL CENTER"
- ▲ FOUND 5/8" IRON ROD W/ YELLOW PLASTIC CAP MARKED "ALPHA INC.", FROM THE PLAT OF "FAIRVIEW VILLAGE COMMERCIAL CENTER" UNLESS OTHERWISE NOTED
- ✖ FOUND AND HELD 5/8" IRON ROD W/ 1–1/2" ALUMINUM CAP MARKED "CARDNO INC", FROM SN 63699

( ) = RECORD DISTANCES & BEARINGS
IR = IRON ROD IP = IRON PIPE
FD = FOUND W/ = WITH
YPC = YELLOW PLASTIC CAP
R/W = RIGHT OF WAY
SN = SURVEY NUMBER
MULTNOMAH COUNTY SURVEY RECORDS
PUE = PUBLIC UTILITY EASEMENT
P1 = PLAT OF "FAIRVIEW VILLAGE COMMERCIAL CENTER"
P2 = PLAT OF "FAIRVIEW VILLAGE COMMERCIAL CENTER NO. 2"
S1 = SN 63699
S2 = SN 64261
D1 = DOCUMENT NO. 96–097363
S.F. = SQUARE FEET

SIGNED ON: 4-9-2015

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
NOVEMBER 30, 2007
JAMES BURTON BROWN
60379

VALID THROUGH DECEMBER 31, 2015

I CERTIFY THAT THIS PLAT WAS PREPARED USING HP PRODUCT #51640A ON WMF FILM

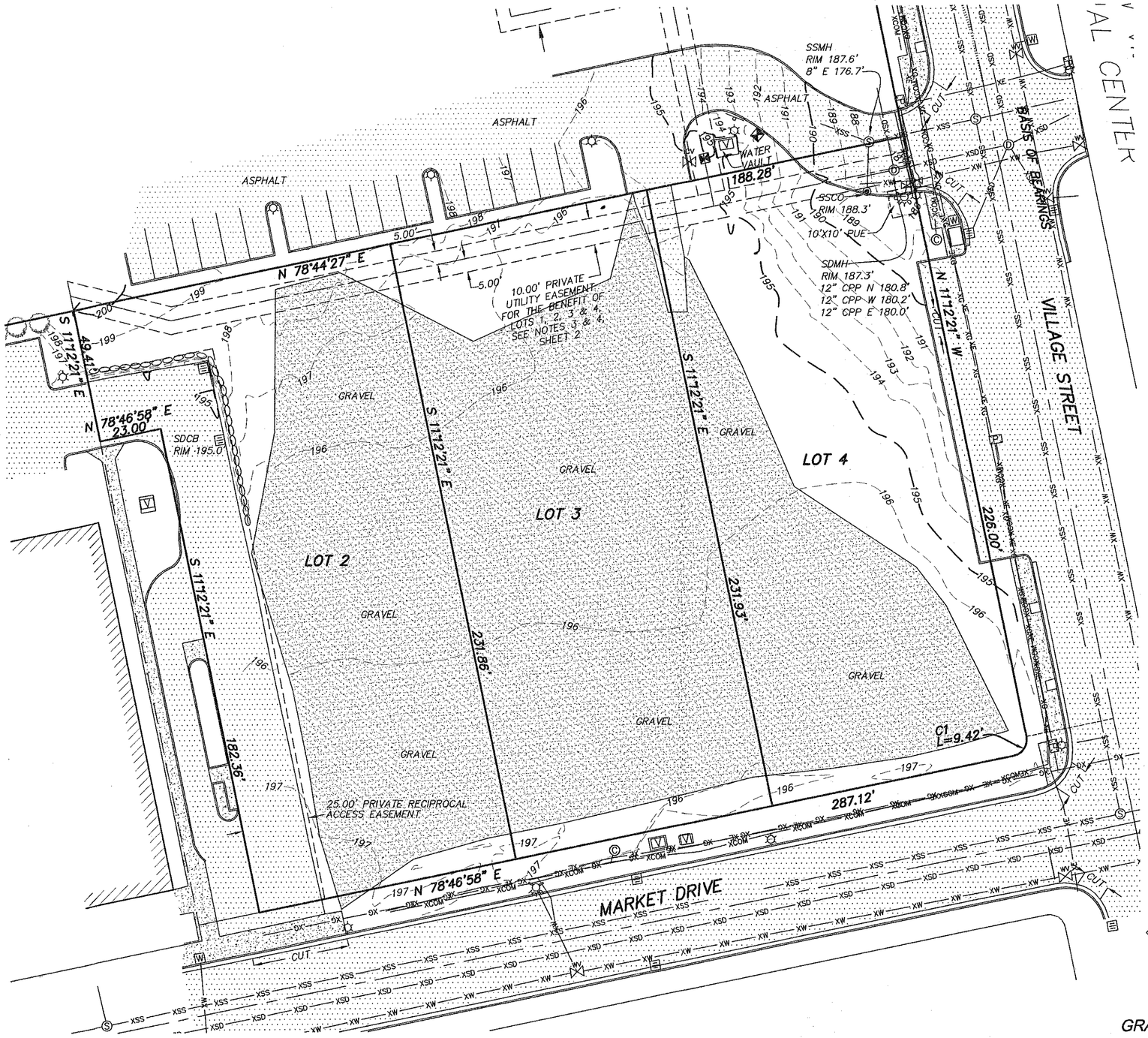
I HEREBY CERTIFY, THIS IS A TRUE AND EXACT COPY OF THE ORIGINAL SUBDIVISION PLAT

CENTERLINE CONCEPTS
LAND SURVEYING, INC.
729 MOLALLA AVE., SUITE 1 & 2
OREGON CITY, OREGON 97045
PHONE 503.650.0188 FAX 503.650.0189

Plotted: M:\PROJECTS\PARKER–FAIRVIEW\dwg\SUB.dwg

EXISTING CONDITIONS MAP

LOTS 2–4, "VILLAGE PLACE"
LOCATED IN THE N.E. 1/4 SECTION 33, T.1N., R.3E., W.M.,
CITY OF FAIRVIEW, MULTNOMAH COUNTY, OREGON
FEBRUARY 6, 2018 SCALE 1"=30'



SURVEY NOTES:

THE DATUM FOR THIS SURVEY IS BASED UPON CONTROL POINT "STOP", BEING A DISK STAMPED "STOP 1956", SET IN A CONCRETE MONUMENT LOCATED ALONG THE SOUTH SIDE OF US HIGHWAY 30, ELEVATION= 36.38, NAVD 88 DATUM.

A TRIMBLE S6–SERIES ROBOTIC INSTRUMENT WAS USED TO COMPLETE A CLOSED LOOP FIELD TRAVERSE.

THE BASIS OF BEARINGS FOR THIS SURVEY IS PER MONUMENTS FOUND AND HELD PER THE PLAT OF "FAIRVIEW VILLAGE COMMERCIAL CENTER", MULTNOMAH COUNTY PLAT RECORDS.

THE PURPOSE OF THIS SURVEY IS TO RESOLVE AND DETERMINE THE PERIMETER BOUNDARY OF THE SUBJECT PROPERTY, TO SHOW ALL PERTINENT BOUNDARY ISSUES AND ENCROACHMENTS. NO PROPERTY CORNERS WERE SET IN THIS SURVEY.

NO WARRANTIES ARE MADE AS TO MATTERS OF UNWRITTEN TITLE, SUCH AS ADVERSE POSSESSION, ESTOPPEL, ACQUIESCENCE, ETC.

THE UNDERGROUND UTILITIES AS SHOWN ON THIS MAP HAVE BEEN LOCATED FROM FIELD SURVEY OF ABOVE GROUND STRUCTURES AND AS MARKED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FUTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY SURVEYOR.

TITLE REPORT PROVIDED BY CHICAGO TITLE INSURANCE COMPANY OF OREGON ORDER NO. 472513510557PP–CT50, WITH AN EFFECTIVE DATE OF JUNE 5, 2013 WAS PROVIDED AND USED IN THIS SURVEY.

LEGEND:

Some Symbols shown may not be used on map

- DECIDUOUS TREE
- EVERGREEN TREE
- STORM SEWER MANHOLE
- CATCH BASIN
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- GAS METER
- BOLLARD
- SIGN
- MAILBOX
- COMMUNICATIONS PEDESTAL
- COMMUNICATIONS MANHOLE
- COMMUNICATIONS BOX
- STORM OUTFALL
- FOUND MONUMENT
- DOWN SPOUT TO STORM SYSTEM
- FD = FOUND
- FI = FIR TREE
- PI = PINE TREE
- CE = CEDAR TREE
- IR = IRON ROD
- YPC = YELLOW PLASTIC CAP
- DE = DECIDUOUS TREE
- UTILITY AND LIGHT POLE
- UTILITY POLE
- LIGHT POLE
- GUY WIRE
- ELECTRIC BOX
- ELECTRIC METER
- ELECTRICAL POWER PEDESTAL
- ELECTRIC RISER
- HEAT PUMP
- XOH — OVERHEAD LINE
- XG — GAS LINE
- XE — ELECTRICAL LINE
- XCOM — COMMUNICATIONS LINE
- XSS — SANITARY SEWER LINE
- XSD — STORM DRAIN LINE
- XW — WATER LINE
- X — FENCELINE
- ROCK WALL
- UTILITY RISER
- ICV — IRRIGATION CONTROL VALVE
- VAULT

SIGNED ON: 2-6-2018

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
NOVEMBER 30, 2007
JAMES BURTON BROWN
60379

RENEWS: DECEMBER 31, 2019

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

CENTERLINE CONCEPTS
LAND SURVEYING, INC.
19376 MOLALLA AVE., SUITE 120
OREGON CITY, OREGON 97045
PHONE 503.650.0188 FAX 503.650.0189

Plotted: M:\PROJECTS\PARKER–FAIRVIEW\dwg\ADD TOPO.dwg

Exhibit B-2

Doug Circosta, Architect

Doug Circosta, Architect

Fairview Village Apartments
OFFICE
OFFICE
Doug Circosta, Architect

Doug Circosta, Architect

DRAWING INDEX

ARCHITECTURAL DRAWINGS
A001 COVER SHEET - PROJECT INFORMATION / DRAWING INDEX

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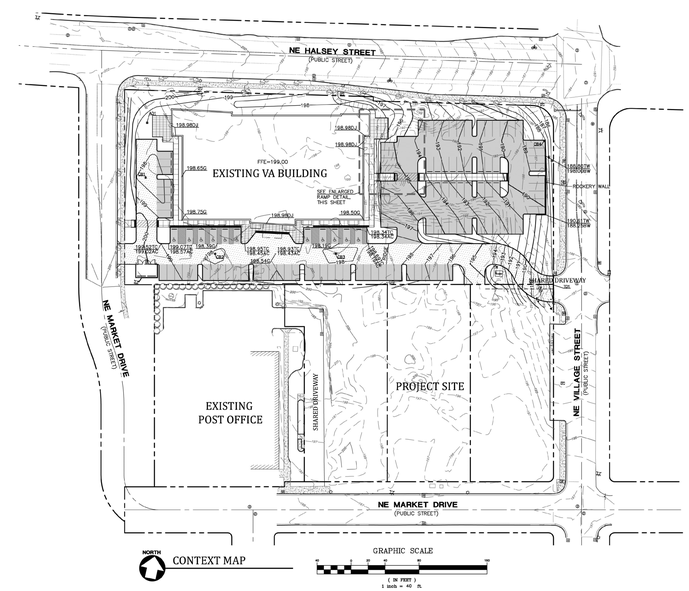
C2.0 EROSION, SEDIMENT CONTROL AND GRADING PLAN
C21 UTILITY PLAN
C3.0 CIVIL DETAILS

LANDSCAPE DRAWINGS
L100 LANDSCAPE PLAN

ARCHITECTURAL DRAWINGS
A100 SITE PLAN
A111 FIRST FLOOR PLAN
A112 SECOND FLOOR PLAN
A113 THIRD FLOOR PLAN
A114 FOURTH FLOOR PLAN

A200 BUILDING ELEVATIONS
A201 BUILDING ELEVATIONS
A202 BUILDING ELEVATIONS

A300 BUILDING SECTIONS



REGISTERED ARCHITECT
DOUG C. CIRCOSTA
PORTLAND, OREGON
STATE OF OREGON

© 2018
Doug Circosta, Architect
503-730-6908
14670 SW Forest Drive
Beaverton, OR 97007

LAND USE ENTITLEMENT DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

PROJECT TEAM

OWNER
Village Development, LLC
1800 Blankenship Road, Suite 325
West Linn, OR 97068
TEL: 503-742-1942

CONTACT: Liz Edmonds
E-mail: Liz@blackhawkd.com

ARCHITECT
Doug Circosta, Architect LLC
14670 SW Forest Drive
Beaverton, OR 97007
Tel: 503-730-6908

CONTACT: Doug Circosta
E-mail: DougCircostaArchitect@gmail.com

LANDSCAPE ARCHITECT
Christopher Freshley
3944 SW 36th Place
Portland, OR 97221
Tel: 503-222-9881

CONTACT: Chris Freshley
E-mail: chris@freshleylandscapearchitect.com

CIVIL ENGINEER
WDY
6443 SW Beaverton-Hillsdale Hwy. Suite 210
Portland, OR 972221
Tel: 503-203-8122

CONTACT: Chris Deslauriers
E-mail: chris@wdyi.com

VICINITY MAP

PROJECT INFORMATION

SITE INFORMATION.
Village Place Lots 2, 3, 4 Fairview, Oregon
R668077, R668078, R668079

Site Area: +/- 69,102 sf. (1.586 acres)

