

TYPE II –SITE PLAN AND DESIGN REVIEW
Applicant’s Submittal
Revised: November 06, 2017

APPLICANT: Kevin Saxton
KASA Architects
4119 NE Cesar E Chavez Blvd
Portland, Oregon 97211

OWNER: Northwest Housing Alternatives
2316 SE Willard Street
Milwaukie, Oregon 97222

REQUEST: Two-story, 24-unit affording housing for veterans and their families.

LOCATION: 314 Pleasant Avenue, Oregon City
Clackamas County Tax APN 2-2E-32CC-04700

I. BACKGROUND:

1. Existing Conditions

The current site is vacant land. A white oak heritage tree is located near the middle of the Pleasant Avenue frontage.

2. Project Description

The project consists of a two-story, 24-unit apartment building that will provide affordable housing for veterans and their families.

II. RESPONSES TO THE OREGON CITY MUNICIPAL CODE:

CHAPTER 17.29 “MUC” MIXED USE CORRIDOR DISTRICT

17.29.020 - Permitted uses—MUC-1 and MUC-2.

- A. Banquet, conference facilities and meeting rooms;*
- B. Bed and breakfast and other lodging facilities for up to ten guests per night;*
- C. Child care centers and/or nursery schools;*
- D. Indoor entertainment centers and arcades;*
- E. Health and fitness clubs;*
- F. Medical and dental clinics, outpatient; infirmary services;*
- G. Museums, libraries and cultural facilities;*
- H. Offices, including finance, insurance, real estate and government;*
- I. Outdoor markets, such as produce stands, craft markets and farmers markets that are operated on the weekends and after six p.m. during the weekday;*
- J. Postal services;*
- K. Parks, playgrounds, play fields and community or neighborhood centers;*

- L. Repair shops, for radio and television, office equipment, bicycles, electronic equipment, shoes and small appliances and equipment;
- N. Residential units, multi-family;
- O. Restaurants, eating and drinking establishments without a drive through;
- P. Services, including personal, professional, educational and financial services; laundry and dry-cleaning;
- Q. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, and similar, provided the maximum footprint for a stand alone building with a single store or multiple buildings with the same business does not exceed sixty thousand square feet;
- R. Seasonal sales, subject to OCMC [Section 17.54.060](#);
- S. Assisted living facilities; nursing homes and group homes for over fifteen patients;
- T. Studios and galleries, including dance, art, photography, music and other arts;
- U. Utilities: Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers;
- V. Veterinary clinics or pet hospitals, pet day care;
- W Home occupations;
- X. Research and development activities;
- Y. Temporary real estate offices in model dwellings located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed;
- Z. Residential care facility;
- AA Transportation facilities;
- BB. Live/work units, pursuant to [Section 17.54.105](#)—Live/work units.

Applicant's Response:

The proposed project is classified as Residential units, multi-family per section N.

17.29.030 - Conditional uses—MUC-1 and MUC-2 zones.

The following uses are permitted in this district when authorized and in accordance with the process and standards contained in [Chapter 17.56](#):

- A. Ancillary drive-in or drive-through facilities;
- B. Emergency service facilities (police and fire), excluding correctional facilities;
- C. Gas stations;
- D. Outdoor markets that do not meet the criteria of Section 17.29.020H.;
- E. Public utilities and services including sub-stations (such as buildings, plants and other structures);
- F. Public and/or private educational or training facilities;
- G. Religious institutions;
- H. Retail trade, including gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores and any other use permitted in the neighborhood, historic or limited commercial districts that have a footprint for a stand alone building with a single store in excess of sixty thousand square feet in the MUC-1 or MUC-2 zone;
- I. Hotels and motels, commercial lodging;
- J. Hospitals;
- K. Parking structures and lots not in conjunction with a primary use;
- L. Passenger terminals (water, auto, bus, train).

Applicant's Response:

N/A.

17.29.040 - Prohibited uses in the MUC-1 and MUC-2 zones.

The following uses are prohibited in the MUC district:

- A. Distributing, wholesaling and warehousing;
- B. Outdoor storage;
- C. Outdoor sales that are not ancillary to a permitted use on the same or abutting property under the same ownership;
- D. Correctional facilities;
- E. Heavy equipment service, repair, sales, storage or rentals (including but not limited to construction equipment and machinery and farming equipment);
- F. Kennels;

- G. Motor vehicle and recreational vehicle sales and incidental service;
- H. Motor vehicle and recreational vehicle repair/service;
- I. Self-service storage facilities.

Applicant's Response:

N/A.

17.29.050 - Dimensional standards—MUC-1.

A Minimum lot areas: None.

Applicant's Response:

N/A.

B. Maximum building height: Forty feet or three stories, whichever is less.

Applicant's Response:

The proposed building is less than 40 feet and is 2 stories tall.

C. Minimum required setbacks if not abutting a residential zone: None.

Applicant's Response:

N/A.

D. Minimum required interior and rear yard setbacks if abutting a residential zone: Twenty feet, plus one foot additional yard setback for every one foot of building height over thirty-five feet.

Applicant's Response:

The proposed building is more than 20 feet away from the adjacent residential zones.

E. Maximum allowed setbacks.

1. Front yard: Five feet (may be extended with Site Plan and Design Review (Section 17.62.055)).

Applicant's Response:

The front setback along Pleasant Avenue is more than 5 feet due to a 10-foot public utility easement and the preservation of a white oak that has been designated as a heritage tree pursuant to section 12.08.040. The white oak is a large mature tree that is over 85 feet tall. Its canopy has a spread of more than 60 feet. The size and location of the tree make it infeasible to place an apartment building such as the proposed building close to the frontage on Pleasant Avenue. White oaks are a native species of oak that were once found throughout the Willamette Valley. Preservation of the white oak on this property is important in maintaining vegetation that is historically characteristic of Oregon City.

The front setback along Caufield Street is more than 5 feet due to a 10-foot public utility easement.

2. Interior side yard: None.

Applicant's Response:

N/A.

3. Corner side setback abutting street: Thirty feet provided the Site Plan and Design Review requirements of Section 17.62.055 are met.

Applicant's Response:

Response

4. Rear yard: None.

Applicant's Response:

N/A.

F. Maximum lot coverage of the building and parking lot: Eighty percent.

Applicant's Response:

Building and parking lot occupy about 41% of the site.

G. Minimum required landscaping (including landscaping within a parking lot): Twenty percent.

Applicant's Response:

Landscaping is over 20% of the site.

17.29.060 - Dimensional standards—MUC-2.

A. Minimum lot area: None.

Applicant's Response:

N/A.

B. Minimum floor area ratio: 0.25.

Applicant's Response:

N/A.

C. Minimum building height: Twenty-five feet or two stories except for accessory structures or buildings under one thousand square feet.

Applicant's Response:

N/A.

D. Maximum building height: Sixty feet.

Applicant's Response:

N/A.

E. Minimum required setbacks if not abutting a residential zone: None.

Applicant's Response:

N/A.

F. Minimum required interior and rear yard setbacks if abutting a residential zone: Twenty feet, plus one foot additional yard setback for every two feet of building height over thirty-five feet.

Applicant's Response:

N/A.

G. Maximum Allowed Setbacks.

1. Front yard: Five feet (may be expanded with Site Plan and Design Review [Section 17.62.055](#)).

Applicant's Response:

N/A.

2. Interior side yard: None.

Applicant's Response:

N/A.

3. Corner side yard abutting street: Twenty feet provided the site plan and design review requirements of [Section 17.62.055](#) are met.

Applicant's Response:

N/A.

4. Rear yard: None.

Applicant's Response:

N/A.

H. Maximum site coverage of building and parking lot: Ninety percent.

Applicant's Response:

N/A.

I. Minimum landscaping requirement (including parking lot): Ten percent.

Applicant's Response:

N/A.

CHAPTER 17.60 VARIANCES

17.60.020 - Variances—Procedures.

17.60.020.A. A request for a variance shall be initiated by a property owner or authorized agent by filing an application with the city recorder. The application shall be accompanied by a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development. When relevant to the request, building plans may also be required. The application shall note the zoning requirement and the extent of the variance requested. Procedures shall thereafter be held under Chapter 17.50. In addition, the procedures set forth in subsection D. of this section shall apply when applicable.

Applicant's Response:

The proposed building will require variances to the design guidelines in the following sections; 17.62.057.G.1, 17.62.057.G.2, and 17.62.057.G.3.b.

17.60.020.B. A nonrefundable filing fee, as listed in Section 17.50.[0]80, shall accompany the application for a variance to defray the costs.

Applicant's Response:

A check for the filing fee will be submitted.

17.60.020.C. Before the planning commission may act on a variance, it shall hold a public hearing thereon following procedures as established in Chapter 17.50. A Variance shall address the criteria identified in Section 17.60.030, Variances — Grounds.

Applicant's Response:

Please see below for a response to the criteria.

17.60.020.D. Minor variances, as defined in subsection E. of this section, shall be processed as a Type II decision, shall be reviewed pursuant to the requirements in Section 17.50.030B., and shall address the criteria identified in Section 17.60.030, Variance — Grounds.

Applicant's Response:

No minor variances are being requested.

17.60.020.E. For the purposes of this section, minor variances shall be defined as follows:

- 1. Variances to setback and yard requirements to allow additions to existing buildings so that the additions follow existing building lines;*
- 2. Variances to width, depth and frontage requirements of up to twenty percent;*
- 3. Variances to residential yard/setback requirements of up to twenty-five percent;*
- 4. Variances to nonresidential yard/setback requirements of up to ten percent;*
- 5. Variances to lot area requirements of up to five;*
- 6. Variance to lot coverage requirements of up to twenty-five percent;*
- 7. Variances to the minimum required parking stalls of up to five percent; and*
- 8. Variances to the floor area requirements and minimum required building height in the mixed-use districts.*

Applicant's Response:

No minor variances are being requested.

17.60.030 - Variance—Grounds.

A variance may be granted only in the event that all of the following conditions exist:

17.60.030.A. That the variance from the requirements is not likely to cause substantial damage to adjacent properties by reducing light, air, safe access or other desirable or necessary qualities otherwise protected by this title;

Applicant's Response:

The variances being sought involve the articulation and modulation requirements of the multifamily standards. The requested variances from these requirements will not damage adjacent property and will not reduce light, air or safe access to adjacent property.

17.60.030.B. That the request is the minimum variance that would alleviate the hardship;

Applicant's Response:

The three multifamily design standards listed above create inefficiencies in building layout and construction, thereby adding additional costs to the project. There is a large need for the type of housing that this project will provide. The goal is to provide as much of it as possible for the limited funding that is available. The requested variances from these three standards are the minimum required in order to make the project financially feasible. All other development standards will be met. In addition to meeting these standards, the project will meet the frontage improvement requirements on Caufield and Pleasant Avenue and tree mitigation of over 179 caliper inches of existing trees.

17.60.030.C. Granting the variance will equal or exceed the purpose of the regulation to be modified.

Applicant's Response:

Please see the response below to the requirements of sections 17.62.057.G.1, 17.62.057.G.2, and 17.62.057.G.3.b for explanations of how the proposed design meets the intent of the multifamily standards and the goals of the adopted 2004 Comprehensive Plan.

17.60.030.D. Any impacts resulting from the adjustment are mitigated;

Applicant's Response:

The proposed design seeks to mitigate the impact of each variance from the articulation and modulation requirements through the use of materials, scale and visual rhythm as described in the response below to each of the requirements.

17.60.030.E. No practical alternatives have been identified which would accomplish the same purpose and not require a variance; and

Applicant's Response:

The multifamily standards for which variances are being sought are prescriptive. Any alternates to these would therefore not meet the prescriptive requirements. However, the alternates that are being proposed strive to meet the intent of each standard.

17.60.030.F. The variance conforms to the comprehensive plan and the intent of the ordinance being varied.

Applicant's Response:

Please see the response below to the requirements of sections 17.62.057.G.1, 17.62.057.G.2, and 17.62.057.G.3.b for explanations of how the proposed design conforms to the adopted 2004 Comprehensive Plan and the intent of the multifamily standards.

CHAPTER 17.62 SITE PLAN AND DESIGN REVIEW

17.62.015 - Modifications that will better meet design review requirements.

The review body may consider modification of site-related development standards. These modifications are done as part of design review and are not required to go through the Variance process pursuant to [section 17.60.020](#).

Adjustments to use-related development standards (such as floor area ratios, intensity of use, size of the use, number of units, or concentration of uses) are required to go through the Variance process pursuant to [section 17.60.020](#). Modifications that are denied through design review may be requested as Variance through the Variance process pursuant to [section 17.60.020](#). The review body may approve requested modifications if it finds that the applicant has shown that the following approval criteria are met:

Applicant's Response:

The proposed building will require modifications to the design guidelines in the following sections; 17.29.050.E.1, 17.62.057.C, 17.62.057.D, and, 12.04.180.

A. The modification will result in a development that better meets design guidelines; and

Applicant's Response:

The modifications are essential to the development of affording housing. They result in a more cost-efficient design while meeting the intent of the design guidelines.

B. The modification meets the intent of the standard. On balance, the proposal will be consistent with the purpose of the standard for which a modification is requested.

Applicant's Response:

Each modification describes how it meets the intent of its respective standard.

17.62.030 - When required.

Site plan and design review shall be required for all development of real property in all zones except the R-10, R-8, R-6, R-5 and R-3.5 zoning districts, unless otherwise provided for by this title or as a condition of approval of a permit. Site plan and design review shall also apply to all conditional uses, cottage housing development, multi-family and non-residential uses in all zones. No building permit or other permit authorization for development shall be issued prior to site plan and design review approval. Parking lots and parking areas accessory to uses regulated by this chapter also shall require site plan and design review approval. Site plan and design review shall not alter the type and category of uses permitted in zoning districts.

Applicant's Response:

This development is a multifamily apartment building in the MUC1 zone, and therefore it requires approval through a Type II procedure.

17.62.035 - Minor site plan and design review.

Applicant's Response:

Required.

17.62.040 - Plans required.

A complete application for site plan and design review shall be submitted. Except as otherwise in subsection I of this section, the application shall include the following plans and information:

A. A site plan or plans, to scale, containing the following:

1. Vicinity information showing streets and access points, pedestrian and bicycle pathways, transit stops and utility locations;
2. The site size, dimensions, and zoning, including dimensions and gross area of each lot or parcel and tax lot and assessor map designations for the proposed site and immediately adjoining properties;
3. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent;
4. The location of natural hazard areas on and within one hundred feet of the boundaries of the site, including:
 - a. Areas indicated on floodplain maps as being within the one hundred-year floodplain,
 - b. Unstable slopes, as defined in Section 17.44.020,
 - c. Areas identified on the seismic conditions map in the comprehensive plan as subject to earthquake and seismic conditions;
5. The location of natural resource areas on and within one hundred feet of the boundaries of the site, including fish and wildlife habitat, existing trees (six inches or greater in caliper measured four feet above ground level), wetlands, streams, natural areas, wooded areas, areas of significant trees or vegetation, and areas designated as being within the natural resources overlay district;
6. The location of inventoried historic or cultural resources on and within one hundred feet of the boundaries of the site;
7. The location, dimensions, and setback distances of all existing permanent structures, improvements and utilities on or within twenty-five feet of the site, and the current or proposed uses of the structures;
8. The location, dimensions, square footage, building orientation and setback distances of proposed structures, improvements and utilities, and the proposed uses of the structures by square footage;
9. The location, dimension and names, as appropriate, of all existing and platted streets, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle accessways and other pedestrian and bicycle ways, transit

street and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site;

10. The location, dimension and names, as appropriate, of all proposed streets, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle accessways and other pedestrian and bicycle ways, transit streets and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site;

11. All parking, circulation, loading and servicing areas, including the locations of all carpool, vanpool and bicycle parking spaces as required in [Chapter 52](#) of this title;

12. Site access points for automobiles, pedestrians, bicycles and transit;

13. On-site pedestrian and bicycle circulation;

14. Outdoor common areas proposed as open space;

15. Total impervious surface created (including buildings and hard ground surfaces).

16. The proposed location, dimensions and materials of fences and walls.

B. A landscaping plan, drawn to scale, showing the location and types of existing trees (six inches or greater in caliper measured four feet above ground level) and vegetation proposed to be removed and to be retained on the site, the location and design of landscaped areas, the varieties, sizes and spacings of trees and plant materials to be planted on the site, other pertinent landscape features, and irrigation systems required to maintain plant materials.

C. Architectural drawings or sketches, drawn to scale and showing floor plans, elevations accurately reflected to grade, and exterior materials of all proposed structures and other improvements as they will appear on completion of construction.

D. A materials board, no larger size than eleven inches by seventeen inches clearly depicting all building materials with specifications as to type, color and texture of exterior materials of proposed structures. An electronic version may be accepted as an alternative if approved by the community development director.

E. An erosion/sedimentation control plan, in accordance with the requirements of [Chapter 17.47](#) and the Public Works Erosion and Sediment Control Standards, and a drainage plan developed in accordance with city drainage master plan requirements, [Chapter 13.12](#) and the Public Works Stormwater and Grading Design Standards. The drainage plan shall identify the location of drainage patterns and drainage courses on and within one hundred feet of the boundaries of the site. Where development is proposed within an identified hazard area, these plans shall reflect concerns identified in the hydrological/geological/geotechnical development impact statement.

F. The legal description of the site.

G. An exterior lighting plan, drawn to scale, showing type, height, and area of illumination.

H. Archeological Monitoring Recommendation. For all projects that will involve ground disturbance, the applicant shall provide:

1. A letter or email from the Oregon State Historic Preservation Office Archaeological Division indicating the level of recommended archeological monitoring on-site, or demonstrate that the applicant had notified the Oregon State Historic Preservation Office and that the Oregon State Historic Preservation Office had not commented within forty-five days of notification by the applicant; and

2. A letter or email from the applicable tribal cultural resource representative of the Confederated Tribes of the Grand Ronde, Confederated Tribes of the Siletz, Confederated Tribes of the Umatilla, Confederated Tribes of the Warm Springs and the Confederated Tribes of the Yakama Nation indicating the level of recommended archeological monitoring on-site, or demonstrate that the applicant had notified the applicable tribal cultural resource representative and that the applicable tribal cultural resource representative had not commented within forty-five days of notification by the applicant.

If, after forty-five days notice from the applicant, the Oregon State Historic Preservation Office or the applicable tribal cultural resource representative fails to provide comment, the city will not require the letter or email as part of the completeness review. For the purpose of this section, ground disturbance is defined as the movement of native soils.