Zoning: VMU - Village Mixed Use

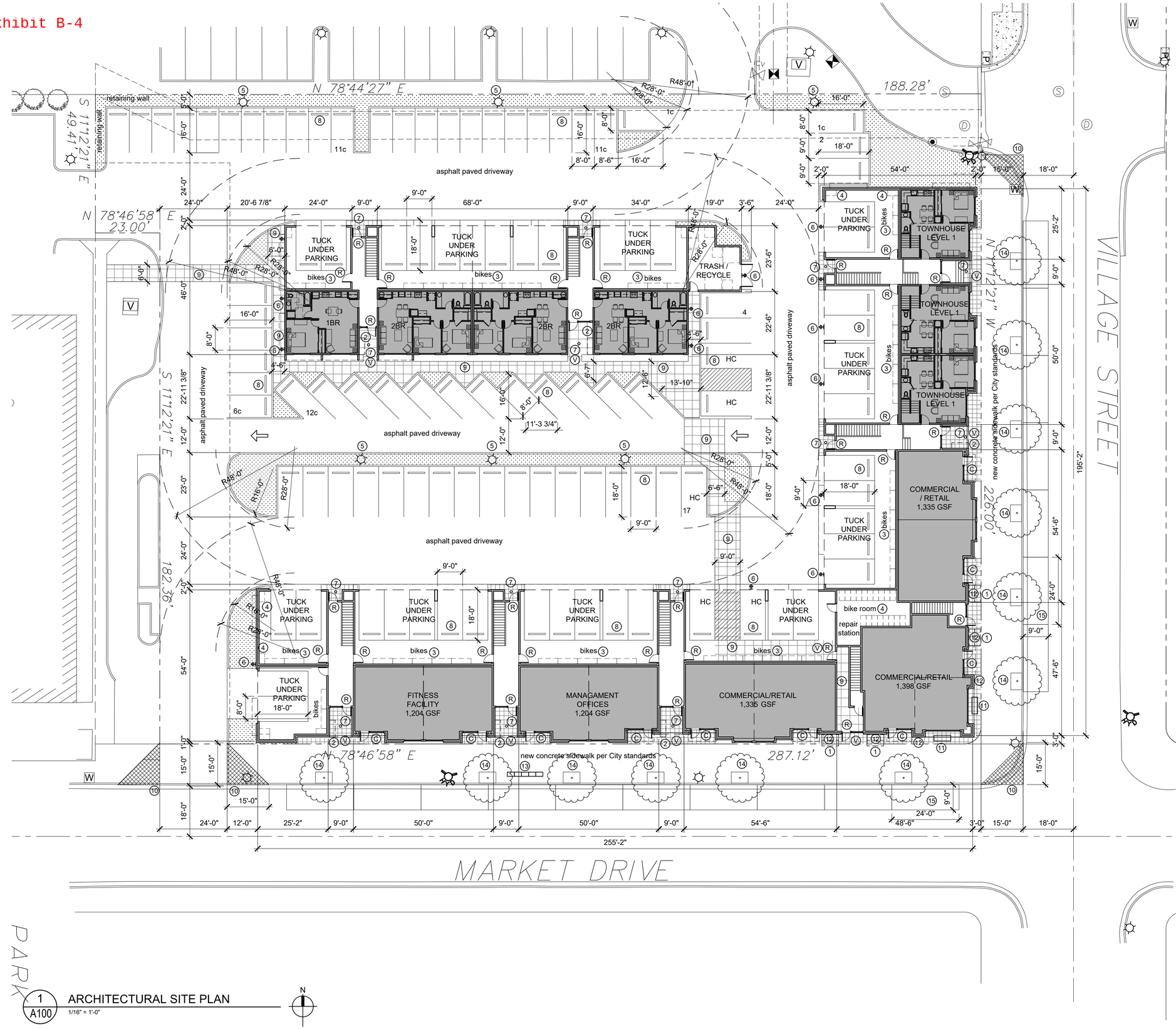
PROJECT SUMMARY
This project consists of 71 new multi-family rental housing units in two buildings. One building is four stories, and one is three stories. The four story building includes 6,476 sf of ground floor retail and commercial spaces. 107 on site parking spaces are provided through a combination of surface and tuck under parking. Right of way improvements are planned along the project street frontages at Village Street and Market Drive.

job no.: 1801
date: 3-22-2018

COVER SHEET

A001

Exhibit B-4



1 A100 ARCHITECTURAL SITE PLAN
1/16" = 1'-0"

SITE AREA: 69,102 SF = 1.586 AC.
1.586 AC X 45 UNITS / AC. = 71 UNITS

IMPERVIOUS SITE AREA = 65,208 SF
PERVIOUS SITE AREA = 3,894 SF

1 BEDROOM / 1 BATH = 32 UNITS
(2) 1 BR FLAT AT 592
(5) 1BR FLAT AT 600 SF
(1) 1 BR FLAT AT 610 SF
(5) 1 BR FLAT AT 650 SF
(6) 1 BR FLAT AT 675 SF
(1) 1 BR FLAT AT 716 SF
(9) 1 BR FLAT AT 764 SF
(2) 1 BR FLAT AT 767 SF
(1) 1 BR+ FLAT AT 973 SF

2 BEDROOM / 1 BATH = 18 UNITS
(3) 2 BR / 1 BA FLAT AT 782 SF
(10) 2 BR / 1 BA FLAT AT 808 SF
(1) 2 BR / 1 BA FLAT AT 816 SF
(4) 2 BR / 1 BA FLAT AT 874 SF

2 BEDROOM / 2 BATH = 21 UNITS
(9) 2 BR / 2BA TOWNHOUSE AT 1,023 SF
(12) 2 BR / 2BA TOWNHOUSE AT 1,153 SF

71 TOTAL UNITS

REQUIRED PARKING:
71 UNITS X 1.5 SPACES / UNIT =
107 RESIDENTIAL PARKING SPACES

COMMERCIAL / RETAIL SPACE:
6,476 GSF ALONG THE MARKET AND VILLAGE FRONTAGE

PARKING REQUIRED:
6,476 / 500 = **13** SPACES REQUIRED

PARKING PROVIDED:
(42) TUCK UNDER PARKING SPACES
(65) SURFACE PARKING SPACES
(17) ON-STREET PARKING SPACES

124 TOTAL PARKING SPACES PROVIDED
120 PARKING SPACES REQUIRED

KEY NOTES

(R) resident entry
(V) visitor entry
(C) commercial entry
(1) short term bike parking ground mounted rack
(2) short term bike parking wall mounted rack
(3) resident long term bike parking wall mounted rack
(4) resident long term bike parking hang mounted rack
(5) pole mounted light fixture TYPE 'A'
(6) wall mounted light fixture TYPE 'B'
(7) ceiling mounted light fixture TYPE 'D'
(8) concrete wheel stop
(9) scored concrete pedestrian pathway
(10) vision clearance triangle
(11) pedestrian bench
(12) wall mounted light fixture TYPE 'C'
(13) pedestal mail boxes
(14) new street tree - see landscape plan
(15) on street parking space

SURFACE TREATMENT LEGEND

landscape area
concrete walk with score joints every 3' each way
stamped and stained concrete between building and right of way

REGISTERED ARCHITECT
DOUG C. CIRCOSTA
PORTLAND, OREGON
STATE OF OREGON

© 2018
Doug Circosta, Architect
503-730-6908
14670 SW Forest Drive
Beaverton, OR 97007

LAND USE ENTITLEMENT DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

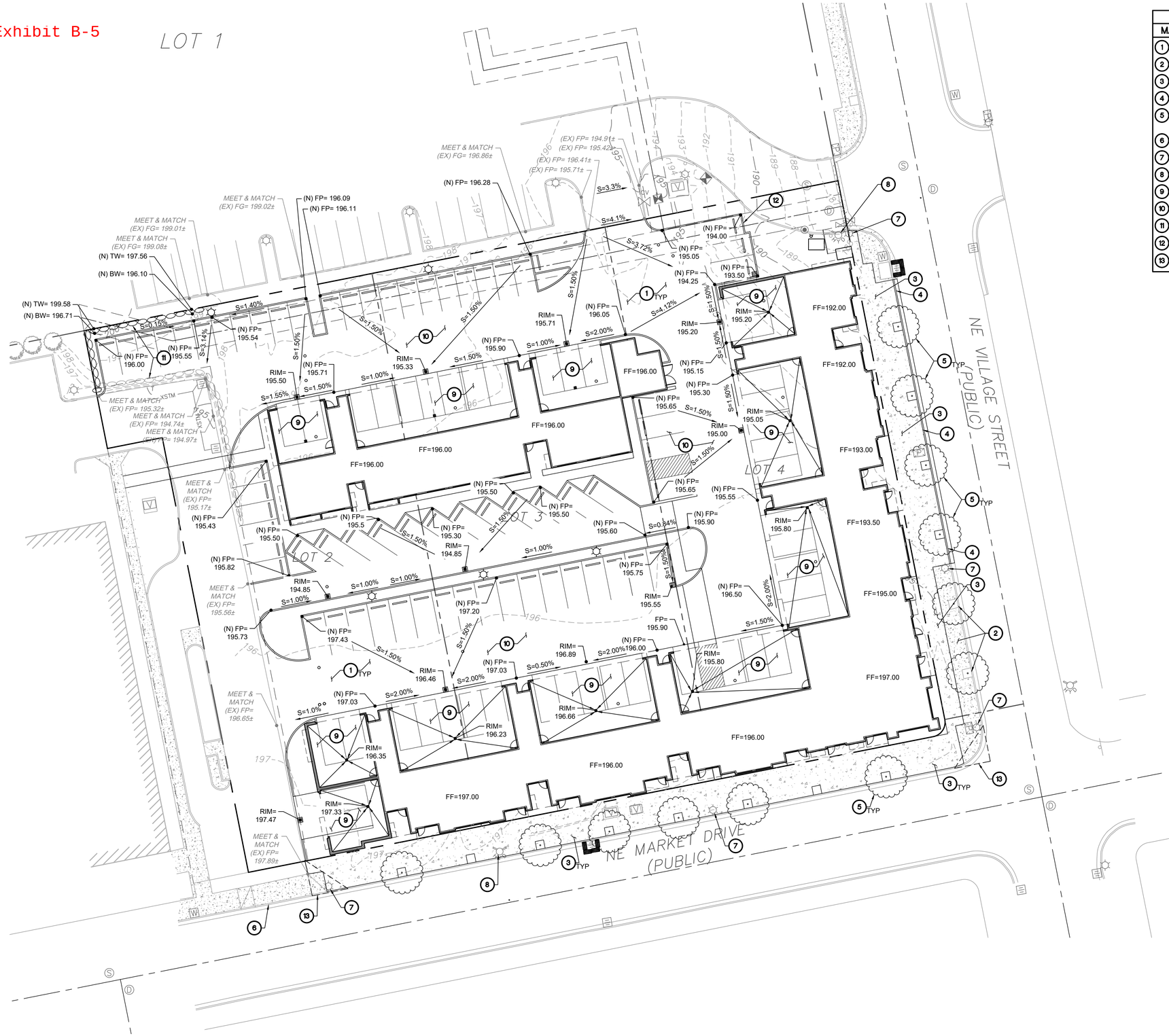
FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

SITE PLAN

A100

Exhibit B-5



KEYNOTES FOR THIS SHEET

MARK	DESCRIPTION
1	A 1200C DEQ PERMIT FOR CONSTRUCTION EROSION CONTROL WILL BE PROVIDED WITH BUILDING PERMIT.
2	EXISTING STREET TREE WELLS AND SIDEWALK TO REMAIN.
3	NEW SIDEWALK PER PUBLIC WORKS REQUIREMENTS, (TYP).
4	INSTALL NEW CURB & GUTTER TO MATCH EXISTING PER PUBLIC WORKS REQUIREMENTS, (TYP).
5	INSTALL NEW STREET TREES PER PUBLIC WORKS REQUIREMENTS. LOCATIONS AND SPACING TO BE COORDINATED WITH FIRE DEPARTMENT FOR LADDER APPARATUS ACCESS, (TYP).
6	EXISTING DRIVEWAY CURB CUT TO REMAIN.
7	EXISTING LIGHT POLE TO REMAIN, (TYP).
8	EXISTING FIRE HYDRANT TO REMAIN.
9	PAVEMENT UNDER BUILDING TO SLOPE TO SANITARY DRAINS, (TYP).
10	PAVEMENT OPEN TO SKY TO DISCHARGE TO TRAPPED SUMPED CATCH BASINS AND DISCHARGE TO PUBLIC STORM, (TYP).
11	RELOCATE ROCK WALL MATERIAL TO NORTH AND WEST PROPERTY LINE AS SHOWN.
12	NEW CONCRETE RETAINING WALL 2.5' FROM FINISH PAVEMENT TO FG.
13	VISION CLEARANCE AREA.

1 C2.0 **EROSION & SEDIMENT CONTROL AND GRADING PLAN**

SCALE: 1" = 20'-0"

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

PRELIMINARY NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
OREGON
JOHN J. DESLAURIERS
04/19/18

RENEWS: 12-31-2018

WDY
Structural · Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210
Portland, Oregon 97221
ph:503.203.8111 fx:503.203.8122
www.wdyi.com

LAND USE DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 18053
date: 3-16-18

EROSION + SEDIMENT CONTROL AND GRADING PLAN

C2.0

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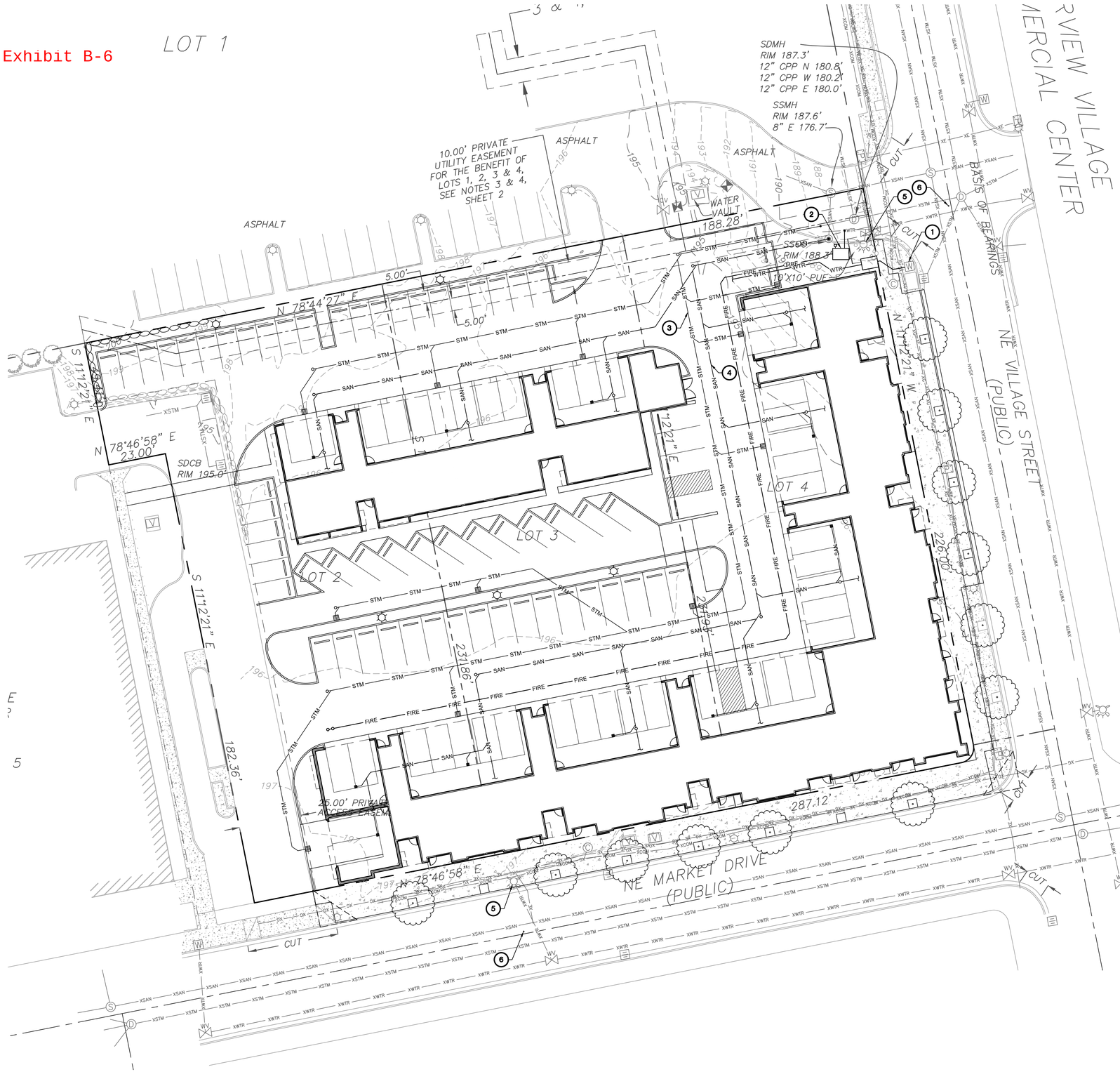
P:\201818053_5 Fairview Village Mixed Use\Cad\Plot\Landuse\C2.0 ESC & Grading Plan\C2.0_18053.dwg, 4/19/2018 10:29:24 AM, money