I. Such special studies or reports as the community development director may require to obtain information to ensure that the proposed development does not adversely affect the surrounding community or identified natural resource areas or create hazardous conditions for persons or improvements on the site. The community development director shall require an applicant to submit one or more development impact statements, as described in [Section 16.12.050](#), upon determination that (1) there is a reasonable likelihood that traffic safety or capacity improvements may be required; (2) the proposal could have significant adverse impacts on identified natural resource areas, including areas designated as being within the natural resources overlay district; or (3) the proposal would be located on or could have significant adverse impacts on natural hazard areas, including the

geologic hazard and flood plain overlay districts. The community development director shall determine which types of development impact statements are necessary and provide written reasons for requiring the statement(s). The development impact statements shall include the information described in Sections 16.12.070, 16.12.080, and 16.12.120 [and this Section] 17.62.040.

J. The community development director may waive the submission of information for specific requirements of this section or may require information in addition to that required by a specific provision of this section, as follows:

1. The community development director may waive the submission of information for a specific requirement upon determination either that specific information is not necessary to evaluate the application properly, or that a specific approval standard is not applicable to the application. If submission of information is waived, the community development director shall, in the decision, identify the waived requirements, explain the reasons for the waiver, and state that the waiver may be challenged on appeal and may be denied by a subsequent review authority. If the matter is forwarded to the planning commission for initial review, the information required by this paragraph shall be included in the staff report;

2. The community development director may require information in addition to that required by a specific provision of this section upon determination that the information is needed to evaluate the application properly and that the need can be justified on the basis of a special or unforeseen circumstance. If additional information is required, the community development director shall, in the decision, explain the reasons for requiring the additional information.

K. If the applicant has not already done so as some other part of the land use review process, the applicant shall submit an erosion control plan that complies with the applicable requirements of Chapter 17.74 of this code.

Applicant's Response:

A complete design review package with relevant drawings is being submitted.

17.62.050 - Standards.

A. All development shall comply with the following standards:

1. Landscaping, A minimum of fifteen percent of the lot shall be landscaped. Existing native vegetation shall be retained to the maximum extent practicable. All plants listed on the Oregon City Nuisance Plant List shall be removed from the site prior to issuance of a final occupancy permit for the building.

Applicant's Response:

Landscaping is over 15%.

a. Except as allowed elsewhere in the zoning and land division chapters of this Code, all areas to be credited towards landscaping must be installed with growing plant materials. A reduction of up to twenty-five percent of the overall required landscaping may be approved by the community development director if the same or greater amount of pervious material is incorporated in the non-parking lot portion of the site plan (pervious material within parking lots are regulated in OCMC 17.52.070).

Applicant's Response:

The site area is 39,958 square feet, 15% of which is 5,993 square feet. The total landscaped area provided on site is 16,723 square feet. This makes up 41.8% of the site area and is exclusive of parking lot interior and buffer landscaping.

b. Pursuant to Chapter 17.49, landscaping requirements within the Natural Resource Overlay District, other than landscaping required for parking lots, may be met by preserving, restoring and permanently protecting native vegetation and habitat on development sites.

Applicant's Response:

N/A.

c. The landscaping plan shall be prepared by a registered landscape architect and include a mix of vertical (trees and shrubs) and horizontal elements (grass, groundcover, etc.) that within three years will cover one hundred percent of the Landscape area. No mulch, bark chips, or similar materials shall be allowed at the time of landscape installation except under the canopy of shrubs and within two feet of the base of trees. The community development department shall maintain a list of trees, shrubs and vegetation acceptable for landscaping.

Applicant's Response:

The landscaping plan was prepared by a registered landscape architect to meet landscaping requirements.

d. For properties within the Downtown Design District, or for major remodeling in all zones subject to this chapter, landscaping shall be required to the extent practicable up to the ten percent requirement.

Applicant's Response:

This property is not in the Downtown Design District.

e. Landscaping shall be visible from public thoroughfares to the extent practicable.

Applicant's Response:

Landscaping is visible from all streets.

f. Interior parking lot landscaping shall not be counted toward the fifteen percent minimum, unless otherwise permitted by the dimensional standards of the underlying zone district.

Applicant's Response:

Interior parking lot landscaping is not counted toward the 15% minimum site landscaping.

2. Vehicular Access and Connectivity.

a. Parking areas shall be located behind buildings, below buildings, or on one or both sides of buildings.

Applicant's Response:

Parking area is located behind the building.

b. Ingress and egress locations on thoroughfares shall be located in the interest of public safety. Access for emergency services (fire and police) shall be provided.

Applicant's Response:

Vehicular entrance to the building is off Myrtle street which is a safer ingress and egress location than Caufield street because Caufield street intersect Pleasant Avenue at an angle.

c. Alleys or vehicular access easements shall be provided in the following Districts: R-2, MUC-1, MUC-2, MUD and NC zones unless other permanent provisions for access to off-street parking and loading facilities are approved by the decision-maker. The corners of alley intersections shall have a radius of not less than ten feet.

Applicant's Response:

Vehicular access is off Myrtle Street.

d. Sites abutting an alley shall be required to gain vehicular access from the alley unless deemed impracticable by the community development director.

Applicant's Response:

Myrtle street runs perpendicular to the site and it will become the vehicular access into the site.

e. Where no alley access is available, the development shall be configured to allow only one driveway per frontage. On corner lots, the driveway(s) shall be located off of the side street (unless the side street is an arterial) and away from the street intersection. Shared driveways shall be required as needed to accomplish the requirements of this section. The location and design of pedestrian access from the sidewalk shall be emphasized so as to be clearly visible and distinguishable from the vehicular access to the site. Special landscaping, paving, lighting, and architectural treatments may be required to accomplish this requirement.

Applicant's Response:

There is only one driveway off Myrtle street.

f. Driveways that are at least twenty-four feet wide shall align with existing or planned streets on adjacent sites.

Applicant's Response:

N/A.

g. Development shall be required to provide existing or future connections to adjacent sites through the use of vehicular and pedestrian access easements where applicable. Such easements shall be required in addition to applicable street dedications as required in Chapter 12.04.

Applicant's Response:

N/A.

h. Vehicle and pedestrian access easements may serve in lieu of streets when approved by the decision maker only where dedication of a street is deemed impracticable by the city.

Applicant's Response:

N/A.

i. Vehicular and pedestrian easements shall allow for public access and shall comply with all applicable pedestrian access requirements.

Applicant's Response:

N/A.

j. 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.

Applicant's Response:

Myrtle Street is a dead-end street and is proposed as the site access to the parking lot. Myrtle Street is not planned for future extension as this would divide the site making it impractical to develop.

k. Parcels larger than three acres shall provide streets as required in [Chapter 12.04](#). The streets shall connect with existing or planned streets adjacent to the site.

Applicant's Response:

This parcel is smaller than three acres.

l. Parking garage entries shall not dominate the streetscape. They shall be designed and situated to be ancillary to the use and architecture of the ground floor. This standard applies to both public garages and any individual private garages, whether they front on a street or private interior access road.

Applicant's Response:

Parking is behind the building.

m. Buildings containing above-grade structured parking shall screen such parking areas with landscaping or landscaped berms, or incorporate contextual architectural elements that complement adjacent buildings or buildings in the area. Upper level parking garages shall use articulation or fenestration treatments that break up the massing of the garage and/or add visual interest.

Applicant's Response:

The proposed building has no above-grade structured parking.

3. Building structures shall be complimentary to the surrounding area. All exterior surfaces shall present a finished appearance. All sides of the building shall include materials and design characteristics consistent with those on the front. Use of inferior or lesser quality materials for side or rear facades or decking shall be prohibited.

a. Alterations, additions and new construction located within the McLoughlin Conservation District, Canemah National Register District, and the Downtown Design District and when abutting a designated Historic Landmark shall utilize materials and a design that incorporates the architecture of the subject building as well as the surrounding district or abutting Historic Landmark. Historic materials such as doors, windows and siding shall be retained or replaced with in kind materials unless the community development director determines that the materials cannot be retained and the new design and materials are compatible with the subject building, and District or Landmark. The community development director may utilize the Historic Review Board's Guidelines for New Construction (2006) to develop findings to show compliance with this section.

b. In historic areas and where development could have a significant visual impact, the review authority may request the advisory opinions of appropriate experts designated by the community development director from the design fields of architecture, landscaping and urban planning. The applicant shall pay the costs associated with obtaining such independent professional advice; provided, however, that the review authority shall seek to minimize those costs to the extent practicable.

Applicant's Response:

The building has been designed to convey a residential scale and feel that compliments the surrounding area. All sides of the building are clad with lap siding similar to the houses in the surrounding area. Window openings on all sides of the building are of a size that is consistent with the residences surrounding the site.

This site is not located in the McLoughlin Conservation District, Canemah National Register District, the Downtown Design District, or a historic district.

8. Sidewalks and curbs shall be provided in accordance with the city's transportation master plan and street design standards. Upon application, the community development director may waive this requirement in whole or in part in those locations where there is no probable need, or comparable alternative location provisions for pedestrians are made.

Applicant's Response:

Sidewalks and curbs on Caufield Street and Pleasant Avenue will be designed according to city's transportation master plan and street design standards.

9. A well-marked, continuous and protected on-site pedestrian circulation system meeting the following standards shall be provided:

a. Pathways between all building entrances and the street are required. Pathways between the street and buildings fronting on the street shall be direct. Exceptions may be allowed by the director where steep slopes or protected natural resources prevent a direct connection or where an indirect route would enhance the design and/or use of a common open space.

Applicant's Response:

The building entrance is located on Caufield Street. A pathway directly connects the entrance and the street.

b. The pedestrian circulation system shall connect all main entrances on the site. For buildings fronting on the street, the sidewalk may be used to meet this standard. Pedestrian connections to other areas of the site, such as parking areas, recreational areas, common outdoor areas, and any pedestrian amenities shall be required.

Applicant's Response:

There is only one main entrance to the building and it is located on Caulfield Street. There is pedestrian connection from the parking area to the two back entrances as well as to the common outdoor area.

c. Elevated external stairways or walkways, that provide pedestrian access to multiple dwelling units located above the ground floor of any building are prohibited. The community development director may allow exceptions for external stairways or walkways located in, or facing interior courtyard areas provided they do not compromise visual access from dwelling units into the courtyard.

Applicant's Response:

There are no elevated external stairways or walkways as part of this development.

d. The pedestrian circulation system shall connect the main entrances of adjacent buildings on the same site.

Applicant's Response:

There is only one building on the site.

e. The pedestrian circulation system shall connect the principal building entrance to those of buildings on adjacent commercial and residential sites where practicable. Walkway linkages to adjacent developments shall not be required within industrial developments or to industrial developments or to vacant industrially-zoned land.

Applicant's Response:

The building entrance is connected to adjacent sites via the street sidewalks on Caulfield Street and Pleasant Avenue.

f. On-site pedestrian walkways shall be hard surfaced, well drained and at least five feet wide. Surface material shall contrast visually to adjoining surfaces. When bordering parking spaces other than spaces for parallel parking, pedestrian walkways shall be a minimum of seven feet in width unless curb stops are provided. When the

pedestrian circulation system is parallel and adjacent to an auto travel lane, the walkway shall be raised or separated from the auto travel lane by a raised curb, bollards, landscaping or other physical barrier. If a raised walkway is used, the ends of the raised portions shall be equipped with curb ramps for each direction of travel. Pedestrian walkways that cross drive isles or other vehicular circulation areas shall utilize a change in textual material or height to alert the driver of the pedestrian crossing area.

Applicant's Response:

The walkway along the parking lot is 5 feet wide. Parking spaces have wheel stops along the walkway.

10. There shall be provided adequate means to ensure continued maintenance and necessary normal replacement of private common facilities and areas, drainage ditches, streets and other ways, structures, recreational facilities, landscaping, fill and excavation areas, screening and fencing, groundcover, garbage storage areas and other facilities not subject to periodic maintenance by the city or other public agency.

Applicant's Response:

The apartment's management will ensure continued maintenance of the building and site.

13. All development shall maintain continuous compliance with applicable federal, state, and city standards pertaining to air and water quality, odor, heat, glare, noise and vibrations, outdoor storage, radioactive materials, toxic or noxious matter, and electromagnetic interference. Prior to issuance of a building permit, the community development director or building official may require submission of evidence demonstrating compliance with such standards and receipt of necessary permits. The review authority may regulate the hours of construction or operation to minimize adverse impacts on adjoining residences, businesses or neighborhoods. The emission of odorous gases or other matter in such quantity as to be readily detectable at any point beyond the property line of the use creating the odors or matter is prohibited.

Applicant's Response:

The development will maintain compliance with applicable federal, state, and city standards as described above.

14. Adequate public water and sanitary sewer facilities sufficient to serve the proposed or permitted level of development shall be provided. The applicant shall demonstrate that adequate facilities and services are presently available or can be made available concurrent with development. Service providers shall be presumed correct in the evidence, which they submit. All facilities shall be designated to city standards as set out in the city's facility master plans and public works design standards. A development may be required to modify or replace existing offsite systems if necessary to provide adequate public facilities. The city may require over sizing of facilities where necessary to meet standards in the city's facility master plan or to allow for the orderly and efficient provision of public facilities and services. Where over sizing is required, the developer may request reimbursement from the city for over sizing based on the city's reimbursement policy and fund availability, or provide for recovery of costs from intervening properties as they develop.

Applicant's Response:

Adequate public water and sanitary sewer facilities sufficient to serve the proposed development will be provided.

15. Adequate right-of-way and improvements to streets, pedestrian ways, bike routes and bikeways, and transit facilities shall be provided and be consistent with the city's transportation master plan and design standards and this title. Consideration shall be given to the need for street widening and other improvements in the area of the proposed development impacted by traffic generated by the proposed development. This shall include, but not be limited to, improvements to the right-of-way, such as installation of lighting, signalization, turn lanes, median and parking strips, traffic islands, paving, curbs and gutters, sidewalks, bikeways, street drainage facilities and other facilities needed because of anticipated vehicular and pedestrian traffic generation. Compliance with [Chapter] 12.04, Streets, Sidewalks and Public Places shall be sufficient to achieve right-of-way and improvement adequacy.

Applicant's Response:

There will be frontage improvements on both Caufield Street and Pleasant Avenue.

16. If a transit agency, upon review of an application for an industrial, institutional, retail or office development, recommends that a bus stop, bus turnout lane, bus shelter, accessible bus landing pad, lighting, or transit stop connection be constructed, or that an easement or dedication be provided for one of these uses, consistent with an agency adopted or approved plan at the time of development, the review authority shall require such improvement, using designs supportive of transit use. Improvements at a major transit stop may include intersection or mid-block traffic management improvements to allow for crossings at major transit stops, as identified in the transportation system plan.

Applicant's Response:

N/A.

17. All utility lines shall be placed underground.

Applicant's Response:

All utility lines will be placed underground.

18. Access and facilities for physically handicapped people shall be incorporated into the site and building design consistent with applicable federal and state requirements, with particular attention to providing continuous, uninterrupted access routes.

Applicant's Response:

An accessible ramp will be built to connect the building back entrance to the open common space and play area.

19. For a residential development, site layout shall achieve at least eighty percent of the maximum density of the base zone for the net developable area. Net developable area excludes all areas for required right-of-way dedication, land protected from development through Natural Resource or Geologic Hazards protection, and required open space or park dedication.

Applicant's Response:

There is no minimum or maximum density for MUC-1.

20. Screening of Mechanical Equipment:

a. Rooftop mechanical equipment, including HVAC equipment and utility equipment that serves the structure, shall be screened. Screening shall be accomplished through the use of parapet walls or a sight-obscuring enclosure around the equipment constructed of one of the primary materials used on the primary facades of the structure, and that is an integral part of the building's architectural design. The parapet or screen shall completely surround the rooftop mechanical equipment to an elevation equal to or greater than the highest portion of the rooftop mechanical equipment being screened. In the event such parapet wall does not fully screen all rooftop equipment, then the rooftop equipment shall be enclosed by a screen constructed of one of the primary materials used on the primary facade of the building so as to achieve complete screening.

Applicant's Response:

Mechanical equipment will be located in the attic of the building so that it will be out of sight.

b. Wall-mounted mechanical equipment shall not be placed on the front facade of a building or on a facade that faces a right-of-way. Wall-mounted mechanical equipment, including air conditioning or HVAC equipment and groups of multiple utility meters, that extends six inches or more from the outer building wall shall be screened from view from streets; from residential, public, and institutional properties; and from public areas of the site or adjacent sites through the use of (a) sight-obscuring enclosures constructed of one of the primary materials used on the primary facade of the structure, (b) sight-obscuring fences, or (c) trees or shrubs that block at least eighty percent of the equipment from view or (d) painting the units to match the building. Wall-mounted mechanical equipment that extends six inches or less from the outer building wall shall be designed to blend in with the color and architectural design of the subject building.

Applicant's Response:

No wall-mounted mechanical equipment will be placed on the front façade of a building or on a façade that faces a right-of-way.

c. Ground-mounted above-grade mechanical equipment shall be screened by ornamental fences, screening enclosures, trees, or shrubs that block at least eighty percent of the view. Placement and type of screening shall be determined by the community development director.

Applicant's Response:

No ground-mounted above-grade mechanical equipment will be installed.

d. All mechanical equipment shall comply with the standards in this section. If mechanical equipment is installed outside of the site plan and design review process, planning staff shall review the plans to determine if additional screening is required. If the proposed screening meets this section, no additional planning review is required.

Applicant's Response:

All mechanical equipment will comply with the standards in this section. No mechanical equipment is proposed to be installed outside of the site plan.

e. This section shall not apply to the installation of solar energy panels, photovoltaic equipment or wind power generating equipment.

Applicant's Response:

Okay.

21. Building Materials.

a. Preferred building materials. Building exteriors shall be constructed from high quality, durable materials. Preferred exterior building materials that reflect the city's desired traditional character are as follows:

i. Brick.

li. Basalt stone or basalt veneer.

iii. Narrow horizontal wood or composite siding (generally five inches wide or less); wider siding will be considered where there is a historic precedent.

iv. Board and baton siding.

v. Other materials subject to approval by the community development director.

vi. Plywood with battens or fiber/composite panels with concealed fasteners and contiguous aluminum sections at each joint that are either horizontally or vertically aligned.

vii. Stucco shall be trimmed in wood, masonry, or other approved materials and shall be sheltered from extreme weather by roof overhangs or other methods.

Applicant's Response:

Building materials will be constructed from durable materials such as cementitious lap siding and board and batten paneling.

b. Prohibited materials. The following materials shall be prohibited in visible locations unless an exception is granted by the community development director based on the integration of the material into the overall design of the structure.

i. Vinyl or plywood siding (including T-111 or similar plywood).

li. Glass block or highly tinted, reflected, translucent or mirrored glass (except stained glass) as more than ten percent of the building facade.

iii. Corrugated fiberglass.

iv. Chain link fencing (except for temporary purposes such as a construction site or as a gate for a refuse enclosure).

[v.] Crushed colored rock/crushed tumbled glass.

[vi.] Non-corrugated and highly reflective sheet metal.