Exhibit B-6



KEYNOTES FOR THIS SHEET

MARK	DESCRIPTION
1	ASSUMED EXISTING 2" DOMESTIC WATER METER BOX AND LATERAL FOR THIS LOT TO BE USED FOR THIS DEVELOPMENT. AN ADDITIONAL 2" METER OR A SINGLE 4" METER OR COMBINATION OF TWO 2" METERS AND SEPARATE METERS FOR THE COMMERCIAL SPACES WILL BE PROVIDED. THE REQUIREMENTS AND DETAILS TO BE DETERMINED.
2	INSTALL DCVA VAULT AND FDC CONNECTION.
3	EXTEND 12" HDPE STORM CONNECTION FOR ONSITE CATCH BASINS AND ROOF DRAINS.
4	EXTEND 8" PVC SEWER FOR TUCK UNDER PARKING FLOOR DRAINS AND BUILDING SEWER DISCHARGES.
5	EXISTING FIRE HYDRANT TO REMAIN.
6	INSTALL BLUE RETRO-REFLECTIVE FIRE HYDRANT MARKER PER OREGON FIRE CODE.

1 / C2.1 **UTILITY PLAN**

SCALE: 1" = 20'-0"

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

REGISTERED PROFESSIONAL ENGINEER
OREGON
JUSTIN T. DESLARIER
04/19/18

PRELIMINARY NOT FOR CONSTRUCTION

RENEWS: 12-31-2018

WDY
Structural • Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210
Portland, Oregon 97221
ph:503.203.8111 fx:503.203.8122
www.wdyi.com

LAND USE DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 18053
date: 3-16-18

UTILITY PLAN

C2.1

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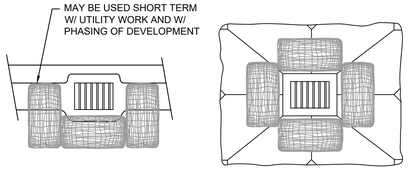
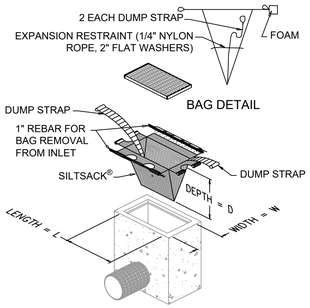
Exhibit B-7

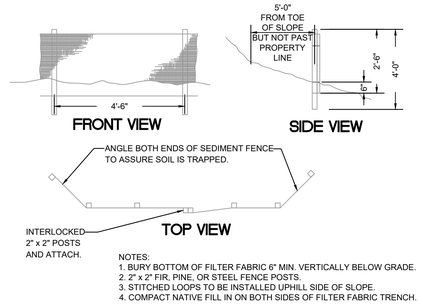




Regular Flow Only
Do not use High Flow Insert Bags.

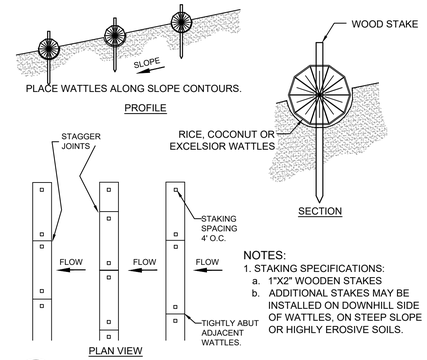
1 C3.0 BIOFILTER BAGS - TEMPORARY
N.T.S.

2 C3.0 FILTER BAG INLET
N.T.S.



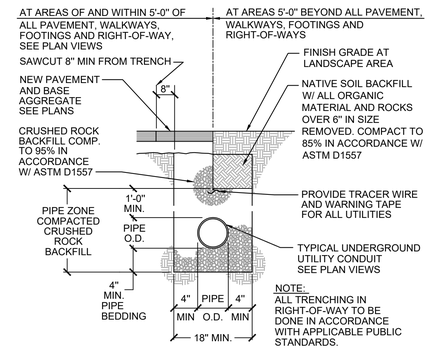
NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" MIN. VERTICALLY BELOW GRADE.
2. 2" x 2" FIR, PINE, OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED UPHILL SIDE OF SLOPE.
4. COMPACT NATIVE FILL IN ON BOTH SIDES OF FILTER FABRIC TRENCH.

3 C3.0 SEDIMENT FENCE
N.T.S.



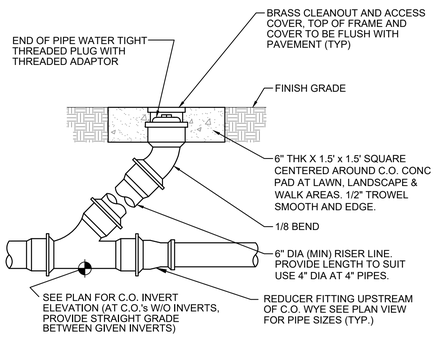
NOTES:
1. STAKING SPECIFICATIONS:
a. 1"X2" WOODEN STAKES
b. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPE OR HIGHLY EROSIVE SOILS.

4 C3.0 SEDIMENT CONTROL WATTLES
N.T.S.
EROSION/StrawBaleBarrier.dwg

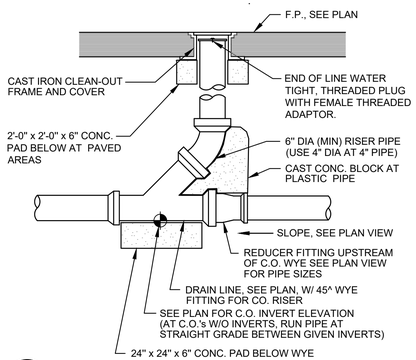


NOTE:
ALL TRENCHING IN RIGHT-OF-WAY TO BE DONE IN ACCORDANCE WITH APPLICABLE PUBLIC STANDARDS.

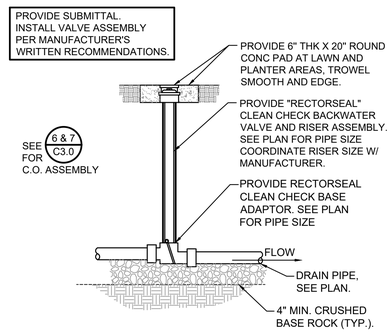
5 C3.0 TYPICAL UTILITY TRENCH SECTION
1" = 1'-0"



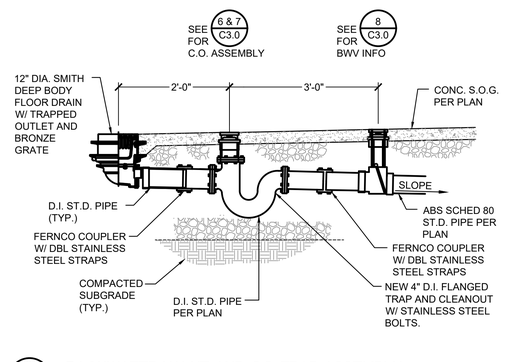
6 C3.0 CLEANOUT AT WALKS, SLABS AND PLANTERS
1" = 1'-0"



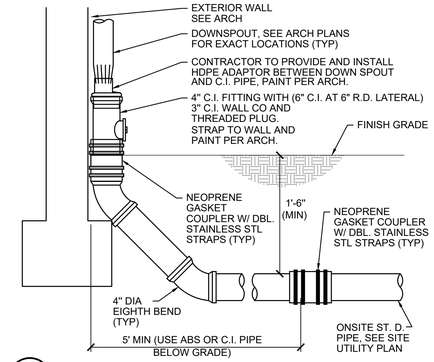
7 C3.0 TYP. CLEAN OUT AT VEHICLE PAVEMENT AREAS
N.T.S.



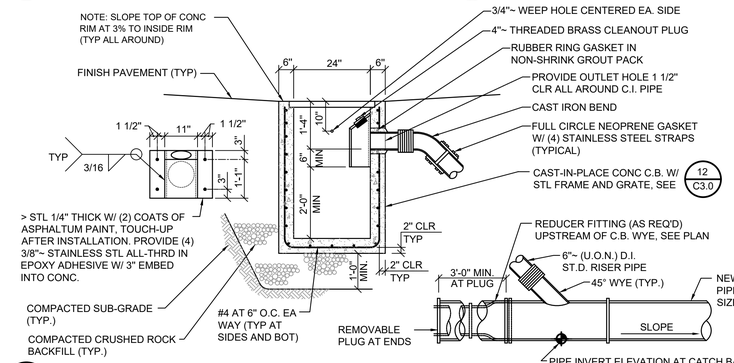
8 C3.0 RECTORSEAL "CLEAN CHECK" BACKWATER VALVE ASSEMBLY FOR FOUNDATION DRAIN (TYP)
1/2" = 1'-0"



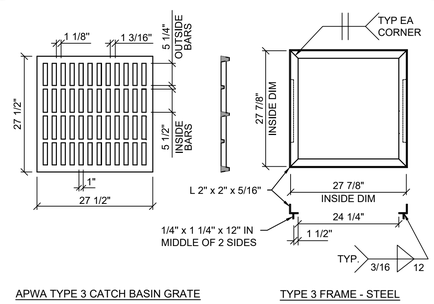
9 C3.0 BACKWATER VALVE AND S.S. TRAP ASSEMBLY
NTS



10 C3.0 TYPICAL EXTERIOR DOWN SPOUT CONNECTION
N.T.S.

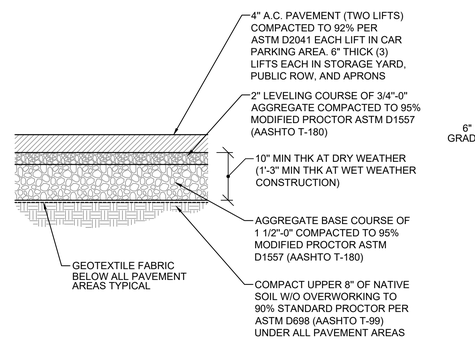


11 C3.0 TYPICAL ON-SITE CONC. CATCH BASIN
N.T.S.

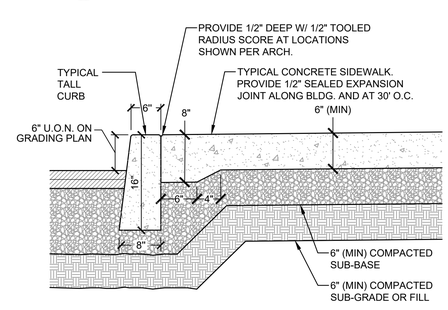


NOTE:
GRATE TO PROVIDE H20 LOADING

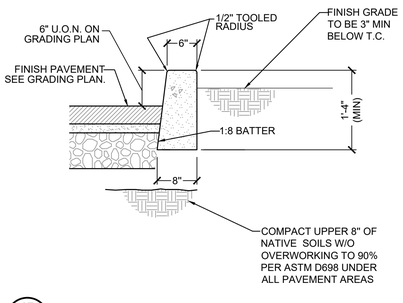
12 C3.0 CAST IRON GRATE-CAST CONCRETE CATCH BASIN
REF: AWPA STD DETAIL #305B



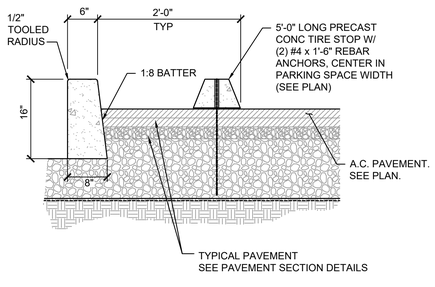
13 C3.0 TYPICAL ASPHALTIC PAVEMENT SECTION
1" = 1'-0"



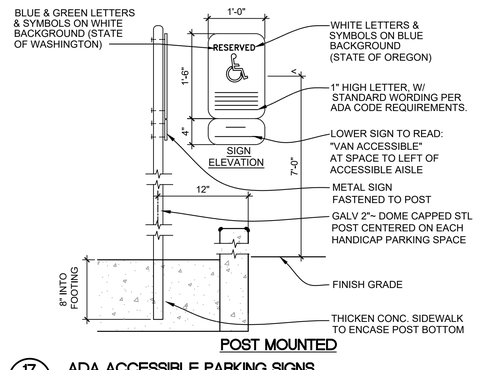
14 C3.0 TYPICAL CONCRETE WALK
N.T.S.



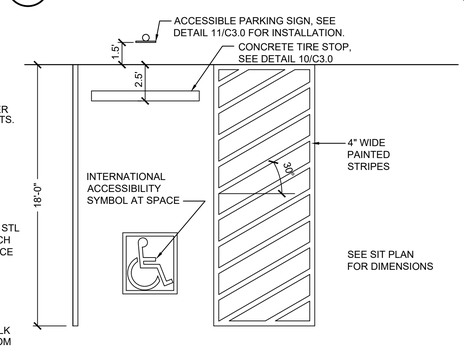
15 C3.0 TYPICAL FULL DEPTH CONCRETE CURB
N.T.S.



16 C3.0 CONCRETE TIRE STOP
1" = 1'-0"



17 C3.0 ADA ACCESSIBLE PARKING SIGNS
N.T.S.



18 C3.0 ADA PARKING STALL
N.T.S.

PRELIMINARY NOT FOR CONSTRUCTION

RENEWS: 12-31-2018

WDY
Structural · Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210
Portland, Oregon 97221
ph:503.203.8111 fx:503.203.8122
www.wdyi.com

LAND USE DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 18053
date: 3-16-18

CIVIL DETAILS

C3.0

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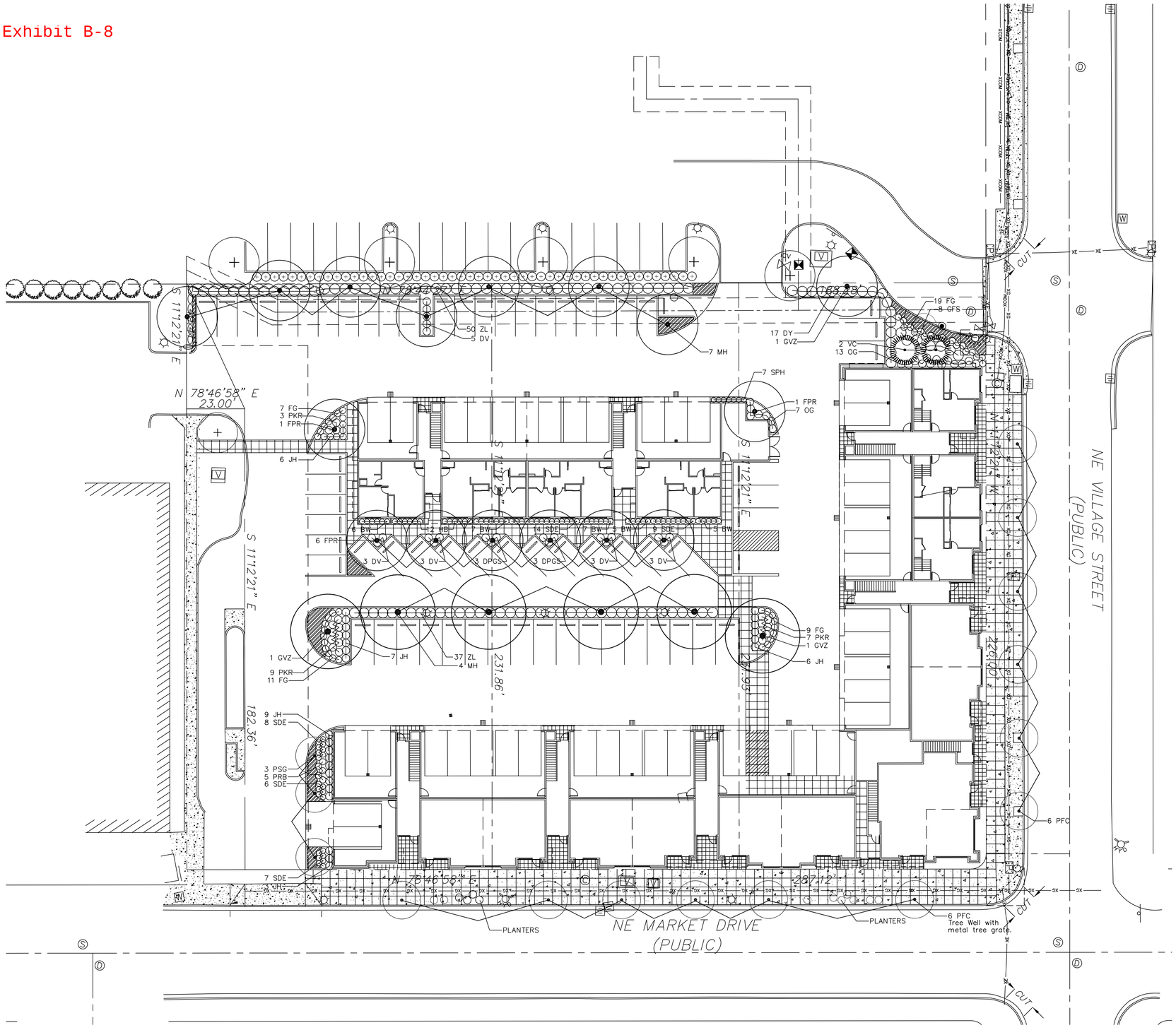
Exhibit B-8



LANDSCAPE LEGEND

SYMBOL	COMMON NAME / BOTANICAL NAME	SIZE/COND.	SPACING
TREES			
FPR	Forest Pansy Redbud Cercis canadensis 'Forest Pansy'	2" cal.	As Shown
GVZ	Green Vase Zelkova Zelkova serrata 'Green Vase'	2" cal.	As Shown
MH	Magnifica Hackberry Celtis 'Magnifica'	2" cal.	As Shown
PFC	Pink Flair Cherry Prunus sargentii 'JFS–KW58'	2" cal.	As Shown
PSG	Princton Sentry Gingko Gingko biloba 'Princton Sentry'	2" cal.	15' o.c.
VC	Virescens Cedar Thuja plicata 'Virescens'	8'–10'	12' o.c.
SHRUBS			
BW	Dwarf Common Boxwood Buxus sempervirens 'Suffruticosa'	18"–24"	2' o.c.
DPGS	Double Play Gold Spirea Spirea japonica 'Yan'	3 gal.	3' o.c.
DV	David Viburnum Viburnum davidii	3 gal.	3' o.c.
DY	Dense Yew Taxus densiformis	24"–30" B&B	4' o.c.
FG	Fountain Grass Pennisetum alopecuroides 'Hamelin'	1 gal.	2.5' o.c.
GFS	Goldflame Spirea Spirea bumalda 'Goldflame'	3 gal.	4' o.c.
HB	Heavenly Bamboo Nandina domestica 'Firepower'	3 gal.	2' o.c.
JH	Japanese Holly Ilex crenata	5 gal.	3' o.c.
OG	Oregon Grape Mahonia aquifolium	5 gal.	3' o.c.
PKR	Pink Knockout Rose Rosa x Radcon 'Pink'	2 gal.	3' o.c.
PRB	Pygmy Ruby Barberry Berberis thunbergii 'Pygruzam'	3 gal.	3' o.c.
SDE	Sunny Delight Euonymus Euonymus japonica var. microphyllus 'Moncliff'	3 gal.	2' o.c.
SPH	Sky Pencil Ilex crenata 'Sky Pencil'	5 gal.	2' o.c.
ZL	Zabel Laurel Prunus laurocerasus 'Zabeliana	24"–30"	4' o.c.
GROUNDCOVER			
	Kinnikinnick Arctostaphylos uva–ursi 'Emerald Carpet'	1 gal.	24" o.c.

NOTES

1. Installation must fully comply with all City of Fairview Village landscape code requirements and any conditions of approval.
2. Irrigation to be provided by a fully automatic underground system, plans to be submitted at Building Permit.
3. Topsoil to be imported sandy loam topsoil and amended as per Soil Laboratory analysis recommendations.

LANDSCAPE SYMBOLS LEGEND

Existing Shrub to Remain

Existing Deciduous Tree to Remain

1 / L100 LANDSCAPE PLAN
1" = 20'-0"

N

CHRISTOPHER FRESHLEY
LANDSCAPE ARCHITECT
3944 S.W. 30TH PLACE • PORTLAND, OREGON 97221 • 503/222-9681
(E-MAIL): CHRIS@FRESHLEYLANDSCAPEARCHITECT.COM

REGISTERED 74 OREGON LANDSCAPE ARCHITECT
CHRISTOPHER K. FRESHLEY

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

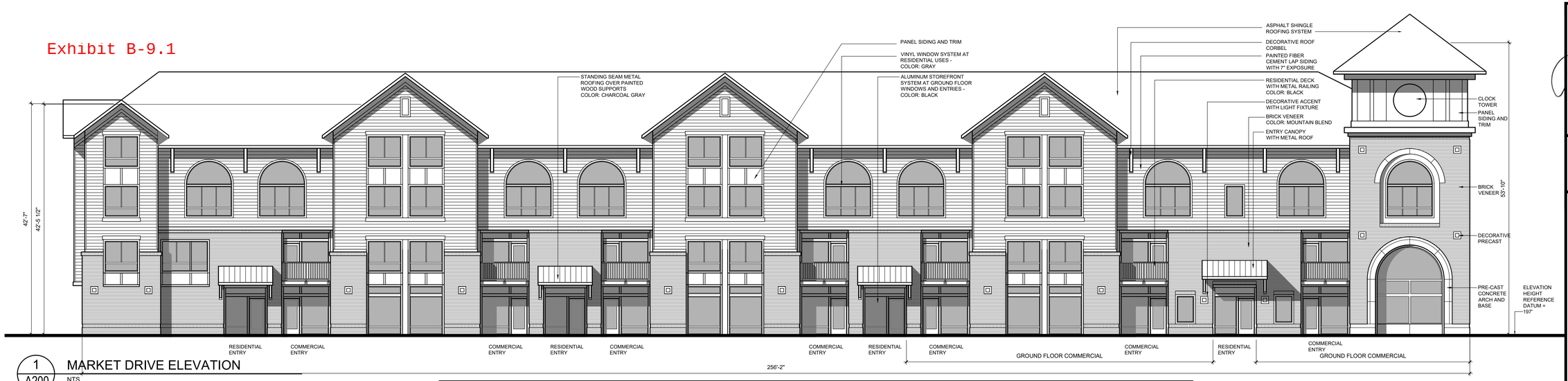
FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-20-2018

LANDSCAPE PLAN

L100

Exhibit B-9.1

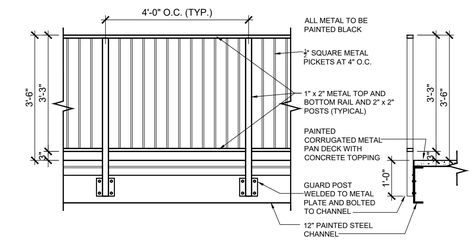


1 A200 MARKET DRIVE ELEVATION

NTS

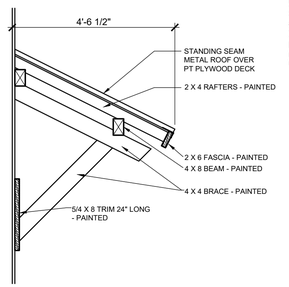
2 A200 MARKET DRIVE ELEVATION

1/8" = 1'-0"



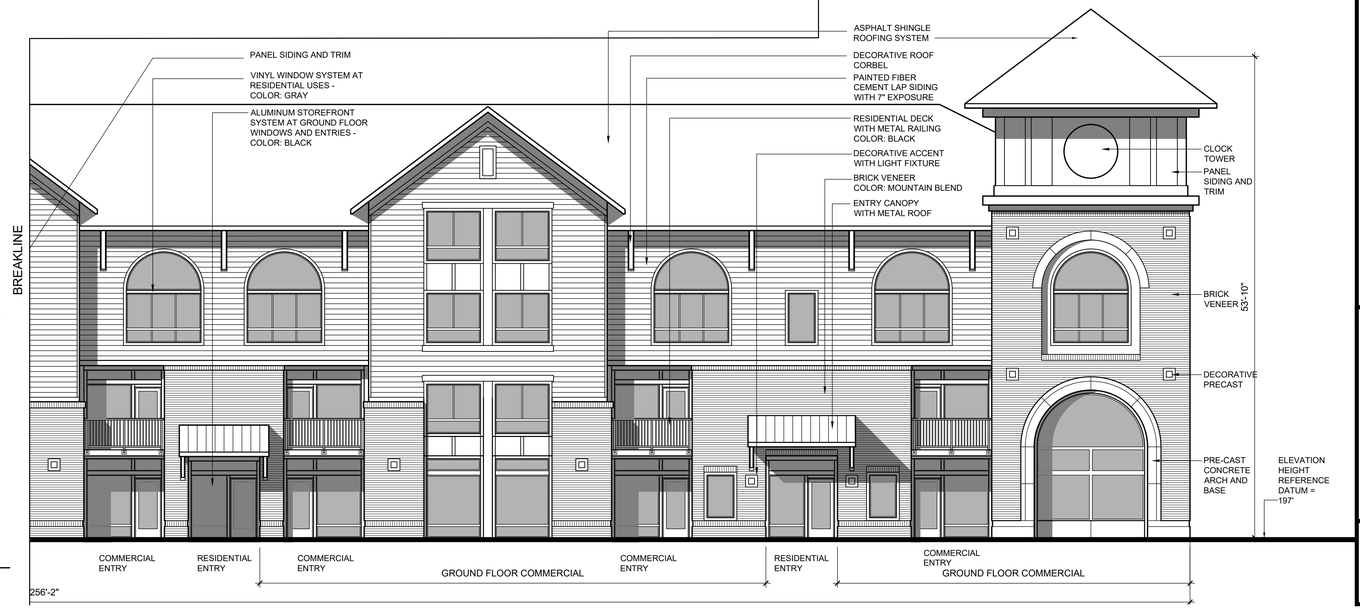
3 A200 DECK DETAIL

1/2" = 1'-0"



4 A200 CANOPY DETAIL

NTS



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LAND USE ENTITLEMENT DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

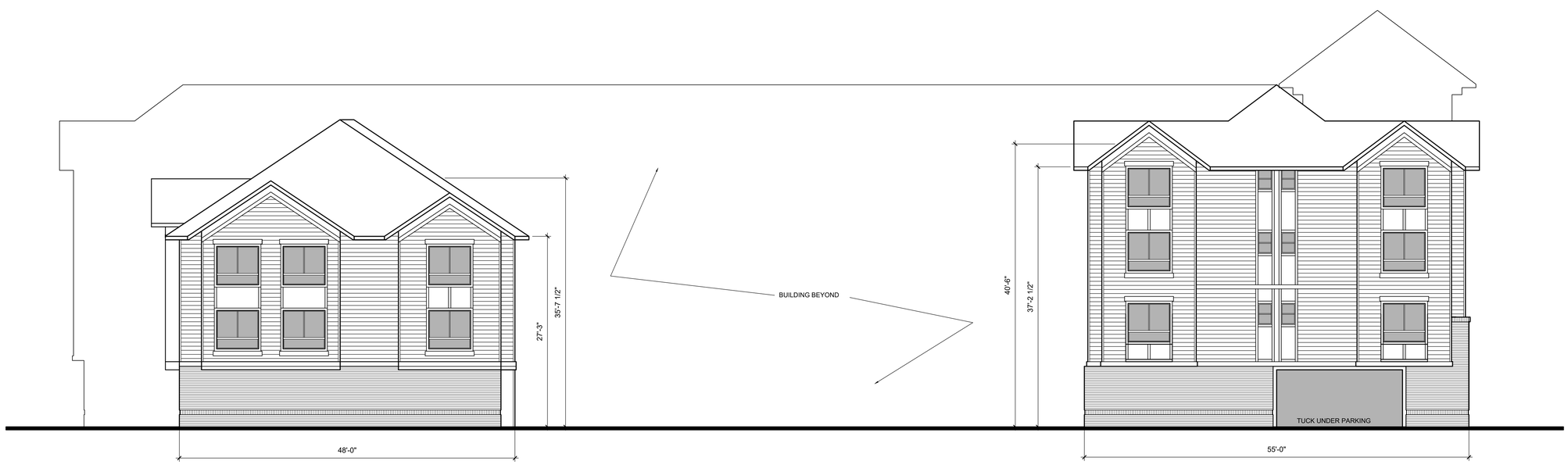
job no.: 1801
date: 3-22-2018

BUILDING ELEVATIONS

A200

Exhibit B-9.2

1 / A201 VILLAGE STREET ELEVATION
1/8" = 1'-0"



2 / A201 WEST ELEVATION
1/8" = 1'-0"

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LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

BUILDING ELEVATIONS

A201

Exhibit B-9.3

1 A202 NORTH ELEVATION

N.T.S.