Applicant's Response:

No materials listed above will be installed.

c. Special material standards: The following materials are allowed if they comply with the requirements found below:

1. Concrete block. When used for the front facade of any building, concrete blocks shall be split, rock- or ground-faced and shall not be the prominent material of the elevation. Plain concrete block or plain concrete may be used as foundation material if the foundation material is not revealed more than three feet above the finished grade level adjacent to the foundation wall.

2. *Metal siding. Metal siding shall have visible corner moldings and trim and incorporate masonry or other similar durable/permanent material near the ground level (first two feet above ground level).*
3. *Exterior Insulation and Finish System (EIFS) and similar toweled finishes shall be trimmed in wood, masonry, or other approved materials and shall be sheltered from extreme weather by roof overhangs or other methods.*
4. *Building surfaces shall be maintained in a clean condition and painted surfaces shall be maintained to prevent or repair peeling, blistered or cracking paint.*

Applicant's Response:

Concrete block, metal siding and EIFS will not be used on this project.

17.62.057 - Multi-family standards.

B. Applicability. In addition to Section 17.62.050 requirements, all multi-family buildings shall comply with the design standards contained in this section. Cottage Housing Development shall follow OCMC 17.62.58 instead of this section.

Applicant's Response:

Please see below for a response to each requirement.

C. Setbacks. Multi-family developments shall be placed no farther than twenty feet from the front property line. A deeper front yard setback may be approved through site plan and design review if the setback area incorporates enhanced pedestrian spaces and amenities, including but not limited to, street furniture, public art or other such deliberately shaped area and/or a feature or amenity that, in the judgment of the community development director, integrates well with adjoining areas. Setbacks may also be increased in order to protect wildlife habitat and water resources pursuant to Section 17.49.100F., and trees and tree groves pursuant to and Section 17.41.120A.

Applicant's Response:

The face of the building is setback 12½ feet from Caufield Street in order to accommodate a 10-foot public utility easement and the roof overhang. It also setback 13 to 40 feet from Pleasant Avenue in order to preserve a white oak that has been designated as a heritage tree.

D. Entrances. Every building abutting a street shall have a street facing front facade. The facade shall be oriented to the street and include windows, doorways, and a structured transition from public to private areas using built elements such as porch features, arbors, low walls, trellis work and/or similar elements integrated with planting.

Applicant's Response:

The south side of the building is the front façade. It is oriented towards Caufield and includes windows and the main entry door to the building. The transition from public to private is accentuated by a steel trellis, benches and accompanying plantings.

E. Percentage of Frontage. On sites with one hundred feet or more of street frontage at least fifty percent of the site frontage width shall be occupied by buildings placed within twenty feet from the property line, unless a greater setback is accepted under the provisions of Section 17.62.057C. For sites with less than one hundred feet of street frontage, at least forty percent of the site frontage width shall be occupied by buildings placed within twenty feet of the property line, unless a greater setback is accepted under the provisions of Section 17.62.056D.

Applicant's Response:

This site has frontage on both Caufield Street and Pleasant Avenue. Both frontages are more than 100 feet long. The building occupies more than 50 percent of the frontage on Caufield. However, the building does not occupy the frontage along Pleasant Avenue due to the preservation of a white oak heritage tree.

F. Pedestrian Circulation.

1. Pathways between dwelling units entrances and the street are required. Such pathways between the street and buildings fronting on the street shall be in a straight line. Exceptions may be allowed by the director where steep slopes prevent a direct connection or where an indirect route would enhance the design and/or use of a common open space.

Applicant's Response:

A hardscaped path leads directly from the public sidewalk on Caufield Street to the building entrance. Individual entrances to the dwelling units are located within the building.

2. The pedestrian circulation system shall connect all main entrances on the site. For townhouses or other residential units fronting on the street, the sidewalk may be used to meet this standard. For multiple-family developments, pedestrian connections to other areas of the site, such as parking areas, recreational areas, common outdoor areas, and any pedestrian amenities shall be required.

Applicant's Response:

There is only one main entrance to the building and it is located Caufield Street. The parking for the building is located on the north side of the building and can be accessed from the building by exterior doors on that side of the building.

3. Elevated external stairways or walkways, which provide pedestrian access to dwelling units located above the ground floor are prohibited. The community development director may allow exceptions for external stairways or walkways located in, or facing interior courtyard areas provided they do not compromise visual access from dwelling units into the courtyard.

Applicant's Response:

There are no elevated external stairways or walkways as part of this development.

G. Architectural and Material Standards. Building articulation and modulation - multifamily residential buildings and residential portions of mixed-use buildings. An alternative to the standards in subsection G. below may be approved by the community development director if the design is consistent with the intent of the standards and a specific architectural or building use exists that prohibits the full implementation of the standard.

Applicant's Response:

Please see below for a response to each requirement.

1. Articulation and modulation of buildings is essential in providing the ability for new buildings to be compatible with the surrounding commercial and residential development. All residential buildings and residential portions of mixed-use buildings shall include at least three of the following modulation and/or articulation features at intervals of no more than thirty feet along all facades facing a street, common open space, and common parking areas:

a. Repeating distinctive window patterns at intervals less than the required interval. Vertical building modulation. Minimum depth and width of modulation is thirty-six inches and four feet (respectively) if tied to a change in color or building material and/or roofline modulation. Otherwise, minimum depth of modulation is ten feet and minimum width for each modulation is fifteen feet. Balconies may not be used to meet modulation option unless they are recessed or projected from the facade and integrated with the building's architecture as determined by the community development director, balconies that appear to be "tacked on" to the facade will not qualify for this option.

b. Horizontal modulation (upper level step-backs). The minimum horizontal modulation for buildings higher than two stories shall be five feet. A dormer- set five feet back from the front facade-is an example of an acceptable horizontal modulation.

c. Articulation of the building's top, middle, and bottom. This typically includes a distinctive ground floor or lower floor design, consistent articulation of middle floors, and a distinctive roofline.



This multifamily building uses a combination of horizontal and vertical modulation, roofline modulation, distinctive window patterns, and clear articulation of the building's top, middle, and bottom to help reduce its perceived architectural scale and add visual interest.

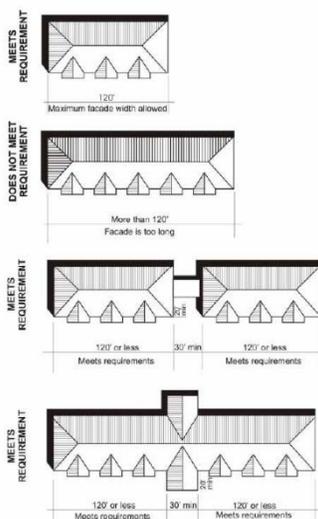
Applicant's Response:

The proposed building will provide affordable housing for veterans with low and very low income. The building will help add housing diversity consistent with the intent of the multifamily standards and Goal 10 of the adopted 2004 Comprehensive Plan of providing a variety of housing types. The proposed building pursues an efficient and cost-effective design in order to deliver as much affordable housing per dollar invested as possible. As a result, the building intentionally does not have a lot of geometric articulation in plan.

However, the design strives to convey a sense of simplicity and beauty in form with its materiality and detailing. Like the houses around it, the building primarily utilizes lap siding. The 7-inch exposure of the siding helps establish a residential scale along the height of the building. Vertical trim punctuates sections of siding on order to create a subtle rhythm within the larger plane of each façade. Within each of these rhythms is a distinctive repeating pattern of punched window openings of a size and spacing that is consistent with the fenestration found in the surrounding neighborhood. The windows are grouped in pairs, are separated by a smooth siding panel and are picture-framed to create a larger relief in the lap siding. The window patterns and siding rhythm occur at 22-foot intervals. In order to accentuate this rhythm and help modulate the façade, columnar Italian cypress have been planted at a spacing that corresponds to the siding delineation.

These design tactics result in an aesthetically pleasing minimalist building that adds architectural variety and visual interest to the neighborhood and that is compatible with the residential character of the surroundings. They have been utilized in order to achieve a construction cost that makes the development feasible. Due to limited funding sources, financial feasibility is critical in being able to deliver a project that helps the city provide and maintain an adequate supply of affordable housing pursuant to Goal 10.2 of the adopted 2004 Comprehensive Plan. Adding vertical or horizontal recesses to the building adds costs that greatly inflate the cost of construction and lead to the development being infeasible.

2. Maximum facades width. Buildings visible from the street must use design techniques to break up long continuous building walls, reduce the architectural scale of the building, and add visual interest. Buildings exceeding one hundred twenty feet in width along the street front shall be divided by a thirty-foot wide modulation of the exterior wall, so that the maximum length of a particular facade is one hundred twenty feet. Such modulation must be at least twenty feet or deeper and extend through all floors. Decks and roof overhangs may encroach up to three feet (per side) into the modulation. The director will consider other design methods that are effective at reducing the perceived width of the building. Examples could include a combination of vertical and/or horizontal building modulation with a change in building materials or finishes, a clear change in building articulation and/or fenestration technique.



Applicant's Response:

The building is 158 feet wide along Caufield Street. As mentioned above, the building design seeks simplicity of form. Reducing the number of corners, increases productivity of framing and drywall allowing more affordable units to be constructed with the same limited resources. A simple building form also reduces the ratio of exterior wall area to floor area which in turn improves the thermal/energy performance and reduces the long-term maintenance costs of the building. The goal of this development is to bring as many affordable housing units as possible for the limited funds that are available. Adding veterans housing to the neighborhood meets the intent of the multifamily standards of providing a variety of housing types and Policy 10.1.4 of the Comprehensive Plan by adding to the diversity of income groups within the community.

Because the depth of the site is reduced by the required dedication and public utility easement on Caufield Street, there is not enough space for a 20-foot deep modulation to project out from the face of the building. Recessing the modulation into the building would cut into proposed community spaces and resident units. Accommodating this recess would require the building foot-print to be enlarged so that these spaces could be located elsewhere. Doing so would also increase the amount of exterior wall area relative to the floor area. This would negatively impact the project costs and the ability to deliver as many affordable units.

However, in order to break up the length of the building, emphasize a residential scale, and add visual interest, several measures are placed in the design. The east and west portions of the building are recessed 2-feet. A 2-foot recess works with a 2-foot building module and allows for advanced framing for material efficiency and reduced waste. The 2-foot recess also provides a significant shadow line and visual relief in breaking down the overall length of the building. In addition to this, special landscaping elements are situated to compliment the siding delineation and repetitive window patterns as described above. And an enhanced pedestrian amenity is located at the entrance to the building in lieu of a building modulation. The amenity helps divide the building into two segments that are less than 120 feet long by employing a contemporary steel trellis, benches and low screening landscaping. The amenity provides a place for residents and neighbors to interact and adds to the livability and stability of the of the neighborhood in accordance with Policy 10.1.7 of the Comprehensive Plan.

3. Roofline standards.

a. Single purpose residential buildings in residential districts must provide a pitched roof with minimum 6:12 roof pitch. The maximum width of any continuous roofline shall be thirty-five feet for single purpose residential buildings. Alternative roof designs will be considered provided design elements are included to help the building and its roofline fit into the site's context.

Applicant's Response:

This is not applicable as the building is in a mixed use commercial district.

b. Mixed use buildings and stand-alone residential in commercial districts shall incorporate a roofline modulation. Specifically: For flat roofs or facades with a horizontal eave, fascia, or parapet, the minimum vertical dimension of roofline modulation is the greater of two feet or 0.1 multiplied by the wall height (finish grade to top of wall). The maximum length of any continuous roofline shall be seventy-five feet.

Applicant's Response:

The building has a hip roof with 2-foot and 4-foot eaves. The roof's 4:12 slope reduces the visual impact of the mass of the roof. The roof also has a consistent eave line that maintains a uniform façade height around the perimeter of the building; helping to reduce perceived height of the building. A uniformly sloped continuous roof creates efficiencies in construction from which reduced costs enable a greater number of affordable units to be built. The simplified roof form also maximizes the amount of area available for the potential installation of solar panels which can offset the long term operating costs of the building. These design measures are an important part of making the development affordable and thereby providing a variety of housing types and income levels within the neighborhood in accordance with the intent of the multifamily standards and the goals and policies of the Comprehensive Plan.

c. Other roof forms consistent with the design standards herein may satisfy this standard if the individual segments of the roof with no change in slope or discontinuity are less than forty feet in width (measured horizontally).

Applicant's Response:

See response to b. above.

H. Diversity of building types. Multi-building developments of four or more buildings shall be required to provide different architectural designs to provide interest and variety. This is particularly important where multiple buildings front on the same street. Simple changes in building colors or reversal of basic facade designs are not sufficient to comply with this standard. Consider changes in vertical and/or horizontal articulation, fenestration, building materials, architectural style, and/or roof design.

Applicant's Response:

There is only one building proposed for this property.

I. Diversity of unit types. Multifamily buildings with more than twenty-five units are required to provide a diversity of housing types to allow for a range of households and age groups. Unit types are defined as the following: Studio, one-bedroom, two-bedroom and three-bedroom units or an ADA accessible master bedroom and bathroom (ground floor or elevator access).

1. Developments of twenty-five to fifty units must provide two unit types representing a minimum of ten percent of the total units per unit type.

2. Developments of fifty-one to seventy-five units must provide three unit types representing a minimum of ten percent of the total units per unit type.

3. Developments of seventy-six units and above must provide four unit types representing a minimum of ten percent of the total units per unit type.

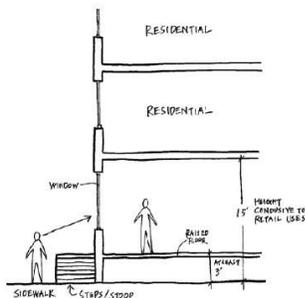
Applicant's Response:

The building contains 24 units with a unit mix of studios, one-bedroom and two-bedroom units. Two one-bedroom units will be accessible.

J. Raised Ground Floor.

This is particularly important when dwelling units are within fifteen feet of a sidewalk or common parking area or for buildings in established neighborhoods that have an established pattern with raised dwelling units.

Where ground floor residential uses are permitted on the ground floor in commercial districts, developments shall incorporate a thirteen-foot tall ground floor height to allow future conversion to commercial uses where desirable. Such projects can utilize a false floor thirty-six inches above the ground for residential uses to increase residents' privacy.



Applicant's Response:

The proposed building does not have a 13-foot tall ground floor height as it is not intended for commercial use in the future.

K. Building Materials.

All multifamily buildings shall be enhanced with appropriate details. Each of the types of details listed below are worth one point. Multifamily buildings must achieve the equivalent of five points worth of architectural details.

1. Decorative porch design with distinct design and use of materials.

2. Decorative treatment of windows and doors, such as decorative molding/framing details around all ground floor windows and doors, bay windows, decorative glazing, or door designs, and/or unique window designs.

3. Landscaped trellises or other decorative element that incorporates landscaping near the building entry or entries.
4. Decorative light fixtures with a diffuse visible light source, such as a globe or "acorn" that is non-glaring or a decorative shade or mounting for each building entry on the facade.
5. Brick or stonework covering more than fifteen percent of the facade.
6. Decorative building materials that add visual interest, including:
 - a. Individualized patterns or continuous wood details.
 - b. Decorative moldings, brackets, wave trim or lattice work.
 - c. Other materials with decorative or textural qualities as approved by the director. The applicant must submit architectural drawings and material samples for approval.
7. Decorative roofline design, including multiple gables and/or dormers, decorative parapet or other design that adds distinct visual interest.
8. Decorative railings, grill work, or terraced landscape beds integrated along the facade of the building.
9. Other details that meet the intent of the guidelines as approved by the director.

Applicant's Response:

The proposed building materials are cementitious lap siding and panel siding. Trellis and benches will be provided at the main entrance to the building on Caufield Street.

L. Window Design.

1. Transparent windows or doors facing the street are required. To meet this requirement, at least fifteen percent of the facade must be transparent. Transparency is measured at the first floor only.
2. All windows on all elevations shall recess or project individual windows at least two inches from the facade and incorporate window trim at least four inches in width that features color that contrasts with the base building color. Exceptions will be considered by the community development director where buildings employ other distinctive window or facade treatment that adds visual interest to the building.

Applicant's Response:

More than 15% of the façades facing the streets are transparent. Currently 19.5% of the south façade on Caufield street and 18% of the east façade on Pleasant Avenue are transparent.

M Common Open Space Requirements.

1. Intent. Creating areas of common open space that are easily accessed by residents provides focal points for community recreation and interaction and adds to the overall quality of life for residents. Given the environmental and recreational benefits of common open space, it should be integrated purposefully into the overall design of a development and not merely be residual areas left over after buildings and parking lots are sited.

Applicant's Response:

An indoor community room and an outdoor seating/play area is provided for the residents.

2. Common Open Space Required. All new multi-family developments in all zones except for the Mixed Use Corridor, Neighborhood Commercial or Mixed Use Downtown Districts, shall set aside a percentage of the net site acreage as common open space for the use and enjoyment of the development's residents. The common open space shall be aggregated into meaningful, quality open spaces. Clustering of buildings is encouraged to minimize small, narrow, unassigned strips in front of and between buildings. Open space areas shall be clearly identified on the development plan. Such designated common open space can be in a natural, undisturbed state, or may be landscaped for more formal courtyards or plazas, or may be developed for active or passive recreation. Phasing shall not be used to circumvent common open space standards.

Applicant's Response:

The proposed project is in Mixed Use Corridor. Therefore, this section is not applicable. However, an outdoor seating/play area is provided for the residents.

3. Minimum Amount Required. The minimum amount of common open space (as a percentage of net land area) shall be: Fifteen percent

Applicant's Response:

N/A.

4. *Areas Not Allowed as Part of Common Open Space.* The following shall not count toward common open space set-aside requirements:

- a. Private lots, yards, balconies and patios dedicated for use by a specific unit;
- b. Public right-of-way or private streets and drives;
- c. Open parking areas and driveways for dwellings;
- d. Land covered by structures except for ancillary structures associated with the use of the open space such as gazebos and picnic shelters or recreation building.
- e. Designated outdoor storage areas;
- f. Land areas between buildings and parking lots or driveways of less than twenty feet;
- g. Required perimeter setbacks; and
- h. Detention/retention facilities, including drainage swales, except that detention or retention areas and stormwater management structures or facilities may be used to meet up to one hundred percent of the required common open space amount provided such areas or facilities are accessible and useable, as determined by the city, as year-round community amenities by the residents of the development (e.g., picnic areas, passive recreation areas, playgrounds, ponds for fishing and/or boating, etc.)

Applicant's Response:

A designated outdoor open area/play area is designed for the residents.

[5.] *Required Greenway Linkages.* Where a greenway linkage, natural or water resource area or other public park is dedicated to or acquired by the city, the area may be credited toward one-half the minimum amount of common open space required. The dedicated lands are not to be calculated in the net land area.

Applicant's Response:

No greenway linkage, natural or water resource area or other public park is dedicated to or acquired by the city.