2 A202 PARTIAL NORTH ELEVATIONS

1/8" = 1'-0"

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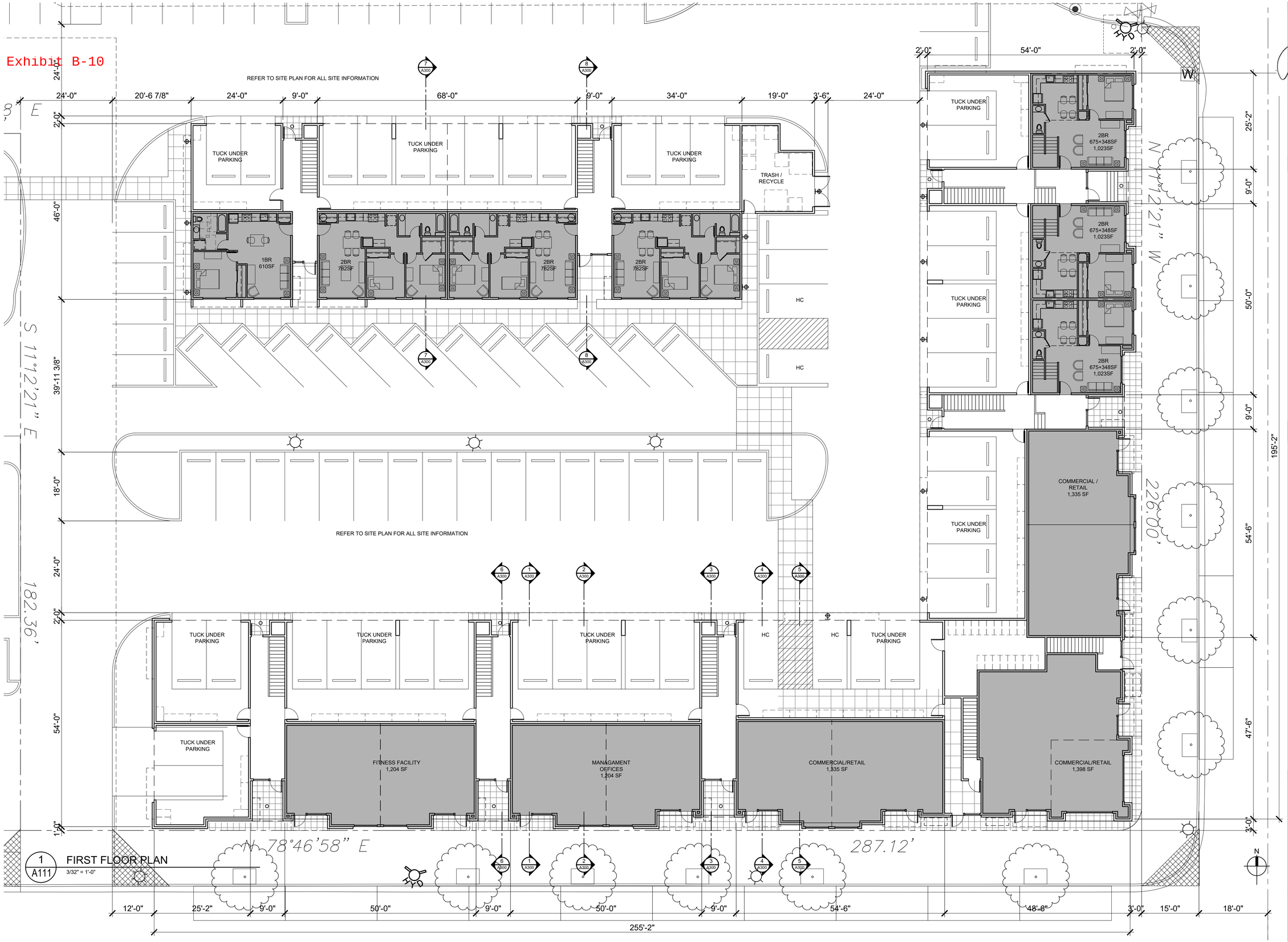
FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

BUILDING ELEVATIONS

A202

Exhibit B-10



1 A111 FIRST FLOOR PLAN
3/32" = 1'-0"

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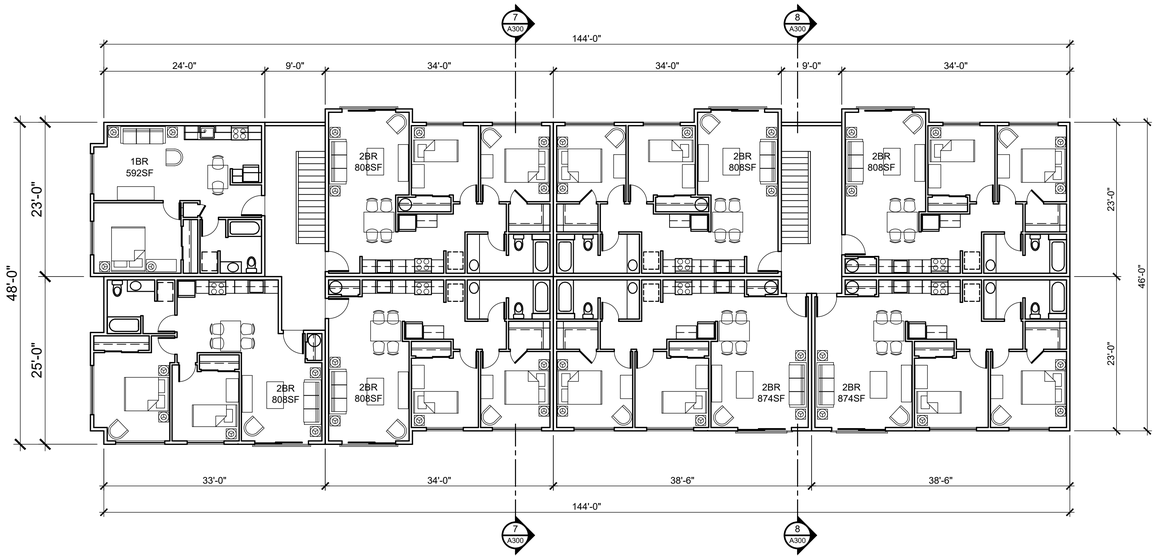
LOTS 2, 3, 4

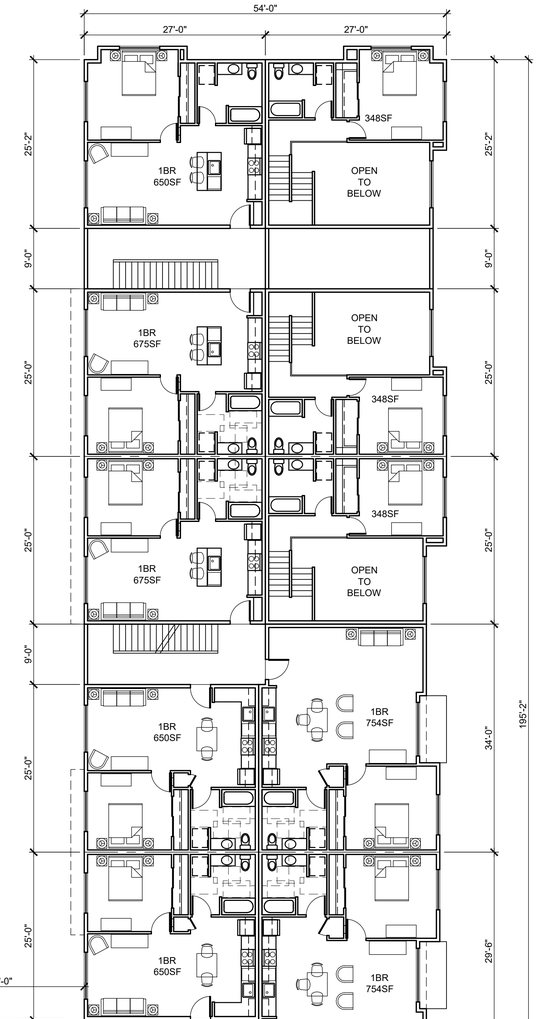
FAIRVIEW, OREGON 97024

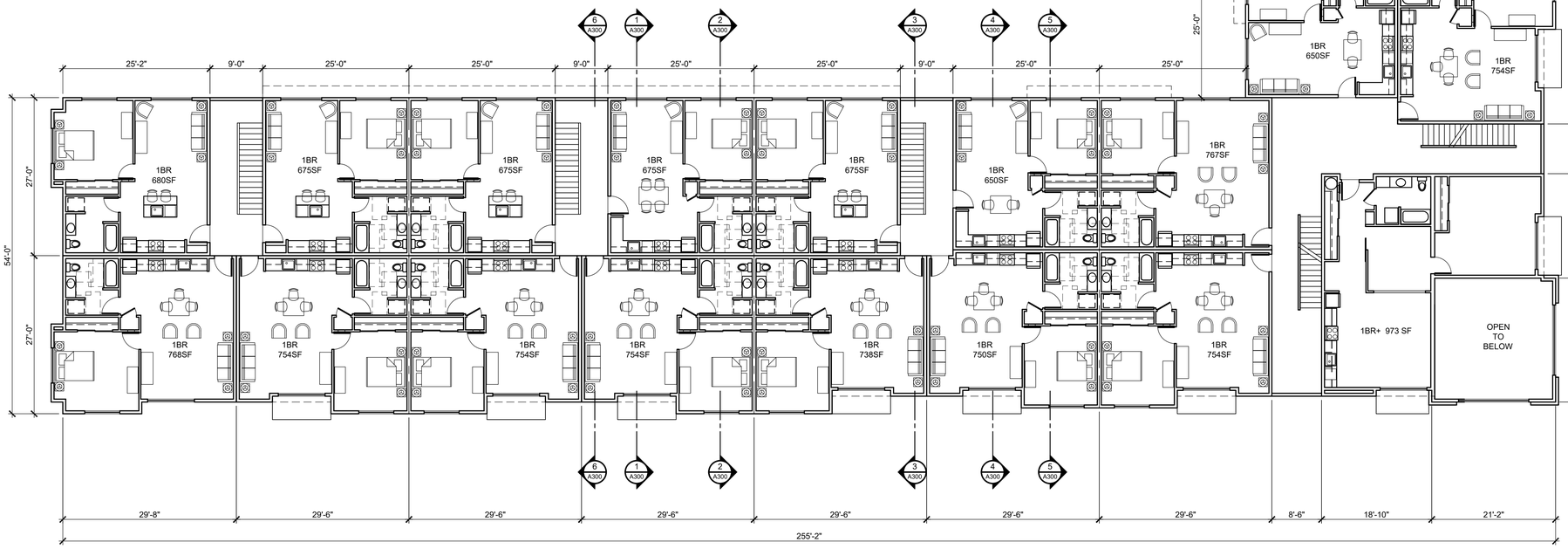
job no.: 1801
date: 3-22-2018

FIRST FLOOR PLAN

A111







1 A112 SECOND FLOOR PLAN

3/32" = 1'-0"