[6.] *Design Criteria for Open Space.* All common open space lands shall meet the following design criteria, as relevant:

[a.] *Connectivity required.* To the maximum extent practicable, common open space shall be organized to create integrated systems of open space that connect with the following types of lands located within or adjacent to the development:

1. Dedicated public park, greenway, or habitat lands;
2. Dedicated school sites;
3. Other dedicated open spaces;
4. Common open space located adjacent to the development;
5. Portions of the regional trail and open space system;

Applicant's Response:

The proposed outdoor common area/play area is connected to the existing open space by the heritage tree.

[7.] *Compact and Contiguous.* To the maximum extent practicable, common open space land shall be compact and contiguous unless the land is used as a continuation of an existing greenway, trail, or other linear park, or unless specific topographic features require a different configuration. An example of such topographic features would be the provision of open space along a scenic creek.

Applicant's Response:

The common open space is compact due to the natural topography of the site.

[8.] *Accessible to Residents.* Common open space shall be reasonably accessible to all of the residents of the development. The city may require access to be restricted if it would degrade, destroy, or adversely interfere with sensitive environmental or natural areas or with significant historic or cultural resources.

Applicant's Response:

The common open space is next to the community space in the building and is accessible by residents.

[9.] *Recreational Facilities.* If an applicant constructs recreational facilities in the common open space as a community amenity, such recreational facilities shall be constructed in accordance with applicable city standards

regarding, but not limited to, size, siting, use, materials, and similar matters. The recreational facilities shall be built with long-lasting and sturdy materials. A long-term maintenance schedule may be required to ensure that there is sufficient funding and management set in place for the amenity to be maintained and replaced if needed.

Applicant's Response:

The common open space has been size to accommodate a future nature play area that will be maintained by the apartment management.

[10.] Design Criteria. Common open spaces, other than those preserved as natural features or areas, should include gardens, courtyards, recreation, or play areas. Required common open space areas over ten thousand square feet of non-natural area shall provide a minimum of five amenities from the list below. Open space of ten thousand feet or less of non-natural area shall provide three amenities.

[a.] Seasonal planting/community gardening areas.

[b.] Large trees.

[c.] Seating.

[d.] Pedestrian-scaled lighting.

[e.] Gazebos or other decorative shelters.

[f.] Play structures for children.

[g.] On-site community recreation amenities.

[h.] Roof gardens or shared patio decks.

[i.] An alternative amenity as approved by the community development director.

Applicant's Response:

The common open space has been size to accommodate a future nature play area. It will contain Large trees, seating and pedestrian-scaled lighting.

[11.] Exceptions to the common open space standard may be granted for the following:

a. For multi-unit developments of up to twenty-five units (or for the first twenty-five units of a larger project) no common open space shall be required when such developments are within one-quarter mile (measured walking distance) to a public park of three acres or more; and there is a direct, improved, permanent, public, Americans with Disabilities Act (ADA) - accessible, lighted, maintained pedestrian trail or sidewalk between the sites. An exception shall be granted only when the nearby park provides an active and fully improved recreation area.

b. For multi-unit developments with required common open space in excess of fifteen thousand square feet, the required open space may be reduced by one-half if access to the public is provided. The qualifying open space area shall be for active use, be maintained by the home owners association and not be within the boundaries of a Water Resource Buffer area.

Applicant's Response:

N/A.

N. Private Open Space.

1. Private Open Space Required. All new multi-family developments in all zones except for the Mixed Use Corridor, Neighborhood Commercial or Mixed Use Downtown Districts, shall set aside a private open space for the use and enjoyment of the development's residents. Private open space is a semi-enclosed area, which is intended for use strictly by the occupants of one dwelling unit. Private open space may include porches, balconies, terraces, roof top gardens, verandas, and decks. Dwellings located at finished grade, or within five feet of finished grade, shall provide a minimum of ninety-six square feet of private open space per dwelling unit, with no dimension less than six feet. Dwellings located more than five feet above finished grade shall provide a minimum of forty-eight square feet with no dimension less than six feet. Ground level private open space shall be visually and physically separated from common open space through the use of perimeter landscaping or fencing.

Applicant's Response:

The site is located in the Mixed Use Corridor, therefore this section is not applicable.

2. Common And Private Open Space Requirements For Multifamily Dwelling Units In The Mixed Use Corridor, Neighborhood Commercial Or Mixed Use Downtown Districts. All residential development in the Mixed Use Corridor, Neighborhood Commercial or Mixed Use Downtown Districts must provide a portion of the project area for private open space or common open space. Fifty square feet of private or common open space is required for

each dwelling unit. The open space may be allocated exclusively for private or common use or may be a combination of the two uses.

a. *Common Open Space:* Common open space may be provided in the form of decks, shared patios, roof gardens, recreation rooms, lobbies or other gathering spaces created strictly for the tenants and not associated with storage or circulation. Landscape buffer areas may not be used as common open space unless active and passive uses are integrated into the space and its use will not adversely affect abutting properties.

b. *Private Open Space:* Private open space may be provided in the forms of decks, screened patios, roof gardens or an alternate private space as approved by the community development director.

Applicant's Response:

24 units at 50 sq. ft. per unit = 1,200 sq. ft. of private or common open space that is required.

The proposed project has a combination of both indoor and outdoor common space for the residents. A 690 square feet of indoor community room is located on the ground floor of the building. Additionally, an outdoor common space/play area is located in the northeast area of the site.

17.62.065 - Outdoor lighting.

B. Applicability.

1. General.

a. *All exterior lighting for any type of commercial, mixed-use, industrial or multi-family development shall comply with the standards of this section, unless excepted in subsection B.3.*

b. *The city engineer/public works director shall have the authority to enforce these regulations on private property if any outdoor illumination is determined to present an immediate threat to the public health, safety and welfare.*

Applicant's Response:

All exterior lighting will comply with the standards of this section.

2. Lighting Plan Requirement.

All commercial, industrial, mixed-use, cottage housing and multi-family developments shall submit a proposed exterior lighting plan. The plan must be submitted concurrently with the site plan. The exterior lighting plan shall include plans and specifications for streetlights, parking lot lights, and exterior building lights. The specifications shall include details of the pole, fixture height and design, lamp type, wattage, and spacing of lights.

Applicant's Response:

A proposed exterior lighting plan will be submitted concurrently with the site plan.

3. Excepted Lighting.

The following types of lighting are excepted from the requirements of this section.

a. *Residential lighting for single-family attached and detached homes, and duplexes.*

b. *Public street and right-of-way lighting.*

c. *Temporary decorative seasonal lighting provided that individual lamps have a light output of sixty watts or less.*

d. *Temporary lighting for emergency or nighttime work and construction.*

e. *Temporary lighting for theatrical, television, and performance areas, or for special public events.*

f. *Lighting for a special district, street, or building that, according to an adopted municipal plan or ordinance, is determined to require special lighting aesthetics as part of its physical character.*

g. *Lighting required and regulated by the Federal Aviation Administration.*

Applicant's Response:

Okay.

C. General Review Standard. If installed, all exterior lighting shall meet the functional security needs of the proposed land use without adversely affecting adjacent properties or the community. For purposes of this section, properties that comply with the design standards of subsection D. below shall be deemed to not adversely affect adjacent properties or the community.

Applicant's Response:

All exterior lighting will meet the functional security needs of the proposed land use without adversely affecting adjacent properties or the community.

D. Design and Illumination Standards.

General Outdoor Lighting Standard and Glare Prohibition.

1. Outdoor lighting, if provided, shall be provided in a manner that enhances security, is appropriate for the use, avoids adverse impacts on surrounding properties, and the night sky through appropriate shielding as defined in this section. Glare shall not cause illumination on other properties in excess of a measurement of 0.5 footcandles of light as measured at the property line. In no case shall exterior lighting add more than 0.5 footcandle to illumination levels at any point off-site. Exterior lighting is not required except for purposes of public safety. However, if installed, all exterior lighting shall meet the following design standards:

Applicant's Response:

Outdoor lighting has been selected that will enhance safety and is appropriate to the use of the site. Lighting has been located so that it does not shine on adjacent property.

2. Any light source or lamp that emits more than nine hundred lumens (thirteen watt compact fluorescent or sixty watt incandescent) shall be concealed or shielded with a full cut-off style fixture in order to minimize the potential for glare and unnecessary diffusion on adjacent property. All fixtures shall utilize one of the following bulb types: metal halide, induction lamp, compact fluorescent, incandescent (including tungsten-halogen), or high pressure sodium with a color rendering index above seventy.

Applicant's Response:

The parking lot lights and the building lights emit more than 900 lumens per fixture. Both fixtures have been positioned to minimize the potential for glare and unnecessary diffusion on adjacent property. These fixtures were selected because they have LED lamps that provide good color rendering and color temperature while being energy efficient relatively maintenance free.

3. The maximum height of any lighting pole serving a multi-family residential use shall be twenty feet. The maximum height serving any other type of use shall be twenty-five feet, except in parking lots larger than five acres, the maximum height shall be thirty-five feet if the pole is located at least one hundred feet from any residential use.

Applicant's Response:

The parking lighting will be mounted on poles that are 20 feet tall.

4. Lighting levels:

Table 1-17.62.065. Foot-candle Levels

| Location | Min | Max | Avg |
|-------------------------------------|-----|--------------------|-----|
| Pedestrian Walkways | 0.5 | 7:1 max/min ratio | 1.5 |
| Pedestrian Walkways in Parking Lots | | 10:1 max/min ratio | 0.5 |
| Pedestrian Accessways | 0.5 | 7:1 max/min ratio | 1.5 |
| Building Entrances | 3 | | |
| Bicycle Parking Areas | 3 | | |
| Abutting property | N/A | .5 | |

Applicant's Response:

The lighting plan will meet the above standards.

5. Parking lots and other background spaces shall be illuminated as unobtrusively as possible while meeting the functional needs of safe circulation and protection of people and property. Foreground spaces, such as building entrances and outside seating areas, shall utilize pedestrian scale lighting that defines the space without glare.

Applicant's Response:

Parking lots and other background spaces will be illuminated to provide a safe circulation for the residents. Buildings entrances and outside seating areas will utilize pedestrian scale lighting without glare.

6. Any on-site pedestrian circulation system shall be lighted to enhance pedestrian safety and allow employees, residents, customers or the public to use the walkways at night. Pedestrian walkway lighting through parking lots shall be lighted to light the walkway and enhance pedestrian safety pursuant to Table 1.

Applicant's Response:

On-site pedestrian circulation system will be lighted to enhance pedestrian safety and allow residents to use the walkway at night.

7. Pedestrian Accessways. To enhance pedestrian and bicycle safety, pedestrian accessways required pursuant to OCMC 12.28 shall be lighted with pedestrian-scale lighting. Accessway lighting shall be to a minimum level of one-half foot-candles, a one and one-half foot-candle average, and a maximum to minimum ratio of seven-to-one and shall be oriented not to shine upon adjacent properties. Street lighting shall be provided at both entrances. Lamps shall include a high-pressure sodium bulb with an unbreakable lens.

Applicant's Response:

Lighting will be provided at all entrances to meet the minimum required level of foot-candles.

8. Floodlights shall not be utilized to light all or any portion of a building facade between ten p.m. and six a.m.

Applicant's Response:

No floodlights will be installed.

9. Lighting on automobile service station, convenience store, and other outdoor canopies shall be fully recessed into the canopy and shall not protrude downward beyond the ceiling of the canopy.

Applicant's Response:

N/A.

10. The style of light standards and fixtures shall be consistent with the style and character of architecture proposed on the site.

Applicant's Response:

The style of light fixtures has been selected to be compatible with the style and character of a residential building.

11. In no case shall exterior lighting add more than one foot-candle to illumination levels at any point off-site.

Applicant's Response:

Exterior lighting will not add more than one foot-candle to illumination levels at any point off-site.

12. All outdoor light not necessary for security purposes shall be reduced, activated by motion sensor detectors, or turned off during non-operating hours.

Applicant's Response:

No outdoor lighting, except for security purposes will be provided.

13. Light fixtures used to illuminate flags, statues, or any other objects mounted on a pole, pedestal, or platform shall use a narrow cone beam of light that will not extend beyond the illuminated object.

Applicant's Response:

No light fixture will be used to illuminate flags, statues or any other objects.

14. For upward-directed architectural, landscape, and decorative lighting, direct light emissions shall not be visible above the building roofline.

Applicant's Response:

No upward-directed lighting will be installed.

15. No flickering or flashing lights shall be permitted, except for temporary decorative seasonal lighting.

Applicant's Response:

No flickering or flashing lights will be installed.

16. Wireless Sites. Unless required by the Federal Aviation Administration or the Oregon Aeronautics Division, artificial lighting of wireless communication towers and antennas shall be prohibited. Strobe lighting of wireless communication facilities is prohibited unless required by the Federal Aviation Administration. Security lighting for equipment shelters or cabinets and other on-the-ground auxiliary equipment on wireless communication facilities shall be initiated by motion detecting lighting.

Applicant's Response:

No artificial lighting of wireless communication towers and antenna will be installed.

17. Lighting for outdoor recreational uses such as ball fields, playing fields, tennis courts, and similar uses, provided that such uses comply with the following standards:

i. Maximum permitted light post height: eighty feet.

ii. Maximum permitted illumination at the property line: 0.5 foot-candles.

Applicant's Response:

There are no ball fields, playing fields, tennis courts and similar uses proposed.

17.62.085 - Refuse and recycling standards for commercial, industrial, and multi-family developments.

The purpose and intent of these provisions is to provide an efficient, safe and convenient refuse and recycling enclosure for the public as well as the local collection firm. All new development, change in property use, expansions or exterior alterations to uses other than single-family or duplex residences shall include a refuse and recycling enclosure. The area(s) shall be:

A. Sized appropriately to meet the needs of current and expected tenants, including an expansion area if necessary;

B. Designed with sturdy materials, which are compatible to the primary structure(s);

C. Fully enclosed and visually screened;

D. Located in a manner easily and safely accessible by collection vehicles;

E. Located in a manner so as not to hinder travel lanes, walkways, streets or adjacent properties;

F. On a level, hard surface designed to discharge surface water runoff and avoid ponding;

G. Maintained by the property owner;

H. Used only for purposes of storing solid waste and recyclable materials;

I. Designed in accordance with applicable sections of the Oregon City Municipal Code (including Chapter 8.20—Solid Waste Collection and Disposal) and city adopted policies.

Applicant's Response:

A fully enclosed and visually screened trash and recycling area will be centrally located and accessible by collection vehicles. The trash and recycling area has been sized to accommodate a 3-cubic-yard trash container and (4) 90-gallon recycling containers.

CHAPTER 17.52 OFF-STREET PARKING AND LOADING

17.52.010 - Applicability.

The construction of a new structure or parking lot, or alterations to the size or use of an existing structure, parking lot or property use shall require site plan review approval and compliance with this chapter. This chapter does not apply to single- and two-family residential dwellings.

Applicant's Response:

The new parking lot for this development has been shown on the site plan.

17.52.015 - Planning commission adjustment of parking standards.

A. Purpose: The purpose of permitting a planning commission adjustment to parking standards is to provide for flexibility in modifying parking standards in all zoning districts, without permitting an adjustment that would adversely impact the surrounding or planned neighborhood. The purpose of an adjustment is to provide flexibility to those uses which may be extraordinary, unique or to provide greater flexibility for areas that can accommodate a denser development pattern based on existing infrastructure and ability to access the site by means of walking, biking

or transit. An adjustment to a minimum or maximum parking standard may be approved based on a determination by the planning commission that the adjustment is consistent with the purpose of this Code, and the approval criteria can be met.

B. Procedure: A request for a planning commission parking adjustment shall be initiated by a property owner or authorized agent by filing a land use application. The application shall be accompanied by a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development and parking plan, the extent of the adjustment requested along with findings for each applicable approval criteria. A request for a parking adjustment shall be processed as a Type III application as set forth in [Chapter 17.50](#).

C. Approval criteria for the adjustment are as follows:

1. Documentation: The applicant shall document that the individual project will require an amount of parking that is different from that required after all applicable reductions have been taken.

2. Parking analysis for surrounding uses and on-street parking availability: The applicant must show that there is a continued fifteen percent parking vacancy in the area adjacent to the use during peak parking periods and that the applicant has permission to occupy this area to serve the use pursuant to the procedures set forth by the community development director.

a. For the purposes of demonstrating the availability of on street parking as defined in [Section] 17.52.020.B.3., the applicant shall undertake a parking study during time periods specified by the community development director. The time periods shall include those during which the highest parking demand is anticipated by the proposed use. Multiple observations during multiple days shall be required. Distances are to be calculated as traversed by a pedestrian that utilizes sidewalks and legal crosswalks or an alternative manner as accepted by the community development director.

b. The onsite parking requirements may be reduced based on the parking vacancy identified in the parking study. The amount of the reduction in onsite parking shall be calculated as follows:

i. Vacant on-street parking spaces within three hundred feet of the site will reduce onsite parking requirements by 0.5 parking spaces; and

ii. Vacant on-street parking spaces between three hundred and six hundred feet of the [site] will reduce onsite parking requirements by 0.2 parking spaces.

3. Function and Use of Site: The applicant shall demonstrate that modifying the amount of required parking spaces will not significantly impact the use or function of the site and/or adjacent sites.

4. Compatibility: The proposal is compatible with the character, scale and existing or planned uses of the surrounding neighborhood.

5. Safety: The proposal does not significantly impact the safety of adjacent properties and rights-of-way.

6. Services: The proposal will not create a significant impact to public services, including fire and emergency services.

Applicant's Response:

No parking adjustments are being sought as part of this project.

17.52.020 - Number of automobile spaces required.

A. The number of parking spaces shall comply with the minimum and maximum standards listed in [Table 17.52.020](#). The parking requirements are based on spaces per one thousand square feet net leasable area unless otherwise stated.

| Table 17.52.020 | | |
|-------------------------|----------------------|---------------|
| LAND USE | PARKING REQUIREMENTS | |
| | MINIMUM | MAXIMUM |
| | MINIMUM | MAXIMUM |
| Multi-Family: Studio | 1.00 per unit | 1.5 per unit |
| Multi-Family: 1 bedroom | 1.25 per unit | 2.00 per unit |
| Multi-Family: 2 bedroom | 1.5 per unit | 2.00 per unit |

| | | |
|---|--------------------------------------|--|
| <i>Multi-Family: 3 bedroom</i> | <i>1.75 per unit</i> | <i>2.50 per unit</i> |
| <i>Hotel, Motel</i> | <i>1.0 per guest room</i> | <i>1.25 per guest room</i> |
| <i>Correctional Institution</i> | <i>1 per 7 beds</i> | <i>1 per 5 beds</i> |
| <i>Senior housing, including congregate care, residential care and assisted living facilities; nursing homes and other types of group homes</i> | <i>1 per 7 beds</i> | <i>1 per 5 beds</i> |
| <i>Hospital</i> | <i>2.00</i> | <i>4.00</i> |
| <i>Preschool Nursery/Kindergarten</i> | <i>2.00</i> | <i>3.00</i> |
| <i>Elementary/Middle School</i> | <i>1 per classroom</i> | <i>1 per classroom + 1 per administrative employee + 0.25 per seat in auditorium/assembly room/stadium</i> |
| <i>High School, College, Commercial School for Adults</i> | <i>0.20 per # staff and students</i> | <i>0.30 per # staff and students</i> |
| <i>Auditorium, Meeting Room, Stadium, Religious Assembly Building, movie theater,</i> | <i>.25 per seat</i> | <i>0.5 per seat</i> |
| <i>Retail Store, Shopping Center, Restaurants</i> | <i>4.10</i> | <i>5.00</i> |
| <i>Office</i> | <i>2.70</i> | <i>3.33</i> |
| <i>Medical or Dental Clinic</i> | <i>2.70</i> | <i>3.33</i> |
| <i>Sports Club, Recreation Facilities</i> | <i>Case Specific</i> | <i>5.40</i> |
| <i>Storage Warehouse, Freight Terminal</i> | <i>0.30</i> | <i>0.40</i> |
| <i>Manufacturing, Wholesale Establishment</i> | <i>1.60</i> | <i>1.67</i> |
| <i>Light Industrial, Industrial Park</i> | <i>1.3</i> | <i>1.60</i> |

Applicant's Response:

1. Multiple Uses. In the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately.

Applicant's Response:

This is a single use building.

2. Requirements for types of buildings and uses not specifically listed herein shall be determined by the community development director, based upon the requirements of comparable uses listed.

Applicant's Response:

Proposed project is a multi-family building.

3. Where calculation in accordance with the above list results in a fractional space, any fraction less than one-half shall be disregarded and any fraction of one-half or more shall require one space.

Applicant's Response:

The proposed unit mix is (4) studios, (12) 1-bedroom and (8) 2-bedroom units. The total minimum required parking spaces is 31. There are 20 on-site parking spaces and 11 off-site parking spaces.

4. *The minimum required parking spaces shall be available for the parking of operable passenger automobiles of residents, customers, patrons and employees only, and shall not be used for storage of vehicles or materials or for the parking of vehicles used in conducting the business or use.*

Applicant's Response:

The parking spaces are intended for residents', visitors' and employees' use only.

5. *A change in use within an existing habitable building located in the MUD Design District or the Willamette Falls Downtown District is exempt from additional parking requirements. Additions to an existing building and new construction are required to meet the minimum parking requirements for the areas as specified in Table 17.52.020 for the increased square footage.*

Applicant's Response:

There is no change in use as this is a new development.

B. Parking requirements can be met either onsite, or offsite by meeting the following conditions:

1. *Mixed Uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (e.g. the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly, up to a maximum reduction of fifty percent, as determined by the community development director.*

Applicant's Response:

Parking requirements will be met by using both onsite and offsite parking spaces.

2. *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), that the shared parking facility is within one thousand feet of the potential uses, and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument authorizing the joint use.*

Applicant's Response:

No shared parking is proposed.

3. *On-Street Parking. On-street parking may be counted toward the minimum standards when it is on the street face abutting the subject land use. An on-street parking space must not obstruct a required clear vision area and it shall not violate any law or street standard. On-street parking for commercial uses shall conform to the following standards:*

a. Dimensions. The following constitutes one on-street parking space:

1. *Parallel parking, each [twenty-two] feet of uninterrupted and available curb;*

2. *[Forty-five/sixty] degree diagonal, each with [fifteen] feet of curb;*

3. *Ninety degree (perpendicular) parking, each with [twelve] feet of curb.*

4. *Public Use Required for Credit. On-street parking spaces counted toward meeting the parking requirements of a specific use may not be used exclusively by that use, but shall be available for general public use at all times. Signs or other actions that limit general public use of on-street spaces are prohibited.*

Applicant's Response:

On-street parking accounts for 11 of the required parking spaces.

C. Reduction of the Number of Automobile Spaces Required. The required number of parking stalls may be reduced in the Downtown Parking Overlay District: Fifty percent reduction in the minimum number of spaces required is allowed prior to seeking further reductions in [sub]sections 2. and 3. below:

1. *Transit Oriented Development. For projects not located within the Downtown Parking Overlay District, the community development director may reduce the required number of parking stalls up to twenty-five percent when it is determined that a project in a commercial center (sixty thousand square feet or greater of retail or office use measured cumulatively within a five hundred-foot radius) or multi-family development with over eighty units, is*

adjacent to or within one thousand three hundred twenty feet of an existing or planned public transit street and is within one thousand three hundred twenty feet of the opposite use (commercial center or multi-family development with over eighty units).

2. *Reduction in Parking for Tree Preservation.* The community development director may grant an adjustment to any standard of this requirement provided that the adjustment preserves a regulated tree or grove so that the reduction in the amount of required pavement can help preserve existing healthy trees in an undisturbed, natural condition. The amount of reduction must take into consideration any unique site conditions and the impact of the reduction on parking needs for the use, and must be approved by the community development director. This reduction is discretionary.

3. *Transportation Demand Management.* The community development director may reduce the required number of parking stalls up to twenty-five percent when a parking-traffic study prepared by a traffic engineer demonstrates:

a. *Alternative modes of transportation, including transit, bicycles, and walking, and/or special characteristics of the customer, client, employee or resident population will reduce expected vehicle use and parking space demand for this development, as compared to standard Institute of Transportation Engineers vehicle trip generation rates and further that the transportation demand management program promotes or achieves parking utilization lower than minimum city parking requirements.*

b. *Transportation demand management (TDM) program has been developed for approval by, and is approved by the city engineer. The plan will contain strategies for reducing vehicle use and parking demand generated by the development and will be measured annually. If, at the annual assessment, the city determines the plan is not successful, the plan may be revised. If the city determines that no good-faith effort has been made to implement the plan, the city may take enforcement actions.*

Applicant's Response:

N/A

17.52.030 - Standards for automobile parking.

A. *Access.* Ingress and egress locations on public thoroughfares shall be located in the interests of public traffic safety. Groups of more than four parking spaces shall be so located and served by driveways so that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley. No driveway with a slope of greater than fifteen percent shall be permitted without approval of the city engineer.

Applicant's Response:

Myrtle street will be the ingress and egress locations to the parking lot.

B. *Surfacing.* Required off-street parking spaces and access aisles shall have paved surfaces adequately maintained. The use of pervious asphalt/concrete and alternative designs that reduce storm water runoff and improve water quality pursuant to the city's stormwater and low impact development design standards are encouraged.

Applicant's Response:

Off-street parking spaces and access aisles will be paved with asphalt paving. Use of pervious asphalt/concrete would be not suitable for this site due to the low infiltration rate of the soil.

C. *Drainage.* Drainage shall be designed in accordance with the requirements of [Chapter 13.12](#) and the city public works stormwater and grading design standards.

Applicant's Response:

Drainage in the parking lot has been designed in accordance with the requirements of [Chapter 13.12](#) and the city public works Stormwater and Grading Design Standards.

D. *Dimensional Standards.*

1. *Requirements for parking developed at varying angles are according to the table included in this section. A parking space shall not be less than seven feet in height when within a building or structure, and shall have access by an all-weather surface to a street or alley. Parking stalls in compliance with the American with Disabilities Act may vary in size in order to comply with the building division requirements. Up to thirty-five percent of the minimum required parking may be compact, while the remaining required parking stalls are designed to standard dimensions. The community development director may approve alternative dimensions for parking stalls in excess of the minimum requirement which comply with the intent of this chapter.*

2. *Alternative parking/plan.* Any applicant may propose an alternative parking plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. In such situations, the community development director may approve an alternative parking lot plan with variations to parking dimensions of this section. The alternative shall be consistent with the intent of this chapter and shall create a safe space for automobiles and pedestrians while providing landscaping to the quantity and quality found within parking lot landscaping requirements.

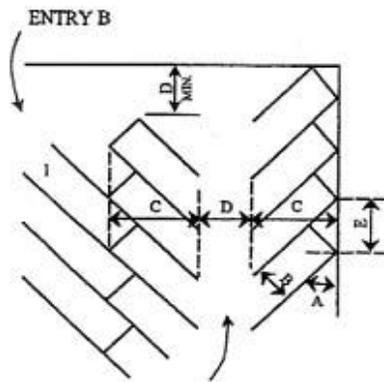
PARKING

STANDARD

PARKING ANGLE SPACE DIMENSIONS

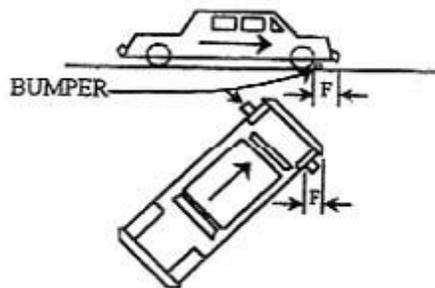
| A Parking Angle | | B Stall Width | C Stall to Curb | D Aisle Width | E Curb Length | F Overhang |
|-----------------------|---------------------|---------------------|--------------------------|---------------------|---------------------|---------------|
| 0 degrees | | 8.5 | 9.0 | 12 | 20 | 0 |
| 30 degrees | Standard Compact | 9' 8' | 17.3' 14.9' | 11' 11' | 18' 16' | |
| 45 degrees | Standard Compact | 8.5 8.5 | 19.8' 17.0' | 13' 13' | 12.7' 11.3' | 1.4 |
| 60 degrees | Standard Compact | 9' 8' | 21' 17.9' | 18' 16' | 10.4' 9.2' | 1.7 |
| 90 degrees | Standard Compact | 9' 8' | 19.0' 16.0' | 24' 22' | 9' 8' | 1.5 |

All dimensions are to the nearest tenth of a foot.



L. TYPICAL PARKING LAYOUT
M. ENTRY

A



NOTE: SPACE 1 CONTINGENT UPON ENTRY B OVERHANG

NOTE: Overhang dimensions are intended to indicate possible location from parking area edge for location of bumpers.

Applicant's Response:

Off-street parking has been designed with a 90-degree parking angle and a 24-foot wide aisle. standard parking stalls are 9 feet x19 feet. Compact parking stalls are 8 feet x16 feet.

E. Carpool and Vanpool Parking. New developments with seventy-five or more parking spaces, and new hospitals, government offices, group homes, nursing and retirement homes, schools and transit park-and-ride facilities with fifty or more parking spaces, shall identify the spaces available for employee, student and commuter parking and designate at least five percent, but not fewer than two, of those spaces for exclusive carpool and vanpool parking. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other employee, student or commuter parking spaces with the exception of ADA accessible parking spaces. The carpool/vanpool spaces shall be clearly marked "Reserved - Carpool/Vanpool Only."

Applicant's Response:

One van accessible parking space is provided by a building entrance.

17.52.040 - Bicycle parking standards.

A. Purpose-Applicability. To encourage bicycle transportation to help reduce principal reliance on the automobile, and to ensure bicycle safety and security, bicycle parking shall be provided in conjunction with all uses other than single-family dwellings or duplexes.

Applicant's Response:

Bicycle parking will be provided according to the following table.

B. Number of Bicycle Spaces Required. For any use not specifically mentioned in Table A, the bicycle parking requirements shall be the same as the use which, as determined by the community development director, is most similar to the use not specifically mentioned. Calculation of the number of bicycle parking spaces required shall be determined in the manner established in Section 17.52.020 for determining automobile parking space requirements. Modifications to bicycle parking requirements may be made through the site plan and design, conditional use, or master plan review process.

TABLE A Required Bicycle Parking Spaces*

Where two options for a requirement are provided, the option resulting in more bicycle parking applies. Where a calculation results in a fraction, the result is rounded up to the nearest whole number.

| USE | MINIMUM BICYCLE PARKING | MINIMUM BICYCLE PARKING - COVERED - The following percentage of bicycle parking is required to be covered |
|------------------------------------|--|--|
| Multi-family (three or more units) | 1 per 10 units (minimum of 2) | 50% (minimum of 1) |
| <i>Institutional</i> | | |
| Correctional institution | 1 per 15 auto spaces (minimum of 2) | 30% (minimum of 1) |
| Nursing home or care facility | 1 per 30 auto spaces (minimum of 2) | 30% (minimum of 1) |
| Hospital | 1 per 20 auto spaces (minimum of 2) | 30% (minimum of 1) |

| | | |
|---|--|---------------------------|
| <i>Park-and-ride lot</i> | <i>1 per 5 auto spaces (minimum of 2)</i> | <i>50% (minimum of 1)</i> |
| <i>Transit center</i> | <i>1 per 5 auto spaces (minimum of 2)</i> | <i>50% (minimum of 1)</i> |
| <i>Parks and open space</i> | <i>1 per 10 auto spaces (minimum of 2)</i> | <i>0%</i> |
| <i>Public parking lots</i> | <i>1 per 10 auto spaces (minimum of 2)</i> | <i>50% (minimum of 1)</i> |
| <i>Automobile parking structures</i> | <i>1 per 10 auto spaces (minimum of 4)</i> | <i>80% (minimum of 2)</i> |
| <i>Religious institutions, movie theater, auditorium or meeting room</i> | <i>1 per 10 auto spaces (minimum of 2)</i> | <i>30% (minimum of 1)</i> |
| <i>Libraries, museums</i> | <i>1 per 5 auto spaces (minimum of 2)</i> | <i>30% (minimum of 1)</i> |
| <i>Preschool, nursery, kindergarten</i> | <i>2 per classroom (minimum of 2)</i> | <i>50% (minimum of 1)</i> |
| <i>Elementary</i> | <i>4 per classroom (minimum of 2)</i> | <i>50% (minimum of 1)</i> |
| <i>Junior high and High school</i> | <i>2 per classroom (minimum of 2)</i> | <i>50% (minimum of 2)</i> |
| <i>College, business/commercial schools</i> | <i>2 per classroom (minimum of 2)</i> | <i>50% (minimum of 1)</i> |
| <i>Swimming pools, gymnasiums, ball courts</i> | <i>1 per 10 auto spaces (minimum of 2)</i> | <i>30% (minimum of 1)</i> |
| <i>Retail stores and shopping centers</i> | <i>1 per 20 auto spaces (minimum of 2)</i> | <i>50% (minimum of 2)</i> |
| <i>Retail stores handling exclusively bulky merchandise such as automobile, boat or trailer sales or rental</i> | <i>1 per 40 auto spaces (minimum of 2)</i> | <i>0%</i> |
| <i>Bank, office</i> | <i>1 per 20 auto spaces (minimum of 2)</i> | <i>50% (minimum of 1)</i> |

| | | |
|-----------------------------------|-------------------------------------|--------------------|
| Medical and dental clinic | 1 per 20 auto spaces (minimum of 2) | 50% (minimum of 1) |
| Eating and drinking establishment | 1 per 20 auto spaces (minimum of 2) | 0% |
| Gasoline service station | 1 per 10 auto spaces (minimum of 2) | 0% |

* Covered bicycle parking is not required for developments with two or fewer stalls.

Applicant's Response:

A 24-unit multi-family apartment building requires 3 bicycle parking spaces 2 of which must be covered.

C. Security of Bicycle Parking. Bicycle parking facilities shall be secured. Acceptable secured bicycle parking area shall be in the form of a lockable enclosure onsite, secure room in a building onsite, a covered or uncovered rack onsite, bicycle parking within the adjacent right-of-way or another form of secure parking where the bicycle can be stored, as approved by the decision maker. All bicycle racks and lockers shall be securely anchored to the ground or to a structure. Bicycle racks shall be designed so that bicycles may be securely locked to them without undue inconvenience and, when in the right-of-way shall comply with clearance and ADA requirements.

Applicant's Response:

2 racks which provide 4 bicycle parking spaces will be installed on site.

D. Bicycle parking facilities shall offer security in the form of either a lockable enclosure or a stationary rack to which the bicycle can be locked. All bicycle racks and lockers shall be securely anchored to the ground or to a structure. Bicycle racks shall be designed so that bicycles may be securely locked to them without undue inconvenience.

Location of Bicycle Parking:

1. Bicycle parking shall be located on-site, in one or more convenient, secure and accessible location. The city engineer and the community development Director may permit the bicycle parking to be provided within the right-of-way provided adequate clear zone and ADA requirements are met. If sites have more than one building, bicycle parking shall be distributed as appropriate to serve all buildings. If a building has two or more main building entrances, the review authority may require bicycle parking to be distributed to serve all main building entrances, as it deems appropriate.

Applicant's Response:

Ground mounted stationary racks will be installed on site.

2. Bicycle parking areas shall be clearly marked or visible from on-site buildings or the street. If a bicycle parking area is not plainly visible from the street or main building entrance, a sign must be posted indicating the location of the bicycle parking area. Indoor bicycle parking areas shall not require stairs to access the space unless approved by the community development director.

Applicant's Response:

The bicycle parking area is visible from both Caulfield Street and the main building entrance.

3. All bicycle parking areas shall be located to avoid conflicts with pedestrian and motor vehicle movement.
a. Bicycle parking areas shall be separated from motor vehicle parking and maneuvering areas and from arterial streets by a barrier or a minimum of five feet.
b. Bicycle parking areas shall not obstruct pedestrian walkways; provided, however, that the review authority may allow bicycle parking in the right-of-way where this does not conflict with pedestrian accessibility.

Applicant's Response:

The bicycle parking area is located away from pedestrian and motor vehicle movement.

4. Accessibility.

- a. Outdoor bicycle areas shall be connected to main building entrances by pedestrian accessible walkways.
- b. Outdoor bicycle parking areas shall have direct access to a right-of-way.
- c. Outdoor bicycle parking should be no farther from the main building entrance than the distance to the closest vehicle space, or fifty feet, whichever is less, unless otherwise determined by the community development director, city engineer, or planning commission.

Applicant's Response:

The bicycle parking area is connected to the main building entrance via the sidewalk along Caufield Street. It has direct access to a right-of-way and is closer to the building entrance than the vehicle parking spaces.

17.52.060 - Parking lot landscaping.

A. Development Standards.

1. The landscaping shall be located in defined landscaped areas that are uniformly distributed throughout the parking or loading area.

Applicant's Response:

The landscaped areas will be uniformly distributed throughout the parking area with landscape islands located at each of the corners and near the middle in order to separate contiguous runs of parking stalls.

2. All areas in a parking lot not used for parking, maneuvering, or circulation shall be landscaped.

Applicant's Response:

All areas surrounding the parking lot will be landscaped.

3. Parking lot trees shall be a mix of deciduous shade trees and coniferous trees. The trees shall be evenly distributed throughout the parking lot as both interior and perimeter landscaping to provide shade.