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LAND USE
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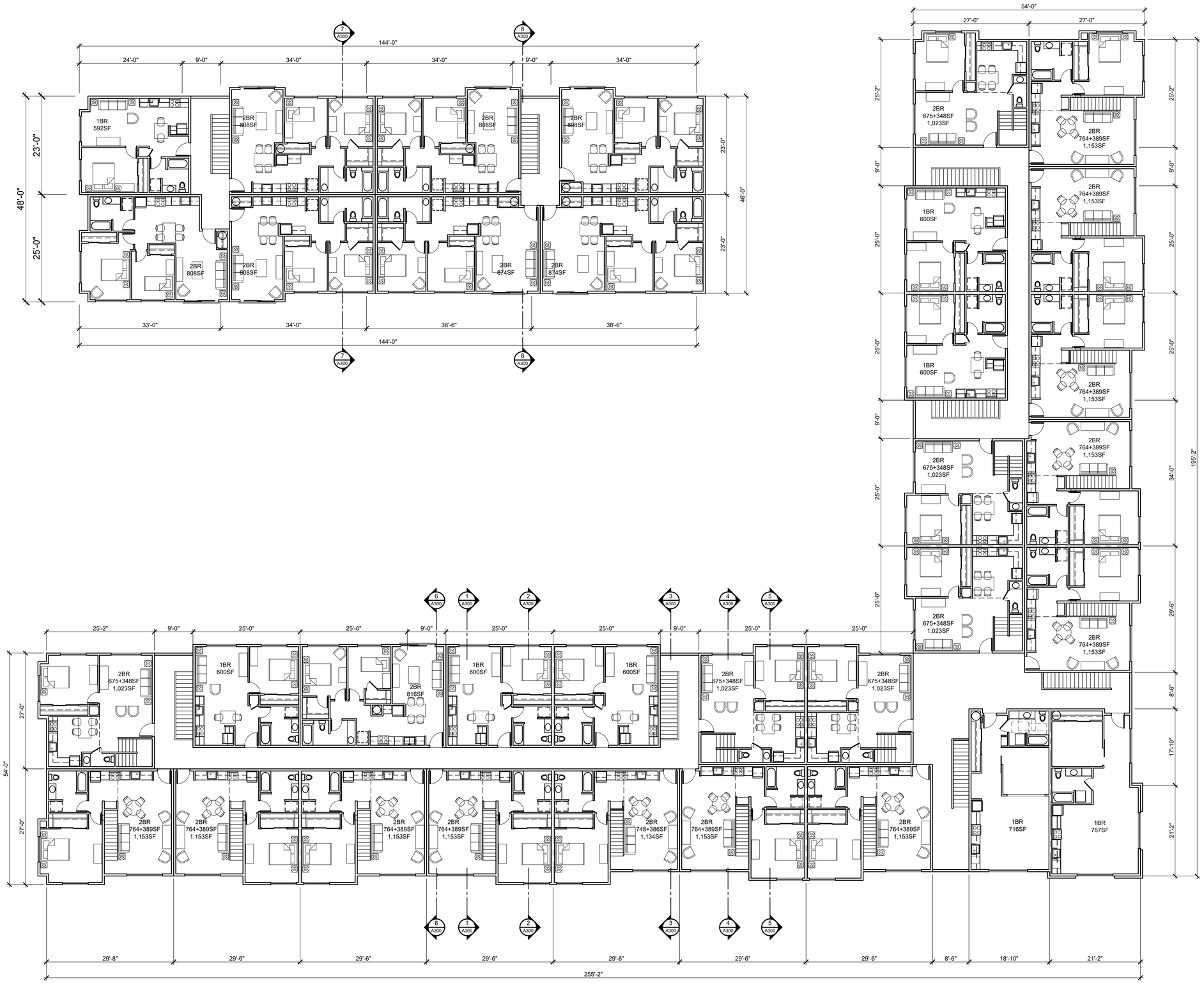
FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

SECOND
FLOOR PLAN

A112



1 A113 THIRD FLOOR PLAN

3/32" = 1'-0"

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LAND USE ENTITLEMENT DRAWINGS

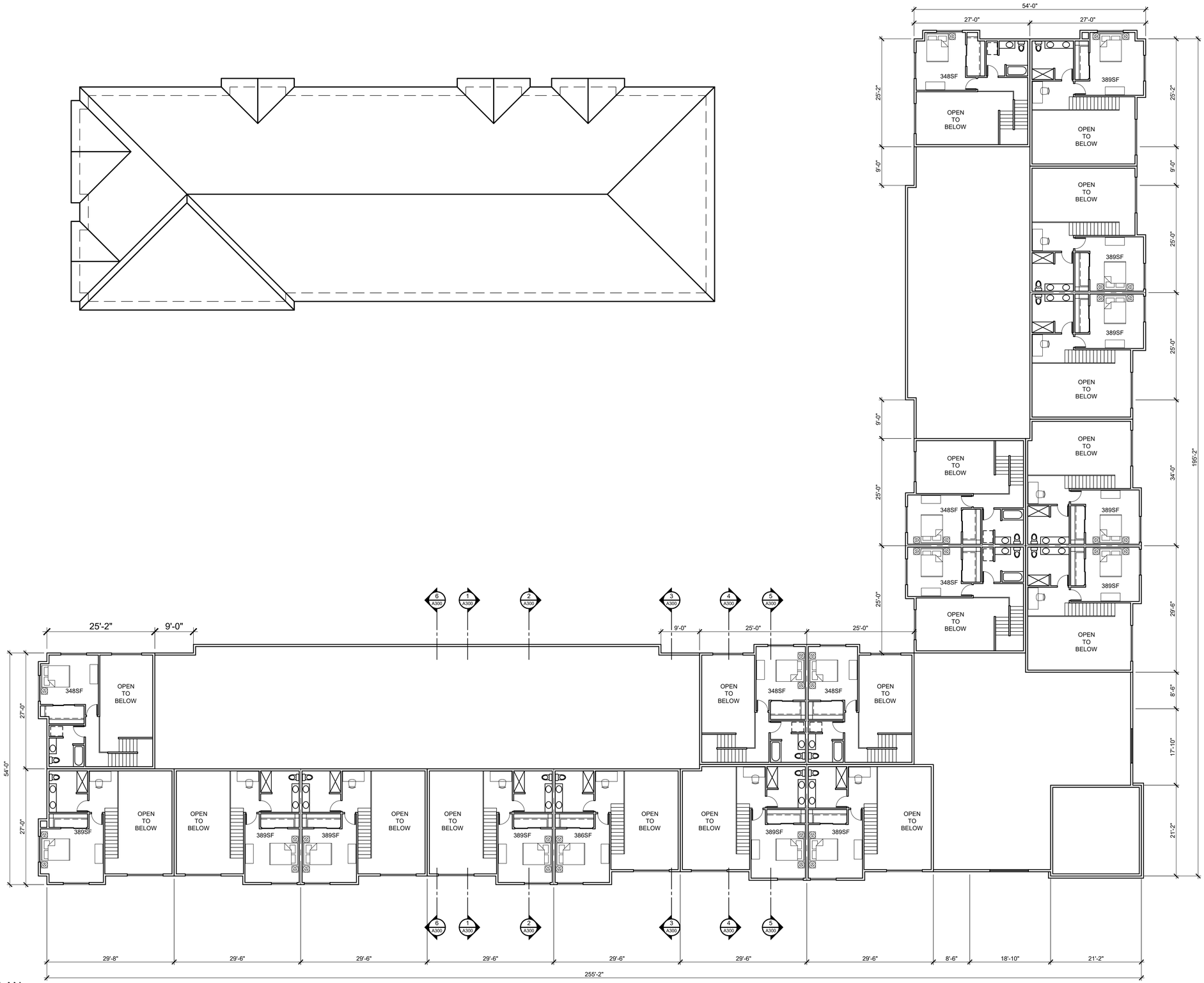
FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

THIRD FLOOR PLAN

A113



1 A114 FOURTH FLOOR PLAN
3/32" = 1'-0"

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LAND USE ENTITLEMENT DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

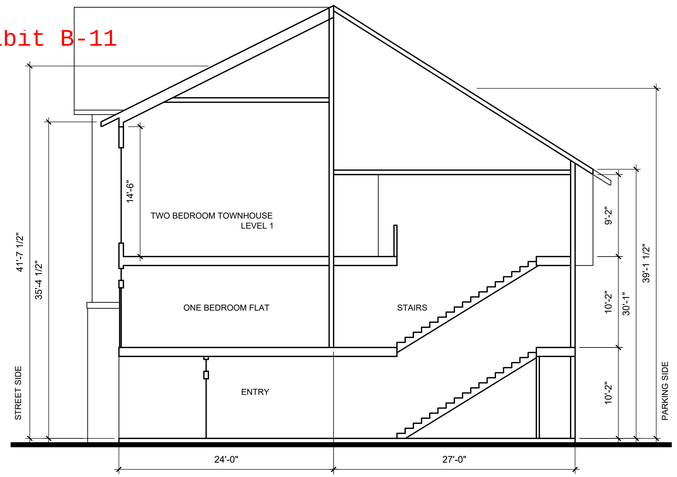
FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

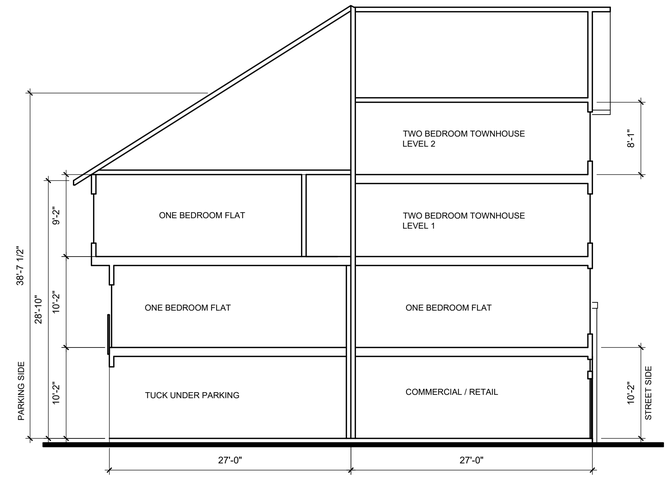
FOURTH FLOOR PLAN

A114

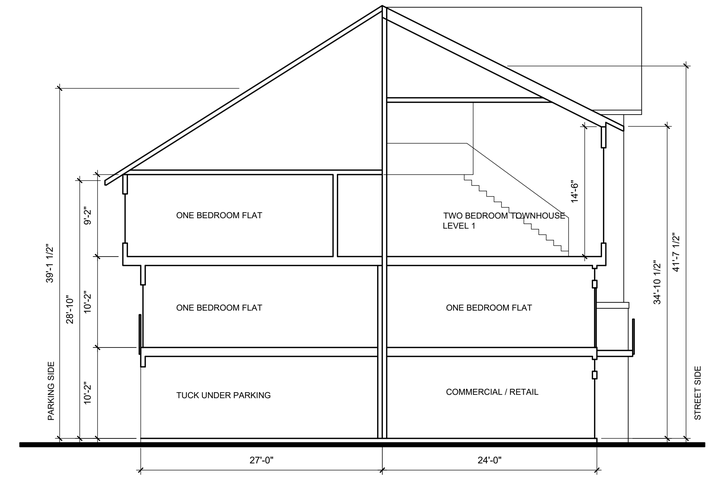
Exhibit B-11



3 A300 BUILDING SECTION
1/8" = 1'-0"



2 A300 BUILDING SECTION
1/8" = 1'-0"



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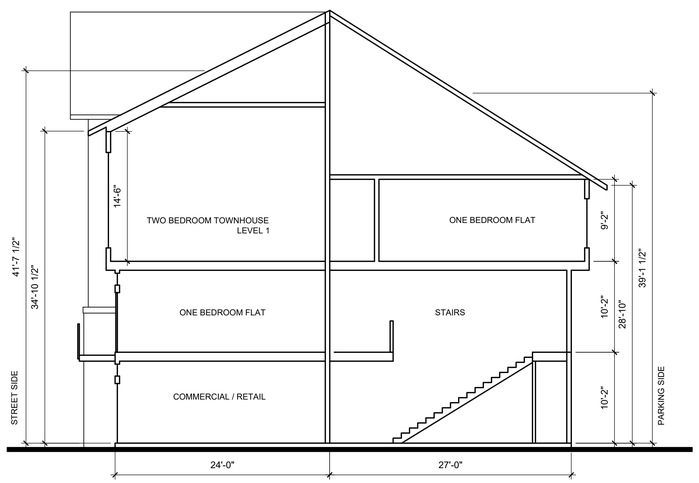

6 A300 BUILDING SECTION
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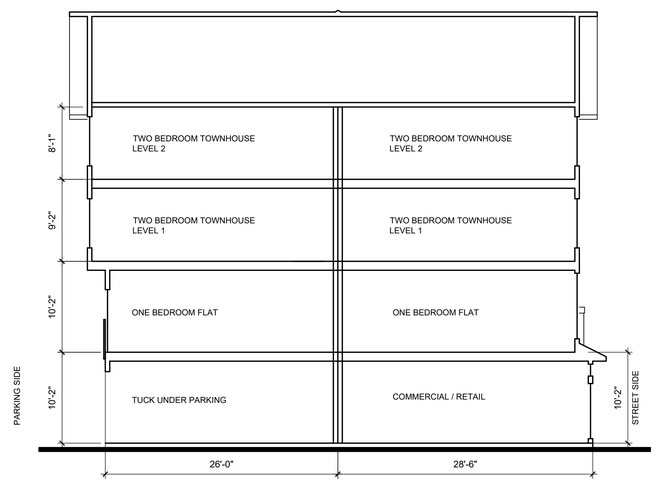

5 A300 BUILDING SECTION
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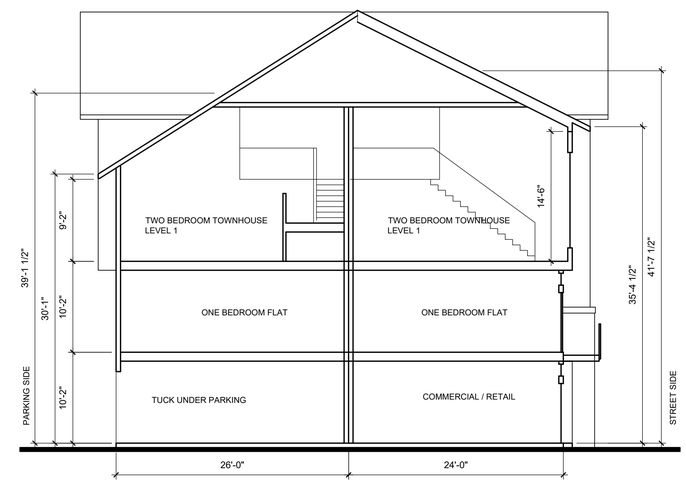

4 A300 BUILDING SECTION
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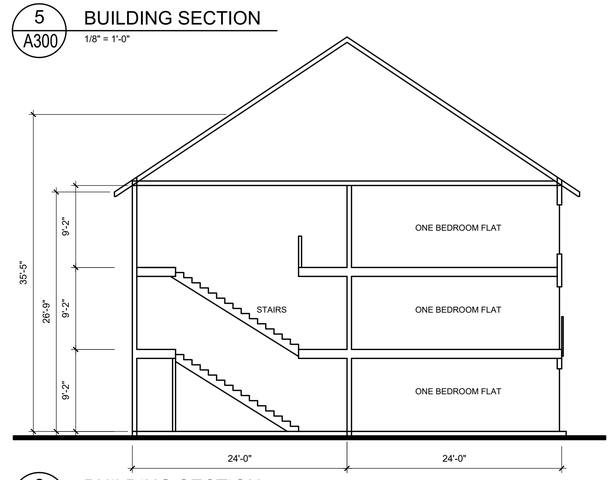
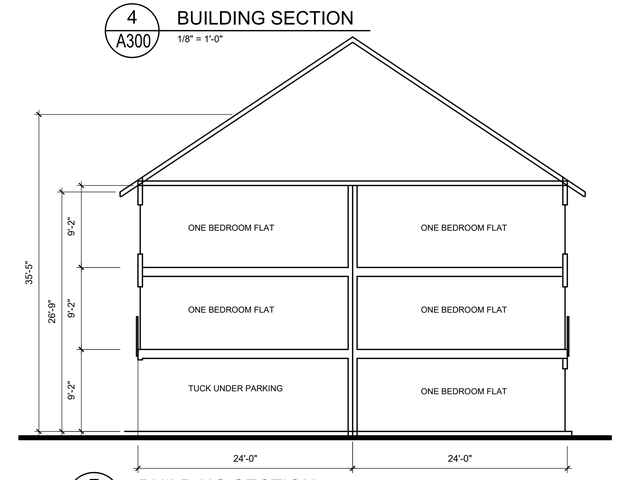


8 A300 BUILDING SECTION
1/8" = 1'-0"



7 A300 BUILDING SECTION
1/8" = 1'-0"

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LAND USE
ENTITLEMENT
DRAWINGS

FAIRVIEW VILLAGE MIXED USE
LOTS 2, 3, 4

FAIRVIEW, OREGON 97024

job no.: 1801
date: 3-22-2018

BUILDING
SECTIONS

A300

Fairview File #: 18-22
Multi Use Commercial Bldg/SW Corner of Market Dr. & Village St.
FROM: Kyle Stuart, Gresham Fire (kyle.stuart@GreshamOregon.gov)
DATE: 4-11-2018
FIRE COMMENTS:

NOTE: Limited information at this time. All of the following will need to be provided on a separate FIRE ACCESS and WATER SUPPLY page with the building permit plans.