Applicant's Response:

The parking lot trees are composed of a mix of deciduous shade trees and coniferous trees.

4. Required landscaping trees shall be of a minimum two-inch minimum caliper size (though it may not be standard for some tree types to be distinguished by caliper), planted according to American Nurseryman Standards, and selected from the Oregon City Street Tree List;

Applicant's Response:

All trees will have a minimum caliper size of 2 inches.

5. Landscaped areas shall include irrigation systems unless an alternate plan is submitted, and approved by the community development director, that can demonstrate adequate maintenance;

Applicant's Response:

A highly efficient irrigation system using MP Rotators will be installed at all landscaped areas.

6. All plant materials, including trees, shrubbery and ground cover should be selected for their appropriateness to the site, drought tolerance, year-round greenery and coverage and staggered flowering periods. Species found on the Oregon City Native Plant List are strongly encouraged and species found on the Oregon City Nuisance Plant List are prohibited.

Applicant's Response:

All plant materials have been selected for their appropriateness to the site, drought tolerance, year-round greenery and coverage and staggered flowering periods.

7. The landscaping in parking areas shall not obstruct lines of sight for safe traffic operation and shall comply with all requirements of *Chapter 10.32, Traffic Sight Obstructions*.

Applicant's Response:

The landscaping in parking area will not obstruct lines of sight for safe traffic operation.

B. Perimeter Parking Lot Landscaping and Parking Lot Entryway/Right-of-Way Screening. Parking lots shall include a five-foot wide landscaped buffer where the parking lot abuts the right-of-way and/or adjoining properties. In order

to provide connectivity between non-single-family sites, the community development director may approve an interruption in the perimeter parking lot landscaping for a single driveway where the parking lot abuts property designated as multi-family, commercial or industrial. Shared driveways and parking aisles that straddle a lot line do not need to meet perimeter landscaping requirements.

1. The perimeter parking lot are[a] shall include:

a. Trees spaced a maximum of thirty-five feet apart (minimum of one tree on either side of the entryway is required). When the parking lot is adjacent to a public right-of-way, the parking lot trees shall be offset from the street trees;

Applicant's Response:

Trees will be spaced a max. of 35 feet apart.

b. Ground cover, such as wild flowers, spaced a maximum of 16-inches on center covering one hundred percent of the exposed ground within three years. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees; and

Applicant's Response:

Groundcover will be provided in the perimeter parking lot landscaping areas. The groundcover has been spaced at a maximum of 30 inches on center, because it was selected for a maturity of each plant of 4 feet to 6 feet of coverage. This spacing is consistent with industry standard for the types of groundcover that are proposed.

c. An evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average. The hedge/shrubs shall be parallel to and not nearer than two feet from the right-of-way line. The required screening shall be designed to allow for free access to the site and sidewalk by pedestrians. Visual breaks, no more than five feet in width, shall be provided every thirty feet within evergreen hedges abutting public right-of-ways.

Applicant's Response:

Shrubs that reach a height of at least 6 feet at maturity are spaced 4 feet on center in order to provide a perimeter buffer. Because the parking lot is at the end of Myrtle street, the shrubs allow free access and form a visual break at the driveway to the parking lot.

C. Parking Area/Building Buffer. Parking areas shall be separated from the exterior wall of a structure, exclusive of pedestrian entranceways or loading areas, by one of the following:

1. Minimum five-foot wide landscaped planter strip (excluding areas for pedestrian connection) abutting either side of a parking lot sidewalk with:

Applicant's Response:

A minimum of 5 feet of landscape planter has been provided in between the parking lot and building.

a. Trees spaced a maximum of thirty-five feet apart;

Applicant's Response:

Trees will be spaced a maximum of 35 feet apart.

b. Ground cover such as wild flowers, spaced a maximum of sixteen-inches on center covering one hundred percent of the exposed ground within three years. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees; and

Applicant's Response:

Groundcover will be provided in the buffer between the parking lot and the building. The groundcover has been spaced at a maximum of 30 inches on center, because it was selected for a maturity of each plant of 4 feet to 6 feet of coverage. This spacing is consistent with industry standard for the types of groundcover that are proposed.

c. An evergreen hedge of thirty to forty-two inches or shrubs placed no more than four feet apart on average; or

Applicant's Response:

Shrubs in the buffer between the parking lot and the building will be spaced 4 feet on center in order to provide a perimeter buffer.

2. Seven-foot sidewalks with shade trees spaced a maximum of thirty-five feet apart in three-foot by five-foot tree wells.

Applicant's Response:

A 5-foot of landscape planter has been provided in between the parking lot and building instead of a 7-foot sidewalk.

D. Interior Parking Lot Landscaping. Surface parking lots shall have a minimum ten percent of the interior of the gross area of the parking lot devoted to landscaping to improve the water quality, reduce storm water runoff, and provide pavement shade. Interior parking lot landscaping shall not be counted toward the fifteen percent minimum total site landscaping required by Section 17.62.050(1) unless otherwise permitted by the dimensional standards of the underlying zone district. Pedestrian walkways or any impervious surface in the landscaped areas are not to be counted in the percentage. Interior parking lot landscaping shall include:

a. A minimum of one tree per six parking spaces.

Applicant's Response:

The size of the parking lot is 7,096 square feet, therefore 710 square feet of interior landscaping is required. 829 square feet of interior landscaping has been provided. This area has not been counted towards the minimum required site landscaping of 15%.

b. Ground cover, such as wild flowers, spaced a maximum of sixteen-inches on center covering one hundred percent of the exposed ground within three years. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees.

Applicant's Response:

Groundcover will be provided at the interior parking lot landscaping areas. The groundcover has been spaced at a maximum of 30 inches on center, because it was selected for a maturity of each plant of 4 feet to 6 feet of coverage. This spacing is consistent with industry standard for the types of groundcover that are proposed.

c. Shrubs spaced no more than four feet apart on average.

Applicant's Response:

Shrubs at the interior parking lot landscaping areas will be planted at no more than 4 inches on center in the parking lot interior landscaping.

d. No more than eight contiguous parking spaces shall be created without providing an interior landscape strip between them. Landscape strips shall be provided between rows of parking shall be a minimum of six feet in width and a minimum of ten feet in length.

Applicant's Response:

The parking lot has been configured so that no more than 8 contiguous spots for parking will be provided in a row.

e. Pedestrian walkways shall have shade trees spaced a maximum of every thirty-five feet in a minimum three-foot by five-foot tree wells; or

Trees spaced every thirty-five feet, shrubs spaced no more than four feet apart on average, and ground cover covering one hundred percent of the exposed ground. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees.

Applicant's Response:

Pedestrian walkways will have trees spaced at 35 feet on center, shrubs at no more than 4 feet on center and groundcover covering 100% of area.

E. Installation.

1. All landscaping shall be installed according to accepted planting procedures, according to American Nurseryman Standards.

2. The site, soils and proposed irrigation systems shall be appropriate for the healthy and long-term maintenance of the proposed plant species.

3. Certificates of occupancy shall not be issued unless the landscaping requirements have been met or other arrangements have been made and approved by the city, such as the posting of a surety.

Applicant's Response:

All landscaping will be installed according to Nurseryman Standards. Soils will be amended to provide an optimal environment for plant growth. A highly efficient irrigation system will be provided.

17.52.070 - Alternative landscaping plan.

Any applicant may propose an alternative landscaping plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. Alternative plans may include the use of low impact development techniques and minimized landscaping requirements. In such situations, the community development director may approve variations to the landscaping standards of [section 17.52.060](#).

A. General Review Standard. The alternative shall be meet or exceed the intent of this chapter and shall create a safe space for automobiles and pedestrians. The alternative landscaping plan shall be prepared by a licensed landscape architect.

B. Credit for Pervious/Low Impact Development. The community development director may count up to fifty percent of the square footage of any pervious hardscaped landscape material within a parking lot that is designed and approved pursuant to the city's adopted stormwater and low impact development design standards toward minimum landscaping requirements for the site. (This includes porous pavement detention, open celled block pavers, porous asphalt, porous concrete pavement, porous turf, porous gravel, etc).

Applicant's Response:

No alternative landscape plan will be provided.

17.52.080 - Maintenance.

The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of the site including but not limited to the off-street parking and loading spaces, bicycle parking and all landscaping which shall be maintained in good condition so as to present a healthy, neat and orderly appearance and shall be kept free from refuse and debris.

All plant growth in interior landscaped areas shall be controlled by pruning, trimming, or otherwise so that:

- a. It will not interfere with the maintenance or repair of any public utility;
- b. It will not restrict pedestrian or vehicular access; and
- c. It will not constitute a traffic hazard due to reduced visibility.

Applicant's Response:

The owner will be responsible for the maintenance of the site.

17.52.090 - Loading areas.

B. Applicability.

1. [Section 17.52.090](#) applies to uses that are expected to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week. The city engineer and decision maker shall determine through site plan and design review the number, size, and location of required loading areas, if any.

Applicant's Response:

N/A.

C. Standards.

1. The off-street loading space shall be large enough to accommodate the largest vehicle that is expected to serve the use without obstructing vehicles or pedestrian traffic on adjacent streets and driveways. Applicants are advised to provide complete and accurate information about the potential need for loading spaces because the city engineer or decision maker may restrict the use of other public right-of-way to ensure efficient loading areas and reduce interference with other uses.

Applicant's Response:

N/A.

2. Where parking areas are prohibited between a building and the street, loading areas are also prohibited.

Applicant's Response:

N/A.

3. The city engineer and decision maker, through site plan and design review, may approve a loading area adjacent to or within a street right-of-way when all of the following loading and unloading operations conditions are met:

- a. Short in duration (i.e., less than one hour);
- b. Infrequent (less than three operations daily between 5:00 a.m. and 12:00 a.m. or all operations between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);
- c. Does not obstruct traffic during peak traffic hours;
- d. Does not interfere with emergency response services; and
- e. Is acceptable to the applicable roadway authority.

Applicant's Response:

N/A.

CHAPTER 12.04 - STREETS SIDEWALKS AND PUBLIC PLACES

12.04.003 - Applicability.

A. Compliance with this chapter is required for all land divisions, site plan and design review, master plan, detailed development plan and conditional use applications and all public improvements.

B. Compliance with this chapter is also required for new construction or additions which exceed fifty percent of the existing square footage, of all single and two-family dwellings. All applicable single and two-family dwellings shall provide any necessary dedications, easements or agreements as identified in the transportation system plan and this chapter. In addition, the frontage of the site shall comply with the following prioritized standards identified in this chapter:

1. Improve street pavement, construct curbs, gutters, sidewalks and planter strips; and
2. Plant street trees.

The cost of compliance with the standards identified in 12.04.003.B.1 and 12.04.003.B.2 is limited to ten percent of the total construction costs. The value of the alterations and improvements as determined by the community development director is based on the entire project and not individual building permits. It is the responsibility of the applicant to submit to the community development director the value of the required improvements. Additional costs may be required to comply with other applicable requirements associated with the proposal such as access or landscaping requirements.

Applicant's Response:

There will be dedications and frontage improvements on both Caufield Street and Pleasant Avenue as described below.

12.04.005 - Jurisdiction and management of the public rights-of-way.

A. The city has jurisdiction and exercises regulatory management over all public rights-of-way within the city under authority of the City Charter and state law by issuing separate public works right-of-way permits or permits as part of issued public infrastructure construction plans. No work in the public right-of-way shall be done without the proper permit. Some public rights-of-way within the city are regulated by the State of Oregon Department of Transportation (ODOT) or Clackamas County and as such, any work in these streets shall conform to their respective permitting requirements.

B. Public rights-of-way include, but are not limited to, streets, roads, highways, bridges, alleys, sidewalks, trails, paths, public easements and all other public ways or areas, including the subsurface under and air space over these areas.

C. The city has jurisdiction and exercises regulatory management over each public right-of-way whether the city has a fee, easement, or other legal interest in the right-of-way. The city has jurisdiction and regulatory management of each right-of-way whether the legal interest in the right-of-way was obtained by grant, dedication, prescription, reservation, condemnation, annexation, foreclosure or other means.

D. No person may occupy or encroach on a public right-of-way without the permission of the city. The city grants permission to use rights-of-way by franchises, licenses and permits.

E. The exercise of jurisdiction and regulatory management of a public right-of-way by the city is not official acceptance of the right-of-way, and does not obligate the city to maintain or repair any part of the right-of-way.

Applicant's Response:

Okay

12.04.007 - Modifications.

The review body may consider modification of this standard resulting from constitutional limitations restricting the city's ability to require the dedication of property or for any other reason, based upon the criteria listed below and other criteria identified in the standard to be modified. All modifications shall be processed through a Type II Land Use application and may require additional evidence from a transportation engineer or others to verify compliance. Compliance with the following criteria is required:

A. The modification meets the intent of the standard;

Applicant's Response:

We would like to request a modification to allow Caufield Street to be classified as a local residential street. Please see our response to section 12.04.180.

B. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Applicant's Response:

Please see our response to section 12.04.180.

C. The modification is consistent with an adopted plan; and

Applicant's Response:

Please see our response to section 12.04.180.

D. The modification is complementary with a surrounding street design; or, in the alternative;

Applicant's Response:

Please see our response to section 12.04.180.

E. If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The city shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

Applicant's Response:

The modification to section 12.04.180 is not being requested for constitutional reasons.

12.04.010 - Construction specifications—Improved streets.

All sidewalks hereafter constructed in the city on improved streets shall be constructed to city standards and widths required in the Oregon City Transportation System Plan. The curb shall be constructed at the same time as the construction of the sidewalk and shall be located as provided in the ordinance authorizing the improvement of said street next proceeding unless otherwise ordered by the city commission. Both sidewalks and curbs are to be constructed according to plans and specifications provided by the city engineer.

Applicant's Response:

The sidewalks and curbs along Pleasant Avenue and Caufield Street will be constructed to city standards.

12.04.020 - Construction specifications—Unimproved streets.

Sidewalks constructed on unimproved streets shall be constructed of concrete according to lines and grades established by the city engineer and approved by the city commission. On unimproved streets curbs do not have to be constructed at the same time as the sidewalk.

Applicant's Response:

Sidewalks and curbs will be constructed of concrete on both Caulfield Street and Pleasant Avenue.

12.04.025 - Street design—Driveway curb cuts.

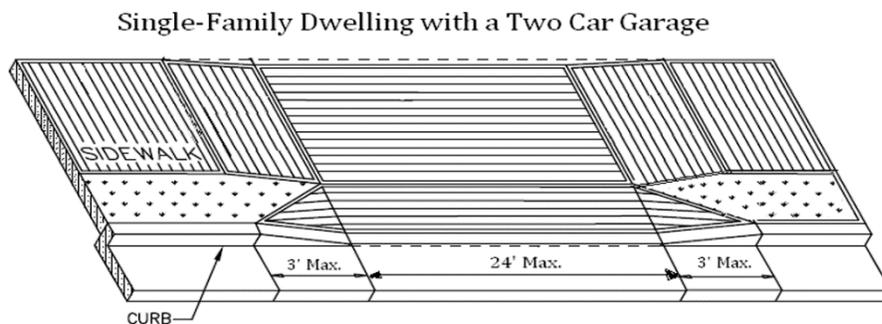
A. One driveway shall be allowed per frontage. In no case shall more than two driveways be allowed on any single or two-family residential property with multiple frontages.

B. With the exception of the limitations identified in 12.04.025.C, all driveway curb cuts shall be limited to the following dimensions.

| Property Use | Minimum Driveway Width at sidewalk or property line | Maximum Driveway Width at sidewalk or property line |
|--|---|---|
| Single or two-family dwelling with one car garage/parking space | 10 feet | 12 feet |
| Single or two-family dwelling with two car garage/parking space | 12 feet | 24 feet |
| Single or two-family dwelling with three or more car garages/parking space | 18 feet | 30 feet |
| Nonresidential or multi-family residential driveway access | 15 feet | 40 feet |

The driveway width abutting the street pavement may be extended three feet on either side of the driveway to accommodate turn movements. Driveways may be widened onsite in locations other than where the driveway meets sidewalk or property line (for example between the property line and the entrance to a garage).

Figure 12.04.025: Example Driveway Curb Cut



Applicant's Response:

The driveway to this site will be on Myrtle Street and will have a width of 25 feet.

C. The decision maker shall be authorized through a Type II process, unless another procedure applicable to the proposal applies, to minimize the number and size of curb cuts (including driveways) as far as practicable for any of the following purposes:

1. To provide adequate space for on-street parking;
2. To facilitate street tree planting requirements;
3. To assure pedestrian and vehicular safety by limiting vehicular access points; and
4. To assure that adequate sight distance requirements are met.

a. Where the decision maker determines any of these situations exist or may occur due to the approval of a proposed development for non-residential uses or attached or multi-family housing, a shared driveway shall be required and limited to twenty-four feet in width adjacent to the sidewalk or property line and may extend to a maximum of thirty feet abutting the street pavement to facilitate turning movements.

b. Where the decision maker determines any of these situations exist or may occur due to approval of a proposed development for detached housing within the "R-5" Single-Family Dwelling District or "R-3.5" Dwelling District, driveway curb cuts shall be limited to twelve feet in width adjacent to the sidewalk or property line and may extend to a maximum of eighteen feet abutting the street pavement to facilitate turning movements.

Applicant's Response:

N/A.

D. For all driveways, the following standards apply.

1. Each new or redeveloped curb cut shall have an approved concrete approach or asphalted street connection where there is no concrete curb and a minimum hard surface for at least ten feet and preferably twenty feet back into the lot as measured from the current edge of street pavement to provide for controlling gravel tracking onto the public street. The hard surface may be concrete, asphalt, or other surface approved by the city engineer.

2. Driving vehicles, trailers, boats, or other wheeled objects across a sidewalk or roadside planter strip at a location other than an approved permanent or city-approved temporary driveway approach is prohibited. Damages caused by such action shall be corrected by the adjoining property owner.

3. Placing soil, gravel, wood, or other material in the gutter or space next to the curb of a public street with the intention of using it as a permanent or temporary driveway is prohibited. Damages caused by such action shall be corrected by the adjoining property owner.

4. Any driveway built within public street or alley right-of-way shall be built and permitted per city requirements as approved by the city engineer.

Applicant's Response:

The driveway on Myrtle Street will have a concrete approach that connects it to the street and will be constructed to meet the above standards.

E. Exceptions. The public works director reserves the right to waive this standard, if it is determined through a Type II decision including written findings that it is in the best interest of the public to do so.

Applicant's Response:

N/A.

12.04.080 - Excavations—Permit required.

It shall be unlawful for any person to dig up, break, excavate, disturb, dig under or undermine any public street or alley, or any part thereof or any macadam, gravel, or other street pavement or improvement without first applying for and obtaining from the engineer a written permit so to do.

Applicant's Response:

No excavations will be performed under any public street, except as required to improve and make connections to the utilities in the streets.