1. Provide fire flow per Oregon Fire Code Appendix B. Fire flow for apartment buildings varies based on construction and square footage. ***OFC App B Table B105.1.***

2. A temporary address of 6" shall be provided at each construction entrance prior to the arrival of materials or workers. ***OFC 505 & 3301***

3. The site addressing shall meet the Gresham Fire Addressing Policy. Each building shall have a sign placard with a minimum 10" address numbers and 6" unit numbers. Each individual residential space shall have a minimum 4" address numbers and commercial tenant spaces a minimum 6" numbers. ***OFC 505.1***

4. Public fire hydrant locations are not indicated on the plans. They must be shown. A public hydrant may be required to be added near the entrance off Halsey. The onsite Private fire hydrants on the East and West sides shall be moved to the same side of the street as the FDC's. Another hydrant will be required to be added to the South side of Building D to meet spacing requirements. All fire hydrants shall have STORZ quick adapters on the large port. The model required is Harrington HPHA50-45NHWCAP. ***OFC 507***

5. A fire hydrant shall be within 50 feet of the fire sprinkler system "FDC's". ***OFC Appendix C 102.2 & NFPA 13E***

6. Fire hydrant locations shall be identified by the installation of reflective markers. The markers shall be BLUE. They shall be located adjacent and to the side of the centerline of the access road way that the fire hydrant is located on. In case that there is no center line, then assume a centerline, and place the marker accordingly. ***OFC 508.5.4***

7. Prior to applying for a building permit provide a fire flow test and report. The fire flow report will verify that the correct fire flow is available and will be required to have been conducted within the last 12 months. ***OFC 507.3 & B-101.1***

8. Required Fire Dept. Access Roads on site shall be designed to support an apparatus weighing 75,000 lb. gross vehicle weight. Provide an engineer's letter stating the access road meets those requirements at time of building permit submittal. ***OFC, Appendix D, Section D102.1***

9. No Parking Fire Lane signage or curb marking will be required. Fire access roads 20' – 26' wide do not allow parking on either side within that space. Parking spaces outside that space are acceptable. Indicate signage or curb marking on the building permit plans. I can email you our policy. ***OFC D 103.6***

10. Each building is required to be provided with fire sprinklers. This includes balconies, decks and ground floor patios. ***903, 903.3.1.2***

11. A fire alarm system will be required. ***OFC 903.4 and 907***

MEMORANDUM

DATE: May 15, 2018 **MEETING DATE:** May 22, 2018

TO: Planning Commission

FROM: Eric Rutledge, Associate Planner

SUBJECT: Accessory Dwelling Unit Code Amendments as Required by SB 1051

ISSUE

In August 2017 the Oregon legislature passed SB 1051, requiring cities and counties of certain populations to allow Accessory Dwelling Unit's (ADU's) in area zoned for detached single-family residences. Staff is requesting feedback from the Planning Commission on the required and recommended code changes. The recommended code changes will be forward to City Council for adoption this summer.

BACKGROUND

Senate Bill 1051

Rising housing costs in Oregon have outpaced employment and wage growth, resulting in a housing affordability crisis throughout the state. In August 2017 the Oregon legislature passed SB 1051, requiring cities and counties of certain populations to allow ADU's in areas zoned for detached single-family dwellings under certain parameters. The bill is intended to address the state's housing shortage by allowing smaller, more affordable units that complement primary single-family residences. By removing barriers to development to support ADU production, the bill is designed to provide new housing opportunities in neighborhoods already served by essential services.

SB 0151 defines an ADU as "an interior, attached or detached residential structure that is used in connection with or that is accessory to a single-family dwelling". To comply with the legislation, local jurisdictions must allow at least one ADU for each detached single-family dwelling, subject to clear and objective standards and reasonable regulations related to siting and design. The legislation also provides recommended code updates related to ADU size, parking, owner-occupancy requirements, review procedures, and SDC fees.

Existing ADU Regulations & Trends

Fairview's development code allows ADU's in all zones that allow single-family detached residences. This includes the R, R7.5, R10, R/TOZ, R/SFLD, VSF, and VTH zones (see Exhibit D). The code provides special standards for accessory dwellings in FMC 19.30.110(B) (Exhibit B). The special standards are intended to control the size and number of ADU's on individual lots and promote compatibility with adjacent land uses. Special standards apply to ADU height, size, parking, owner occupancy, and more.

Since 2000, approximately 5 ADUs have been permitted in Fairview. Three have been constructed in the Historic Fairview neighborhood, and two in the Village. This construction rate is relatively low compared to cities with greater population growth and demand for affordable housing. On average, planning staff receives one inquiry per month from property owners interested in developing an ADU on their property. Interest in ADU development is expected to grow, as family sizes decrease and development pressure from Portland moves east.

REQUIRED & RECOMMENDED CODE AMENDMENTS

Changes are required to Fairview's development code to meet the minimum requirements in SB 1051. While the existing code meets the major requirement of allowing ADU's in all detached single-family zones, smaller adjustments are needed to reach full compliance. The required changes include:

- Updating the definition of "ADU"
- Allowing one ADU per detached single-family residence. The code currently allows one ADU per lot, up to a maximum of 50% of the lots within any given block.
- Removing any subjective standards that are not "clear and objective". E.g. the standard that hedges or a fence may be required to buffer the ADU from adjacent residents.
- Clarifying siting and design standards

Beyond these requirements, the State has provided a set of recommended standards that will help remove barriers to ADU development. Exhibit A provides a full list of the required and recommended standards and how the Fairview Development Code may be updated.

NEXT STEPS & QUESTIONS FOR THE COMMISSION

The commission is scheduled to hold a second work session on June 12 to review draft code language. Cities must provide the State Department of Land Conservation & Development (DLCD) with notice of a public hearing to adopt ADU code amendments by July 1. To meet this requirement, staff recommends holding a Planning Commission hearing on June 24 to make a recommendation to council.

Staff requests feedback from the commission on the approach to implementing the required amendments and whether the commission would like to consider amendments on any of the recommended changes.

EXHIBITS

A. Code Evaluation Matrix
B. FMC 19.30.110(B) Accessory Dwelling
C. ADU Example Photos & Diagrams
D. Map of Zoning Districts Impacted by Code Update
E. Guidance on Implementing the ADU Requirement Under SB 1051 – DLCD Handout

Exhibit A

Fairview Development Code Evaluation
Accessory Dwelling Units (ADUs)

State Guidance	Fairview Code	Amendment Needed?	Code Amendment Proposed
SB 1051 *Requirements*			
Definition of ADU is "An interior, attached, or detached residential structure that is used in connection with, or that is accessory to, a single-family dwelling.	"Accessory Dwelling. An “accessory dwelling” is a small, secondary housing unit on a single-family lot, usually the size of a studio apartment."	**YES**	1. Adopt state definition 2. Update existing definition to better match new state requirements
Allow at least one ADU for each detached single-family dwelling (rather than 1 per lot)	"One Unit. A maximum of one accessory dwelling unit is allowed per lot" "Units per Block. The number of accessory dwelling units is not to exceed 50 percent of the lots within any block" In VSF zone, only ADUs above detached garages are permitted.	**YES**	1. Update the one unit requirement to apply per single-family detached residence and; remove the limit on ADUs per block and; update the VSF chapter to allow ADUs in any location, subject to setback and lot coverage requirements
ADUs permitted in all zones where single-family detached dwellings are permitted	Allows ADUs in all zones where single-family detached dwellings are permitted (R, R7.5, R10, R/TOZ, R/SFLD, VSF, VTH)	**NO**	N/A
“Clear and objective” standards for design, if any design standards used	"Buffering. A minimum four-foot hedge or sight-obscuring fence may be required to buffer a detached accessory dwelling from dwellings on adjacent lots, when buffering is necessary for the privacy and enjoyment of yard areas by either the occupants or adjacent residents"	**YES**	1. Update the buffering standard to apply to all detached ADU's 2. Update the buffering standard to apply to no ADU's 3. Update the buffering standard to apply under certain clear and objective conditions

Fairview Development Code Evaluation
Accessory Dwelling Units (ADUs)

State Guidance	Fairview Code	Amendment Needed?	Code Amendment Proposed
"Reasonable siting and design standards"	Height Max: 20 ft. Area Max: 800 SF ADUs subject to the same setback requirements as the primary residence.	**NO**	1. No change 2. Create additional siting and design standards
State *Recommendations*			
No owner-occupancy standards	The primary residence or accessory dwelling shall be owner-occupied. Alternatively, the owner may appoint a family member as a resident caretaker of the principal house or of the accessory dwelling	**NO**	1. No change 2. Remove owner-occupancy requirements
Type I review, or combined with building permit	Type 1 review with building permit	**NO**	1. No change
Don't require additional off-street parking, or provide generous supporting provisions like on-street parking credit,tandem parking, combined access, no more than two total required spaces	The development of the accessory dwelling shall provide an additional on-site parking space if the primary dwelling has less than four on-site spaces available before construction of the accessory unit	**NO**	1. Do no require additional off-street parking with ADU construction 2. Require a new, lower minimum number of off-street spaces (e.g. at least one per dwelling unit) 3. No change to the parking space requirements *Staff recommends clarifying which spaces on a property can count towards off-street parking (e.g. garage, driveway, other paved surface, etc.)

Fairview Development Code Evaluation
Accessory Dwelling Units (ADUs)

State Guidance	Fairview Code	Amendment Needed?	Code Amendment Proposed
Allow flexibility in square footage for entire floor ADUs	800 SF maximum	**NO**	1. Retain 800 SF maximum, with exception that existing interior spaces that occupy an entire floor and are greater than 800 SF can be converted to an ADU (e.g. 900 SF existing basement or 1000 SF top floor) 2. No change 3. Change maximum square footage requirement
Apply same or less restrictive standards to ADUs as those for other accessory buildings	There are more standards for accessory structures than accessory dwellings. Should they be different?	**NO**	1. No change
Consider two ADUs per dwelling, possibly one attached and one detached.	One ADU allowed per lot. Can be attached, detached, or above garage.	**NO**	1. No change 2. Allow two ADU's per single family-detached residence
Consider SDC methodology to scale SDCs to ADU impacts or consider a fee waiver.	Historically, SDCs have not been assessed to ADUs	**NO**	SDC's not determined by development code.

Exhibit B

Fairview Municipal Code 19.30.110

Special Standards for Certain Uses

B. Accessory Dwelling (Attached, Separate Cottage, or Above Detached Garage). An accessory dwelling is a small, secondary housing unit on a single-family lot, usually the size of a studio apartment. The additional unit can be a detached cottage, a unit attached to a garage, or in a portion of an existing house. The housing density standard of the residential district does not apply to accessory dwellings, due to the small size and low occupancy level of the use. The following standards are intended to control the size and number of accessory dwellings on individual lots, to promote compatibility with adjacent land uses. Accessory dwellings shall comply with all of the following standards:

1. Oregon Structural Specialty Code. The structure complies with the Oregon Structural Specialty Code;

2. Owner-Occupied. The primary residence or accessory dwelling shall be owner-occupied. Alternatively, the owner may appoint a family member as a resident caretaker of the principal house or of the accessory dwelling;

3. One Unit. A maximum of one accessory dwelling unit is allowed per lot;

4. Floor Area. The total square footage of the accessory dwelling shall not exceed 800 square feet. On a lot less than one acre, an accessory dwelling unit may be constructed above a detached garage. However, the floor area of the accessory dwelling unit cannot exceed 800 square feet and the floor area of the detached garage, excluding the accessory dwelling unit, cannot exceed 1,000 square feet;

5. Building Height. The building height of detached accessory dwellings (i.e., separate cottages) shall not exceed 20 feet, as measured in accordance with FMC 19.30.080;

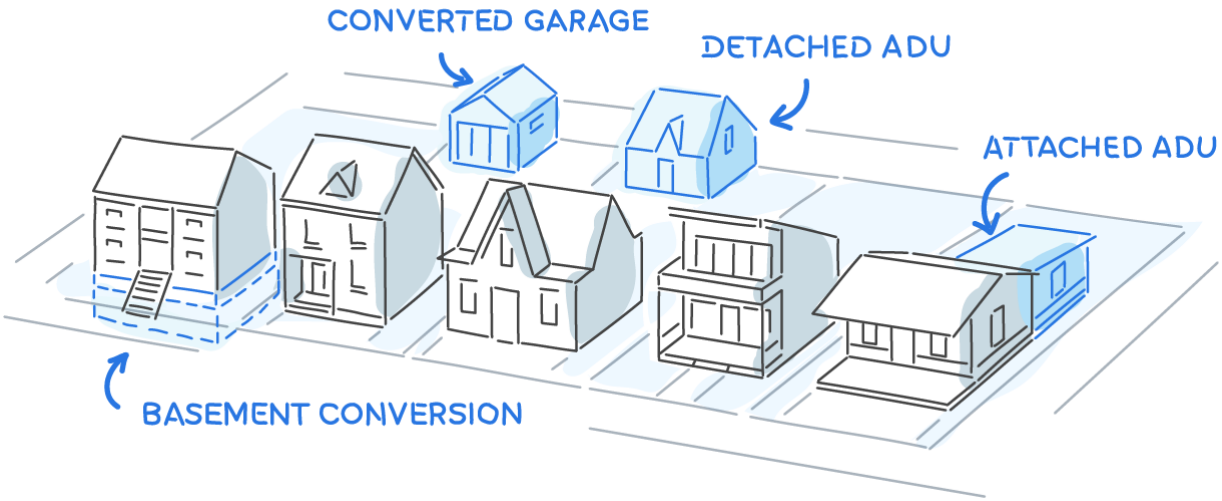
6. Buffering. A minimum four-foot hedge or sight-obscuring fence may be required to buffer a detached accessory dwelling from dwellings on adjacent lots, when buffering is necessary for the privacy and enjoyment of yard areas by either the occupants or adjacent residents;

7. Units per Block. The number of accessory dwelling units is not to exceed 50 percent of the lots within any block;

8. Parking. The development of the accessory dwelling shall provide an additional on-site parking space if the primary dwelling has less than four on-site spaces available before construction of the accessory unit; and

9. Lot Coverage. The accessory dwelling and all other buildings and impermeable surfaces shall not exceed the 70 percent lot coverage requirement in FMC 19.30.070.