12.04.090 - Excavations—Permit restrictions.

The permit shall designate the portion of the street to be so taken up or disturbed, together with the purpose for making the excavation, the number of days in which the work shall be done, and the trench or excavation to be refilled and such other restrictions as may be deemed of public necessity or benefit.

Applicant's Response:

All utility connections will be shown on the civil drawings at the time of submittal for the public works permit.

12.04.100 - Excavations—Restoration of pavement.

Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the city for any purpose whatsoever under the permit granted by the engineer, it shall be the duty of the person making the excavation to restore the pavement in accordance with the City of Oregon City Public Works Pavement Cut Standard in effect at the time a right-of-way permit application is filed. The city commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.

Applicant's Response:

Street pavement will be restored at all excavation locations.

12.04.120 - Obstructions—Permit required.

A. Permanent Obstructions. It is unlawful for any person to place, put or maintain any obstruction, other than a temporary obstruction, as defined in subsection B. of this section, in any public street or alley in the city, without obtaining approval for a right-of-way permit from the commission by passage of a resolution.

1. The city engineer shall provide applicants with an application form outlining the minimum submittal requirements.

2. The applicant shall submit at least the following information in the permitting process in order to allow the commission to adequately consider whether to allow the placement of an obstruction and whether any conditions may be attached:

a. Site plan showing right-of-way, utilities, driveways as directed by staff;

b. Sight distance per [Chapter 10.32](#), Traffic Sight Obstructions;

c. Traffic control plan including parking per *Manual on Uniform Traffic Control Devices (MUTCD)*;

- d. Alternative routes if necessary;
- e. Minimizing obstruction area; and
- f. Hold harmless/maintenance agreement.

3. If the commission adopts a resolution allowing the placement of a permanent obstruction in the right-of-way, the city engineer shall issue a right-of-way permit with any conditions deemed necessary by the commission.

B. Temporary Obstructions.

1. A "temporary obstruction" is defined as an object placed in a public street, road or alley for a period of not more than sixty consecutive days. A "temporary obstruction" includes, but is not limited to, moving containers and debris dumpsters.

2. The city engineer, or designee, is authorized to grant a permit for a temporary obstruction.

3. The city engineer shall provide applicants with an application form outlining the minimum submittal requirements.

4. The applicant shall submit, and the city engineer, or designee, shall consider, at least the following items in the permitting process. Additional information may be required in the discretion of the city engineer:

- a. Site plan showing right-of-way, utilities, driveways as directed by staff;
- b. Sight distance per [Chapter 10.32, Traffic Sight Obstructions](#);
- c. Traffic control plan including parking per *Manual on Uniform Traffic Control Devices (MUTCD)*;
- d. Alternative routes if necessary;
- e. Minimizing obstruction area; and
- f. Hold harmless/maintenance agreement.

5. In determining whether to issue a right-of-way permit to allow a temporary obstruction, the city engineer may issue such a permit only after finding that the following criteria have been satisfied:

- a. The obstruction will not unreasonably impair the safety of people using the right-of-way and nearby residents;
- b. The obstruction will not unreasonably hinder the efficiency of traffic affected by the obstruction;
- c. No alternative locations are available that would not require use of the public right-of-way; and
- d. Any other factor that the city engineer deems relevant.

6. The permittee shall post a weatherproof copy of the temporary obstruction permit in plain view from the right-of-way.

C. Fees. The fee for obtaining a right-of-way permit for either a permanent obstruction or a temporary obstruction shall be set by resolution of the commission.

Applicant's Response:

N/A.

12.04.160 - Street vacations—Restrictions.

The commission, upon hearing such petition, may grant the same in whole or in part, or may deny the same in whole or in part, or may grant the same with such reservations as would appear to be for the public interest, including reservations pertaining to the maintenance and use of underground public utilities in the portion vacated.

Applicant's Response:

N/A.

12.04.170 - Street design—Purpose and general provisions.

All development shall be in conformance with the policies and design standards established by this chapter and with applicable standards in the city's public facility master plan and city design standards and specifications. In reviewing applications for development, the city engineer shall take into consideration any approved development and the remaining development potential of adjacent properties. All street, water, sanitary sewer, storm drainage and utility plans associated with any development must be reviewed and approved by the city engineer prior to construction. All streets, driveways or storm drainage connections to another jurisdiction's facility or right-of-way must be reviewed by the appropriate jurisdiction as a condition of the preliminary plat and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction.

Applicant's Response:

Street design will meet the above standards.

12.04.175 - Street design—Generally.

The location, width and grade of street shall be considered in relation to: existing and planned streets, topographical conditions, public convenience and safety for all modes of travel, existing and identified future transit routes and

pedestrian/bicycle accessways, overlay districts, and the proposed use of land to be served by the streets. The street system shall assure an adequate traffic circulation system with intersection angles, grades, tangents and curves appropriate for the traffic to be carried considering the terrain. To the extent possible, proposed streets shall connect to all existing or approved stub streets that abut the development site. The arrangement of streets shall either:

A. Provide for the continuation or appropriate projection of existing principal streets in the surrounding area and on adjacent parcels or conform to a plan for the area approved or adopted by the city to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical;

B. Where necessary to give access to or permit a satisfactory future development of adjoining land, streets shall be extended to the boundary of the development and the resulting dead-end street (stub) may be approved with a temporary turnaround as approved by the city engineer. 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. Access control in accordance with [Chapter] 12.04 shall be required to preserve the objectives of street extensions.

Applicant's Response:

The grading along Pleasant Avenue and Caufield Street will not be modified except as required to install the frontage improvements. Myrtle Street is currently a deadend street. This street is not proposed to be extended through the site, since doing so would eliminate the ability to develop the site.

12.04.180 - Street design.

All development regulated by this chapter shall provide street improvements in compliance with the standards in Figure 12.04.180 depending on the street classification set forth in the Transportation System Plan and the Comprehensive Plan designation of the adjacent property, unless an alternative plan has been adopted. The standards provided below are maximum design standards and may be reduced with an alternative street design which may be approved based on the modification criteria in [Section] 12.04.007. The steps for reducing the maximum design below are found in the Transportation System Plan.

Table 12.04.180 Street Design

To read the table below, select the road classification as identified in the Transportation System Plan and the Comprehensive Plan designation of the adjacent properties to find the maximum design standards for the road cross section. If the Comprehensive Plan designation on either side of the street differs, the wider right-of-way standard shall apply.

| Road Classification | Comprehensive Plan Designation | Right-of-Way Width | Pavement Width | Public Access | Sidewalk | Landscape Strip | Bike Lane | Street Parking | Travel Lanes | Median |
|---------------------|--|--------------------|----------------|---------------|--|-----------------|-----------|----------------|------------------|--------|
| Major Arterial | Mixed Use, Commercial or Public/Quasi Public | 116 ft. | 94 ft. | 0.5 ft. | 10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells | | 6 ft. | 8 ft. | (5) 12 ft. Lanes | 6 ft. |
| | Industrial | 120 ft. | 88 ft. | 0.5 ft. | 5 ft. | 10.5 ft. | 6 ft. | N/A | (5) 14 ft. Lanes | 6 ft. |
| | Residential | 126 ft. | 94 ft. | 0.5 ft. | 5 ft. | 10.5 ft. | 6 ft. | 8 ft. | (5) 12 ft. Lanes | 6 ft. |

| <i>Road Classification</i> | <i>Comprehensive Plan Designation</i> | <i>Right-of-Way Width</i> | <i>Pavement Width</i> | <i>Public Access</i> | <i>Sidewalk</i> | <i>Landscape Strip</i> | <i>Bike Lane</i> | <i>Street Parking</i> | <i>Travel Lanes</i> | <i>Median</i> |
|----------------------------|---|---------------------------|-----------------------|----------------------|--|------------------------|------------------|-----------------------|---------------------|---------------|
| <i>Minor Arterial</i> | <i>Mixed Use, Commercial or Public/Quasi Public</i> | 116 ft. | 94 ft. | 0.5 ft. | 10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells | | 6 ft. | 8 ft. | (5) 12 ft. Lanes | 6 ft. |
| | <i>Industrial</i> | 118 ft. | 86 ft. | 0.5 ft. | 5 ft. | 10.5 ft. | 6 ft. | 7 ft. | (5) 12 ft. Lanes | N/A |
| | <i>Residential</i> | 100 ft. | 68 ft. | 0.5 ft. | 5 ft. | 10.5 ft. | 6 ft. | 7 ft. | (3) 12 ft. Lanes | 6 ft. |

| <i>Road Classification</i> | <i>Comprehensive Plan Designation</i> | <i>Right-of-Way Width</i> | <i>Pavement Width</i> | <i>Public Access</i> | <i>Sidewalk</i> | <i>Landscape Strip</i> | <i>Bike Lane</i> | <i>Street Parking</i> | <i>Travel Lanes</i> | <i>Median</i> |
|----------------------------|---|---------------------------|-----------------------|----------------------|--|------------------------|------------------|-----------------------|---------------------|---------------|
| <i>Collector</i> | <i>Mixed Use, Commercial or Public/Quasi Public</i> | 86 ft. | 64 ft. | 0.5 ft. | 10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells | | 6 ft. | 8 ft. | (3) 12 ft. Lanes | N/A |
| | <i>Industrial</i> | 88 ft. | 62 ft. | 0.5 ft. | 5 ft. | 7.5 ft. | 6 ft. | 7 ft. | (3) 12 ft. Lanes | N/A |
| | <i>Residential</i> | 85 ft. | 59 ft. | 0.5 ft. | 5 ft. | 7.5 ft. | 6 ft. | 7 ft. | (3) 11 ft. Lanes | N/A |

| <i>Road Classification</i> | <i>Comprehensive Plan Designation</i> | <i>Right-of-Way Width</i> | <i>Pavement Width</i> | <i>Public Access</i> | <i>Sidewalk</i> | <i>Landscape Strip</i> | <i>Bike Lane</i> | <i>Street Parking</i> | <i>Travel Lanes</i> | <i>Median</i> |
|----------------------------|---------------------------------------|---------------------------|-----------------------|----------------------|-----------------|------------------------|------------------|-----------------------|---------------------|---------------|
|----------------------------|---------------------------------------|---------------------------|-----------------------|----------------------|-----------------|------------------------|------------------|-----------------------|---------------------|---------------|

| | | | | | | | | | | |
|-------|--|--------|--------|---------|--|---------|-------------------------|-------|------------------|-----|
| Local | Mixed Use, Commercial or Public/Quasi Public | 62 ft. | 40 ft. | 0.5 ft. | 10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells | | N/A | 8 ft. | (2) 12 ft. Lanes | N/A |
| | Industrial | 60 ft. | 38 ft. | 0.5 ft. | 5 ft. | 5.5 ft. | (2) 19 ft. Shared Space | | N/A | |
| | Residential | 54 ft. | 32 ft. | 0.5 ft. | 5 ft. | 5.5 ft. | (2) 16 ft. Shared Space | | N/A | |

1. Pavement width includes, bike lane, street parking, travel lanes and median.
2. Public access, sidewalks, landscape strips, bike lanes and on-street parking are required on both sides of the street in all designations. The right-of-way width and pavement widths identified above include the total street section.
3. A 0.5 foot curb is included in landscape strip or sidewalk width.
4. Travel lanes may be through lanes or turn lanes.
5. The 0.5 foot public access provides access to adjacent public improvements.
6. Alleys shall have a minimum right-of-way width of twenty feet and a minimum pavement width of sixteen feet. If alleys are provided, garage access shall be provided from the alley.

Applicant's Response:

Caufield Street and Pleasant Avenue are both classified as Local streets. Pleasant Avenue will be improved to a local mixed use commercial street standard. Caufield Street would be classified as a local mixed use commercial street on the north half of the street adjacent to our site and as a local residential street on the south half. We would like to request that it be classified as a local residential street on both sides. Caufield is roughly 485 feet long and is surrounded by residential zoning except at our site. As the adjacent sites get redeveloped, the street will be improved to a local residential street standard. Classifying it as a local residential street in front of our site will keep the street improvements consistent along the length of the street. A consistent street width will provide safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight since they will not have to navigate a narrowing street width.

12.04.185 - Street design—Access control.

- A. A street which is dedicated to end at the boundary of the development or in the case of half-streets dedicated along a boundary shall have an access control granted to the city as a city controlled plat restriction for the purposes of controlling ingress and egress to the property adjacent to the end of the dedicated street. The access control restriction shall exist until such time as a public street is created, by dedication and accepted, extending the street to the adjacent property.
- B. The city may grant a permit for the adjoining owner to access through the access control.
- C. The plat shall contain the following access control language or similar on the face of the map at the end of each street for which access control is required: "Access Control (See plat restrictions)."
- D. Said plats shall also contain the following plat restriction note(s): "Access to (name of street or tract) from adjoining tracts (name of deed document number[s]) shall be controlled by the City of Oregon City by the recording of this plat, as shown. These access controls shall be automatically terminated upon the acceptance of a public road dedication or the recording of a plat extending the street to adjacent property that would access through those Access Controls."

Applicant's Response:

N/A.

12.04.190 - Street design—Alignment.

The centerline of streets shall be:

- A. Aligned with existing streets by continuation of the centerlines; or
- B. Offset from the centerline by no more than five (5) feet, provided appropriate mitigation, in the judgment of the city engineer, is provided to ensure that the offset intersection will not pose a safety hazard.

Applicant's Response:

The centerline of streets will be aligned with the existing centerline of streets.

12.04.194 - Traffic sight obstructions.

All new streets shall comply with the Traffic Sight Obstructions in [Chapter 10.32](#).

Applicant's Response:

No new streets are being proposed.

12.04.195 - Spacing standards.

A. All new streets shall be designed as local streets unless otherwise designated as arterials and collectors in Figure 8 in the transportation system plan. The maximum block spacing between streets is five hundred thirty feet and the minimum block spacing between streets is one hundred fifty feet as measured between the right-of-way centerlines. If the maximum block size is exceeded, pedestrian accessways must be provided every three hundred thirty feet. The spacing standards within this section do not apply to alleys.

B. All new development and redevelopment shall meet the minimum driveway spacing standards identified in Table 12.04.195.B.

| Street Functional Classification | Minimum Driveway Spacing Standards | Distance |
|----------------------------------|---|----------|
| Major Arterial Streets | Minimum distance from a street corner to a driveway for all uses and Minimum distance between driveways for uses other than single and two-family dwellings | 175 ft. |
| Minor Arterial Streets | Minimum distance from a street corner to a driveway for all uses and Minimum distance between driveways for uses other than single and two-family dwellings | 175 ft. |
| Collector Streets | Minimum distance from a street corner to a driveway for all uses and Minimum distance between driveways for uses other than single and two-family dwellings | 100 ft. |
| Local Streets | Minimum distance from a street corner to a driveway for all uses and Minimum distance between driveways for uses other than single and two-family dwellings | 25 ft. |

The distance from a street corner to a driveway is measured along the right-of-way from the edge of the intersection right-of-way to the nearest portion of the driveway and the distance between driveways is measured at the nearest portions of the driveway at the right-of-way.

Applicant's Response:

No new street are being proposed.

12.04.199 - Pedestrian and bicycle accessways.

Pedestrian/bicycle accessways are intended to provide direct, safe and convenient connections between residential areas, retail and office areas, institutional facilities, industrial parks, transit streets, neighborhood activity centers, rights-of-way, and pedestrian/bicycle accessways which minimize out-of-direction travel, and transit-orientated developments where public street connections for automobiles, bicycles and pedestrians are unavailable. Pedestrian/bicycle accessways are appropriate in areas where public street options are unavailable, impractical or inappropriate. Pedestrian and bicycle accessways are required through private property or as right-of-way connecting development to the right-of-way at intervals not exceeding three hundred thirty feet of frontage; or where the lack of street continuity creates inconvenient or out of direction travel patterns for local pedestrian or bicycle trips.

A. Entry points shall align with pedestrian crossing points along adjacent streets and with adjacent street intersections.

Applicant's Response:

No pedestrian and bicycle accessways are being proposed since there will be sidewalks constructed on both Pleasant Avenue and Caufield Street.

B. Accessways shall be free of horizontal obstructions and have a nine-foot, six-inch high vertical clearance to accommodate bicyclists. To safely accommodate both pedestrians and bicycles, accessway right-of-way widths shall be as follows:

1. Accessways shall have a fifteen-foot-wide right-of-way with a seven-foot wide paved surface between a five-foot planter strip and a three-foot planter strip.

2. If an accessway also provides secondary fire access, the right-of-way width shall be at least twenty-three feet wide with a fifteen-foot paved surface a five-foot planter strip and a three-foot planter strip.

Applicant's Response:

N/A.

C. Accessways shall be direct with at least one end point of the accessway always visible from any point along the accessway. On-street parking shall be prohibited within fifteen feet of the intersection of the accessway with public streets to preserve safe sight distance and promote safety.

Applicant's Response:

N/A.

D. To enhance pedestrian and bicycle safety, accessways shall be lighted with pedestrian-scale lighting. Accessway lighting shall be to a minimum level of one-half-foot-candles, a one and one-half foot-candle average, and a maximum to minimum ratio of seven-to-one and shall be oriented not to shine upon adjacent properties. Street lighting shall be provided at both entrances.

Applicant's Response:

N/A.

E. Accessways shall comply with Americans with Disabilities Act (ADA).

Applicant's Response:

N/A.

F. The planter strips on either side of the accessway shall be landscaped along adjacent property by installation of the following:

1. Within the three-foot planter strip, an evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average;

2. Ground cover covering one hundred percent of the exposed ground. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees;

3. Within the five-foot planter strip, two-inch minimum caliper trees with a maximum of thirty-five feet of separation between the trees to increase the tree canopy over the accessway;

4. In satisfying the requirements of this section, evergreen plant materials that grow over forty-two inches in height shall be avoided. All plant materials shall be selected from the Oregon City Native Plant List.

Applicant's Response:

N/A.

G. Accessways shall be designed to prohibit unauthorized motorized traffic. Curbs and removable, lockable bollards are suggested mechanisms to achieve this.

Applicant's Response:

N/A.

H. Accessway surfaces shall be paved with all-weather materials as approved by the city. Pervious materials are encouraged. Accessway surfaces shall be designed to drain stormwater runoff to the side or sides of the accessway. Minimum cross slope shall be two percent.

Applicant's Response:

N/A.

I. In parks, greenways or other natural resource areas, accessways may be approved with a five-foot wide gravel path with wooden, brick or concrete edgings.

Applicant's Response:

N/A.

J. The community development director may approve an alternative accessway design due to existing site constraints through the modification process set forth in [Section 12.04.007](#).

Applicant's Response:

N/A.