Exhibit C



Sketch: Possible ADU locations in a single-family zone

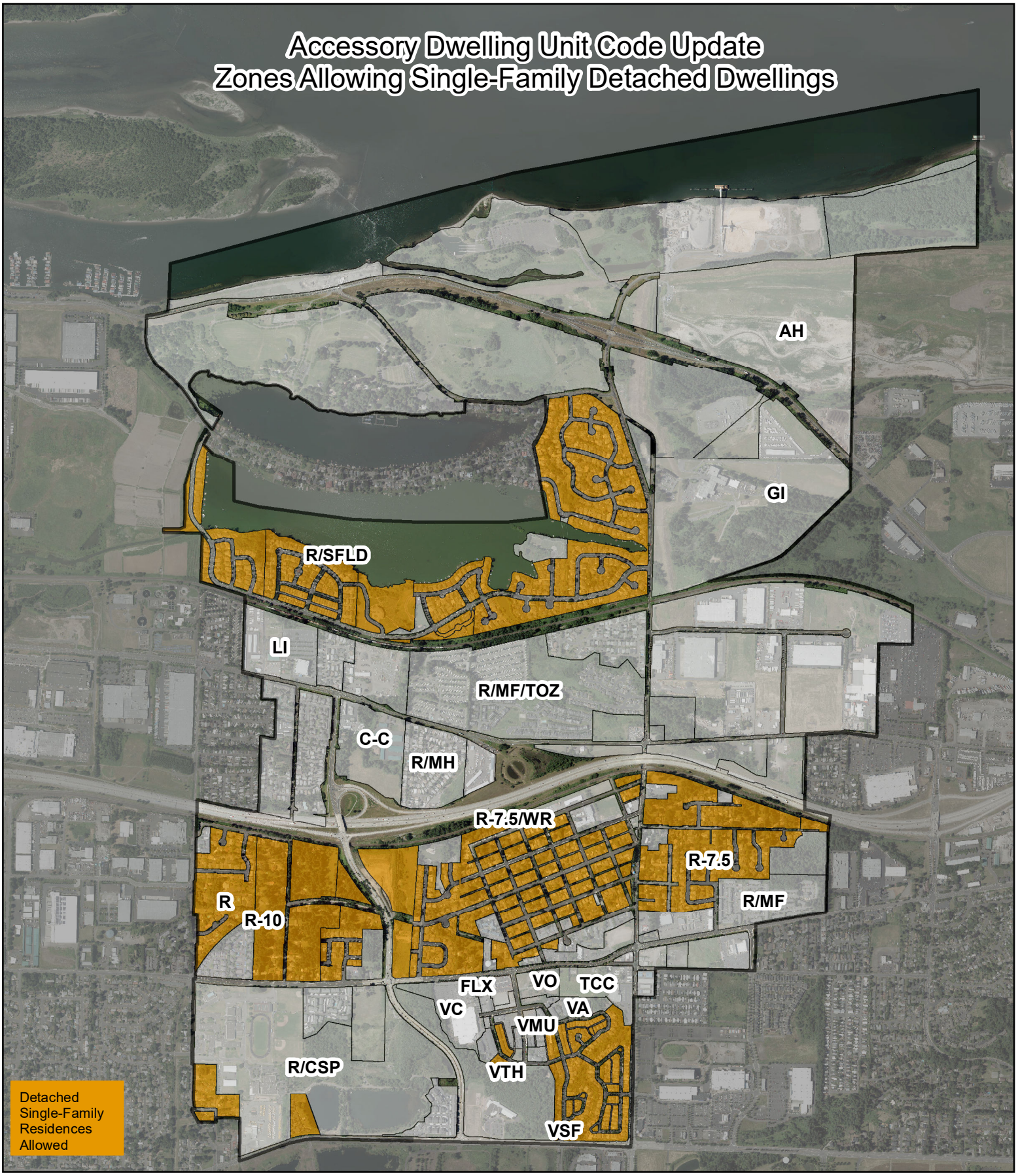
Example A: Detached ADU above garage in Historic Fairview

Example B: Primary residence with detached ADU behind building – Historic Fairview

Example B: Detached ADU behind primary structure

Example C: ADU above garage, facing Alley – off Village Street

Exhibit D



- Residential (R)
- Residential (R-7.5)
- Residential (R-10)
- Res/South Fairview Lake Design Overlay (R/SFLD)
- Village Single Family (VSF)
- Village Townhouse (VTH)
- Agricultural Holding (AH)
- Corridor Commercial (CC)
- General Industrial (GI)
- Light Industrial (LI)
- Res/MultiFamilyTownh... Overlay (R/MF/TOZ)
- Residential Community Service Parks (R/CSP)
- Residential MultiFamily (R/MF)
- Residential/Manufactu... Home (R/MH)
- Town Center Commercial (TCC)
- Village Apartments (VA)
- Village Commercial (VC)
- Village Flex (FLX)
- Village Mixed Use (VMU)
- Village Office (VO)

City of Fairview
1300 NE Village Street
Fairview, OR 97024
(503) 665-7929
www.fairvieworegon.gov

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1 inch = 1,667 feet

This map is for informational purposes only and the City cannot accept responsibility for any errors, omissions, or positional inaccuracy. This map is provided "AS-IS".

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Exhibit E

GUIDANCE ON IMPLEMENTING

THE ACCESSORY DWELLING UNITS (ADU) REQUIREMENT

UNDER OREGON SENATE BILL 1051

M. Keplinger's backyard detached ADU, Richmond neighborhood, Portland, OR.
(Photo courtesy of Ellen Bassett and accessorydwellings.org.)

OREGON DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT

MARCH 2018

Oregon Department of
Land Conservation
and Development

Introduction

As housing prices in Oregon go up, outpacing employment and wage growth, the availability of affordable housing is decreasing in cities throughout the state. While Oregon's population continues to expand, the supply of housing, already impacted by less building during the recession, has not kept up. To address the lack of housing supply, House Speaker Tina Kotek introduced House Bill 2007 during the 2017 legislative session to, as she stated, "remove barriers to development." Through the legislative process, legislators placed much of the content of House Bill 2007 into Senate Bill 1051, which then passed, and was signed into law by Governor Brown on August 15, 2017.

Among the provisions of SB 1051 is the requirement that cities and counties of a certain population allow accessory dwelling units (ADUs) as described below:

a) A city with a population greater than 2,500 or a county with a population greater than 15,000 shall allow in areas zoned for detached single-family dwellings the development of at least one accessory dwelling unit for each detached single-family dwelling, subject to reasonable local regulations relating to siting and design.

b) As used in this subsection, "accessory dwelling unit" means an interior, attached or detached residential structure that is used in connection with or that is accessory to a single-family dwelling.

This new requirement becomes effective on July 1, 2018 and subject cities and counties must accept applications for ADUs inside urban growth boundaries (UGBs)[1] starting July 1, 2018. Many local governments in Oregon already have ADU regulations that meet the requirements of SB 1051, however, some do not. Still others have regulations that, given the overall legislative direction to encourage the construction of ADUs to meet the housing needs of Oregon's cities, are not "reasonable." The Oregon Department of Land Conservation and Development (DLCD) is issuing this guidance and model code language to help local governments comply with the legislation. The model code language is included on its own page at the end of this document.

[1] *The passage of HB 4031 in 2018 limited the siting of ADUs within UGBs.*

Guidance by Topic

The purpose of the following guidance is to help cities and counties implement SB 1051 in a manner that meets the letter and spirit of the law: to create more housing in Oregon by removing barriers to development.

Number of Units

SB 1051 requires subject cities and counties to allow "at least one accessory dwelling unit for each detached single-family dwelling." While local governments must allow one ADU where required, DLCD encourages them to consider allowing two units. For example, a city or county could allow one detached ADU and allow another as an attached or interior unit (such as a basement conversion). Because ADUs blend in well with single-family neighborhoods, allowing two units can help increase housing supply while not having a significant visual impact. Vancouver, BC is a successful example of such an approach.

Siting Standards

In order to simplify standards and not create barriers to development of ADUs, DLCD recommends applying the same or less restrictive development standards to ADUs as those for other accessory buildings. Typically that would mean that an ADU could be developed on any legal lot or parcel as long as it met the required setbacks and lot coverage limits; local governments should not mandate a minimum lot size for ADUs. So that lot coverage requirements do not preclude ADUs from being built on smaller lots, local governments should review their lot coverage standards to make sure they don't create a barrier to development. To address storm water concerns, consider limits to impermeable surfaces rather than simply coverage by structures.

In addition, any legal nonconforming structure (such as a house or outbuilding that doesn't meet current setback requirements) should be allowed to contain, or be converted to, an ADU as long as the development does not increase the nonconformity.

Design Standards

Any design standards required of ADUs must be clear and objective (ORS 197.307[4]). Clear and objective standards do not contain words like "compatible" or "character." With the exception of ADUs that are in historic districts and must follow the historic district regulations, DLCD does not recommend any special design standards for ADUs. Requirements that ADUs match the materials, roof pitch, windows, etc. of the primary dwelling can create additional barriers to development and sometimes backfire if the design and materials of the proposed

ADU would have been of superior quality to those of the primary dwelling, had they been allowed.

Parking

Requiring off-street parking is one of the biggest barriers to developing ADUs and it is recommended that jurisdictions not include an off-street parking requirement in their ADU standards. Adding off-street parking on many properties, especially in older centrally-located areas where more housing should be encouraged, is often either very expensive or physically impossible. In addition, when adding an additional off-street parking space requires a new or widened curb cut, it removes existing on-street parking, resulting in no net gain of parking supply. As an alternative to requiring off-street parking for ADUs, local governments can implement a residential parking district if there is an on-street parking supply shortage. For more help on parking issues, visit www.oregon.gov/lcd/tgm/pages/parking.aspx or contact DLCD.

Owner Occupancy

Owner-occupancy requirements, in which the property owner is required to live on the property in either the primary or accessory dwelling unit, are difficult to enforce and not recommended. They may be a barrier to property owners constructing ADUs, but will more likely simply be ignored and constitute an on-going enforcement headache for local governments.

Public Utilities

Development codes that require ADUs to have separate sewer and water connections create barriers to building ADUs. In some cases, a property owner may want to provide separate connections, but in other cases doing so may be prohibitively expensive.

System Development Charges (SDCs)

While SDCs are not part of the development code and SB 1051 does not require them to be updated, local governments should consider revising their SDCs to match the true impact of ADUs in order to remove barriers to their development. ADUs are generally able to house fewer people than average single-family dwellings, so their fiscal impact would be expected to be less than a single-family dwelling. Accordingly, it makes sense that they should be charged lower SDCs than primary detached single-family dwellings.

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Accessory Dwellings (model code)

Note: ORS 197.312 requires that at least one accessory dwelling be allowed per detached single-family dwelling in every zone that allows detached single-family dwellings. Accessory dwellings are an economical way to provide additional housing choices, particularly in communities with high land prices or a lack of investment in affordable housing. They provide an opportunity to increase housing supply in developed neighborhoods and can blend in well with single-family detached dwellings. Accessory dwelling regulations can be difficult to enforce when local codes specify who can own or occupy the homes. Requirements that accessory dwellings have separate connections to and pay system development charges for water and sewer services can pose barriers to development. Concerns about neighborhood compatibility, parking, and other factors should be considered and balanced against the need to address Oregon's housing shortage by removing barriers to development.

The model development code language below provides recommended language for accessory dwellings. The italicized sections in brackets indicate options to be selected or suggested numerical standards that communities can adjust to meet their needs. Local housing providers should be consulted when drafting standards for accessory dwellings, and the following standards should be tailored to fit the needs of your community.

Accessory dwellings, where allowed, are subject to review and approval through a Type I procedure*[, pursuant to Section _____,]* and shall conform to all of the following standards:

[***A. One Unit.*** A *maximum of one Accessory Dwelling is allowed per legal single-family dwelling. The unit may be a detached building, in a portion of a detached accessory building (e.g., above a garage or workshop), or a unit attached or interior to the primary dwelling (e.g., an addition or the conversion of an existing floor).*

/

A. Two Units. *A maximum of two Accessory Dwellings are allowed per legal single-family dwelling. One unit must be a detached Accessory Dwelling, or in a portion of a detached accessory building (e.g., above a garage or workshop), and one unit must be attached or interior to the primary dwelling (e.g., an addition or the conversion of an existing floor).]*

B. Floor Area.

1. A detached Accessory Dwelling shall not exceed *[800-900]* square feet of floor area, or *[75]* percent of the primary dwelling's floor area, whichever is smaller.

2. An attached or interior Accessory Dwelling shall not exceed *[800-900]* square feet of floor area, or *[75]* percent of the primary dwelling's floor area, whichever is smaller. However, Accessory Dwellings that result from the conversion of a level or floor (e.g., basement, attic, or second story) of the primary dwelling may occupy the entire level or floor, even if the floor area of the Accessory Dwelling would be more than *[800-900]* square feet.

C. Other Development Standards. Accessory Dwellings shall meet all other development standards (e.g., height, setbacks, lot coverage, etc.) for buildings in the zoning district, except that:

1. Conversion of an existing legal non-conforming structure to an Accessory Dwelling is allowed, provided that the conversion does not increase the non-conformity; and

2. No off-street parking is required for an Accessory Dwelling.

Definition (This should be included in the "definitions" section of the zoning ordinance. It matches the definition for Accessory Dwelling found in ORS 197.312)

Accessory Dwelling – An interior, attached, or detached residential structure that is used in connection with, or that is accessory to, a single-family dwelling.