K. Ownership, liability and maintenance of accessways. To ensure that all pedestrian/bicycle accessways will be adequately maintained over time, the hearings body shall require one of the following:

- 1. Dedicate the accessways to the public as public right-of-way prior to the final approval of the development; or*
- 2. The developer incorporates the accessway into a recorded easement or tract that specifically requires the property owner and future property owners to provide for the ownership, liability and maintenance of the accessway.*

Applicant's Response:

N/A.

12.04.200 - Reserved.

Editor's note— Ord. No. 13-1003, [§ 1](#), Exhibit 1, adopted July 17, 2013, repealed [§ 12.04.200](#) in its entirety. Former [§ 12.04.200](#) pertained to "Street Design—Constrained local streets and/or rights-of-way." See Prior Code Cross-Reference Table and Code Comparative Table and Disposition List for derivation.

Applicant's Response:

N/A.

12.04.205 - Mobility standards.

Development shall demonstrate compliance with intersection mobility standards. When evaluating the performance of the transportation system, the City of Oregon City requires all intersections, except for the facilities identified in subsection D below, to be maintained at or below the following mobility standards during the two-hour peak operating conditions. The first hour has the highest weekday traffic volumes and the second hour is the next highest hour before or after the first hour. Except as provided otherwise below, this may require the installation of mobility improvements as set forth in the transportation system plan or as otherwise identified by the city transportation engineer.

A. For intersections within the regional center, the following mobility standards apply:

- 1. During the first hour, a maximum v/c ratio of 1.10 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.*
- 2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.*
- 3. Intersections located on the Regional Center boundary shall be considered within the Regional Center.*

B. For intersections outside of the Regional Center but designated on the Arterial and Throughway Network, as defined in the Regional Transportation Plan, the following mobility standards apply:

- 1. During the first hour, a maximum v/c ratio of 0.99 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.*
- 2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.*

C. For intersections outside the boundaries of the Regional Center and not designated on the Arterial and Throughway Network, as defined in the Regional Transportation Plan, the following mobility standards apply:

1. For signalized intersections:

a. During the first hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

b. During the second hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

2. For unsignalized intersections outside of the boundaries of the Regional Center:

a. For unsignalized intersections, during the peak hour, all movements serving more than twenty vehicles shall be maintained at LOS "E" or better. LOS "F" will be tolerated at movements serving no more than twenty vehicles during the peak hour.

D. Until the city adopts new performance measures that identify alternative mobility targets, the city shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:

I-205/OR 99E Interchange

I-205/OR 213 Interchange

OR 213/Beavercreek Road

State intersections located within or on the Regional Center Boundaries

1. In the case of conceptual development approval for a master plan that impacts the above references intersections:

a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the Code in place at the time the detailed development plan is submitted; and

b. Only those trips approved by a detailed development plan review are vested.

2. Development which does not comply with the mobility standards for the intersections identified in [Section] 12.04.205.D shall provide for the improvements identified in the Transportation System Plan (TSP) in an effort to improve intersection mobility as necessary to offset the impact caused by development. Where required by other provisions of the Code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the Code.

Applicant's Response:

N/A.

12.04.210 - Street design—Intersection angles.

Except where topography requires a lesser angle, streets shall be laid out to intersect at angles as near as possible to right angles. In no case shall the acute angles be less than eighty degrees unless there is a special intersection design. An arterial or collector street intersecting with another street shall have at least one hundred feet of tangent adjacent to the intersection unless topography requires a lesser distance. Other streets, except alleys, shall have at least fifty feet of tangent adjacent to the intersection unless topography requires a lesser distance. All street intersections shall be provided with a minimum curb return radius of twenty-five feet for local streets. Larger radii shall be required for higher street classifications as determined by the city engineer. Additional right-of-way shall be required to accommodate curb returns and sidewalks at intersections. Ordinarily, intersections should not have more than two streets at any one point.

Applicant's Response:

N/A.

12.04.215 - Street design—Off-site street improvements.

During consideration of the preliminary plan for a development, the decision maker shall determine whether existing streets impacted by, adjacent to, or abutting the development meet the city's applicable planned minimum design or dimensional requirements. Where such streets fail to meet these requirements, the decision-maker shall require the applicant to make proportional improvements sufficient to achieve conformance with minimum applicable design standards required to serve the proposed development.

Applicant's Response:

There will be frontage improvements constructed on both Pleasant Avenue and Caufield Street.

12.04.220 - Street design—Half street.

Half streets, while generally not acceptable, may be approved where essential to the development, when in conformance with all other applicable requirements, and where it will not create a safety hazard. When approving

half streets, the decision maker must first determine that it will be practical to require the dedication of the other half of the street when the adjoining property is divided or developed. Where the decision maker approves a half street, the applicant must construct an additional ten feet of pavement width so as to make the half street safe and usable until such time as the other half is constructed. Whenever a half street is adjacent to property capable of being divided or developed, the other half of the street shall be provided and improved when that adjacent property divides or develops. Access control may be required to preserve the objectives of half streets.

When the remainder of an existing half-street improvement is made it shall include the following items: dedication of required right-of-way, construction of the remaining portion of the street including pavement, curb and gutter, landscape strip, sidewalk, street trees, lighting and other improvements as required for that particular street. It shall also include at a minimum the pavement replacement to the centerline of the street. Any damage to the existing street shall be repaired in accordance with the city's "Moratorium Pavement Cut Standard" or as approved by the city engineer.

Applicant's Response:

N/A.

12.04.225 - Street design—Cul-de-sacs and dead-end streets.

The city discourages the use of cul-de-sacs and permanent dead-end streets except where construction of a through street is found by the decision maker to be impracticable due to topography or some significant physical constraint such as geologic hazards, wetland, natural or historic resource areas, dedicated open space, existing development patterns, arterial access restrictions or similar situation as determined by the community development director. When permitted, access from new cul-de-sacs and permanent dead-end streets shall be limited to a maximum of twenty-five dwelling units and a maximum street length of two hundred feet, as measured from the right-of-way line of the nearest intersecting street to the back of the cul-de-sac curb face. In addition, cul-de-sacs and dead end roads shall include pedestrian/bicycle accessways as required in this chapter. This section is not intended to preclude the use of curvilinear eyebrow widening of a street where needed.

Where approved, cul-de-sacs shall have sufficient radius to provide adequate turn-around for emergency vehicles in accordance with fire district and city adopted street standards. Permanent dead-end streets other than cul-de-sacs shall provide public street right-of-way/easements sufficient to provide turn-around space with appropriate no-parking signs or markings for waste disposal, sweepers, and other long vehicles in the form of a hammerhead or other design to be approved by the decision maker. Driveways shall be encouraged off the turnaround to provide for additional on-street parking space.

Applicant's Response:

Myrtle Street is an existing dead-end street. However, it is not planned for future extension as this would divide the site making it impractical to develop.

12.04.230 - Street design—Street names.

Except for extensions of existing streets, no street name shall be used which will duplicate or be confused with the name of an existing street. Street names shall conform to the established standards in the city and shall be subject to the approval of the city.

Applicant's Response:

No new street names are being proposed.

12.04.235 - Street design—Grades and curves.

Grades and center line radii shall conform to the standards in the city's street design standards and specifications.

Applicant's Response:

The grading along Pleasant Avenue and Caufield Street will not be modified except as required to install the frontage improvements. No center line radii are proposed to be modified as part of the improvements.

12.04.240 - Street design—Development abutting arterial or collector street.

Where development abuts or contains an existing or proposed arterial or collector street, the decision maker may require: access control; screen planting or wall contained in an easement or otherwise protected by a restrictive covenant in a form acceptable to the decision maker along the rear or side property line; or such other treatment it deems necessary to adequately protect residential properties or afford separation of through and local traffic.

Reverse frontage lots with suitable depth may also be considered an option for residential property that has arterial frontage. Where access for development abuts and connects for vehicular access to another jurisdiction's facility then authorization by that jurisdiction may be required.

Applicant's Response:

The development does not abut an arterial or collector street.

12.04.245 - Street design—Pedestrian and bicycle safety.

Where deemed necessary to ensure public safety, reduce traffic hazards and promote the welfare of pedestrians, bicyclists and residents of the subject area, the decision maker may require that local streets be so designed as to discourage their use by nonlocal automobile traffic.

All crosswalks shall include a large vegetative or sidewalk area which extends into the street pavement as far as practicable to provide safer pedestrian crossing opportunities. These curb extensions can increase the visibility of pedestrians and provide a shorter crosswalk distance as well as encourage motorists to drive slower. The decision maker may approve an alternative design that achieves the same standard for constrained sites or where deemed unnecessary by the city engineer.

Applicant's Response:

Frontage improvements on both Caufield Street and Pleasant Avenue will improve pedestrian and bicycle safety.

12.04.255 - Street design—Alleys.

Public alleys shall be provided in the following districts R-5, R-3.5, R-2, MUC-1, MUC-2 and NC zones unless other permanent provisions for private access to off-street parking and loading facilities are approved by the decision maker. The corners of alley intersections shall have a radius of not less than ten feet.

Applicant's Response:

There are no proposed or existing alleys at this site.

12.04.260 - Street design—Transit.

Streets shall be designed and laid out in a manner that promotes pedestrian and bicycle circulation. The applicant shall coordinate with transit agencies where the application impacts transit streets as identified in [Section] 17.04.1310. Pedestrian/bicycle access ways shall be provided as necessary in Chapter 12.04 to minimize the travel distance to transit streets and stops and neighborhood activity centers. The decision maker may require provisions, including easements, for transit facilities along transit streets where a need for bus stops, bus pullouts or other transit facilities within or adjacent to the development has been identified.

Applicant's Response:

N/A.

12.04.265 - Street design—Planter strips.

All development shall include vegetative planter strips that are five feet in width or larger and located adjacent to the curb. This requirement may be waived or modified if the decision maker finds it is not practicable. The decision maker may permit constrained sites to place street trees on the abutting private property within ten feet of the public right-of-way if a covenant is recorded on the title of the property identifying the tree as a city street tree which is maintained by the property owner. Development proposed along a collector, minor arterial, or major arterial street may use tree wells with root barriers located near the curb within a wider sidewalk in lieu of a planter strip, in which case each tree shall have a protected area to ensure proper root growth and reduce potential damage to sidewalks, curbs and gutters.

To promote and maintain the community tree canopy adjacent to public streets, trees shall be selected and planted in planter strips in accordance with Chapter 12.08, Street Trees. Individual abutting lot owners shall be legally responsible for maintaining healthy and attractive trees and vegetation in the planter strip. If a homeowners' association is created as part of the development, the association may assume the maintenance obligation through a legally binding mechanism, e.g., deed restrictions, maintenance agreement, etc., which shall be reviewed and approved by the city attorney. Failure to properly maintain trees and vegetation in a planter strip shall be a violation of this code and enforceable as a civil infraction.

Applicant's Response:

5' wide planter strips will be provided both on Caufield Street and Pleasant Avenue. The planter strips are shown on the landscape plan to have street trees and lawn.

12.04.270 - Standard construction specifications.

The workmanship and materials for any work performed under permits issued per this chapter shall be in accordance with the edition of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the city in accordance with this ordinance, in effect at the time of application. The exception to this requirement is where this chapter and the Public Works Street Design Drawings provide other design details, in which case the requirements of this chapter and the Public Works Street Design Drawings shall be complied with. In the case of work within ODOT or Clackamas County rights-of-way, work shall be in conformance with their respective construction standards.

Applicant's Response:

All work performed in the right of way will be in accordance with the edition of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA).

CHAPTER 12.08 - PUBLIC AND STREET TREES^[2]

12.08.015 - Street tree planting and maintenance requirements.

All new construction or major redevelopment shall provide street trees adjacent to all street frontages. Species of trees shall be selected based upon vision clearance requirements, but shall in all cases be selected from the Oregon City Street Tree List or be approved by a certified arborist. If a setback sidewalk has already been constructed or the Development Services determines that the forthcoming street design shall include a setback sidewalk, then all street trees shall be installed with a planting strip. If existing street design includes a curb-tight sidewalk, then all street trees shall be placed within the front yard setback, exclusive of any utility easement.

Applicant's Response:

Street trees will be planted in the planter strips on Caufield Street and Pleasant Avenue. The street trees species is chanticleer pear. They were selected from the Oregon City Street Tree List. Individual trees will be selected that are branched at 6 feet.

A. One street tree shall be planted for every thirty-five feet of property frontage. The tree spacing shall be evenly distributed throughout the total development frontage. The community development director may approve an alternative street tree plan if site or other constraints prevent meeting the placement of one street tree per thirty-five feet of property frontage.

Applicant's Response:

The street trees will be spaced 35 feet on center and will be evenly spaced in the planter strips on Caufield Street and Pleasant Avenue.

B. The following clearance distances shall be maintained when planting trees:

- 1. Fifteen feet from streetlights;*
- 2. Five feet from fire hydrants;*
- 3. Twenty feet from intersections;*
- 4. A minimum of five feet (at mature height) below power lines.*

Applicant's Response:

The street trees have been placed 23 feet from the intersection of Caufield Street and Pleasant Avenue; Five feet from fire hydrants; and 5 feet from the fire hydrant on Pleasant Avenue. The chanticleer pear was selected, because their growth pattern works well with overhead power lines.

C. All trees shall be a minimum of two inches in caliper at six inches above the root crown and installed to city specifications.

Applicant's Response:

All street trees will have a minimum caliper size of 2 inches.

D. All established trees shall be pruned tight to the trunk to a height that provides adequate clearance for street cleaning equipment and ensures ADA complaint clearance for pedestrians.

Applicant's Response:

The street trees will be selected and pruned to branch at 6 feet.

12.08.020 - Street tree species selection.

The community development director may specify the species of street trees required to be planted if there is an established planting scheme adjacent to a lot frontage, if there are obstructions in the planting strip, or if overhead power lines are present.

Applicant's Response:

The street trees species is chanticleer pear. They were selected from the Oregon City Street Tree List, because their growth pattern works well with overhead power lines.

12.08.035 - Public tree removal.

Existing street trees shall be retained and protected during construction unless removal is specified as part of a land use approval or in conjunction with a public facilities construction project, as approved by the community development director. A diseased or hazardous street tree, as determined by a registered arborist and verified by the City, may be removed if replaced. A non-diseased, non-hazardous street tree that is removed shall be replaced in accordance with the Table 12.08.035.

All new street trees will have a minimum two-inch caliper trunk measured six inches above the root crown. The community development director may approve off-site installation of replacement trees where necessary due to planting constraints. The community development director may additionally allow a fee in-lieu of planting the tree(s) to be placed into a city fund dedicated to planting trees in Oregon City in accordance with Oregon City Municipal Code 12.08.

Table 12.08.035

| Replacement Schedule for Trees Determined to be Dead, Diseased or Hazardous by a Certified Arborist | | Replacement Schedule for Trees Not Determined to be Dead, Diseased or Hazardous by a Certified Arborist | |
|---|---|---|---|
| Diameter of tree to be Removed (Inches of diameter at 4-ft height) | Number of Replacement Trees to be Planted | Diameter of tree to be Removed (Inches of diameter at 4-ft height) | Number of Replacement Trees to be Planted |
| Any Diameter | 1 Tree | Less than 6" | 1 Tree |
| | | 6" to 12" | 2 Trees |
| | | 13" to 18" | 3 Trees |
| | | 19" to 24" | 4 Trees |
| | | 25" to 30" | 5 Trees |
| | | 31" and over | 8 Trees |

Applicant's Response:

There are no existing street trees.

12.08.040 - Heritage Trees and Groves.

A. Purpose. Certain trees, because of their age, species, natural resource value, ecological or historical association, are of special importance to the city. These trees may live on private or public property.

1. The purpose of this chapter is to recognize, foster appreciation and provide for voluntary protection of Heritage Trees.

2. In particular, the following trees shall be considered significant, and therefore eligible for heritage tree nomination in Oregon City, if they meet the minimum size requirements of the table below:

Tree Eligibility based on Size

| <i>Species</i> | <i>Common Name</i> | <i>Size (d.b.h)</i> |
|---|--------------------------|---------------------|
| <i>Quercus garryana</i> | <i>Oregon white oak</i> | <i>8"</i> |
| <i>Pseudotsuga menziesii</i> | <i>Douglas-fir</i> | <i>18"</i> |
| <i>Thuja plicata</i> | <i>Western red cedar</i> | <i>12"</i> |
| <i>Pinus ponderosa</i> | <i>Ponderosa pine</i> | <i>12"</i> |
| <i>Taxus brevifolia</i> | <i>Western yew</i> | <i>6"</i> |
| <i>Other deciduous and horticultural tree species</i> | | <i>20"</i> |
| <i>Other evergreen and conifer trees</i> | | <i>18"</i> |

D. Criteria.

1. The city commission may designate a tree or grove as a Heritage Tree or Heritage Grove if the commission determines that the following criteria are met:

- a. The tree or grove is of landmark importance to the City of Oregon City due to age, size, species, horticultural quality or historic importance; or
- b. It is listed as a State Heritage Tree, as designated by the state division of forest resources; or
- c. It is a rare species, or provides a habitat for rare species of plants, animals or birds; and
- d. The tree is not irreparably damaged, diseased, hazardous or unsafe, or the applicant is willing to have the tree treated by an arborist and the treatment will alleviate the damage, disease or hazard;

E. Protection of Heritage Trees and Groves.

- 1. No Heritage Tree or Grove may be removed, topped, or otherwise altered unless permitted by this section.
- 2. An application to remove a Heritage Tree or Grove shall demonstrate that the burden imposed on the property owner, or, if the tree is located within the public right-of-way under city jurisdiction, then the burden imposed on the city by the continued presence of the tree outweighs the public benefit provided by the tree. For the purposes of making this determination, the following tree impacts shall not be considered unreasonable burdens on the property owner, or if appropriate, the city:
 - a. View obstruction;
 - b. Routine pruning, leaf raking and other maintenance activities; and
 - c. Infrastructure impacts or tree hazards that can be controlled or avoided by appropriate pruning or maintenance.
- 3. Unless the tree is permitted to be removed due to poor health or hazard pursuant to Section 12.08.042, the applicant shall be required to mitigate for the loss of the tree pursuant to Table 12.08.042.
- 4. Any person who removes a Heritage Tree or Grove in violation of this chapter shall be subject to the penalties provided in this chapter.

F. Recognition of Heritage Trees and Groves.

- 1. A Heritage Tree plaque may be designed and furnished by the city to the property owner, or if the tree is in the public right-of-way, to the appropriate city official, of a designated Heritage Tree or Grove. The city may charge a fee to cover the costs of the providing the plaque. The plaque shall be posted at a location at or near the tree or grove and, if feasible, visible from a public right-of-way.
- 2. The community development director shall maintain a list and map of designated Heritage Trees and Groves.

G. Removal of Heritage Tree or Grove Designation.

1. A Heritage Tree or Grove may be removed from designation if it dies or is removed pursuant to this chapter. If removed from private property, the city shall record a document extinguishing the covenant.

Applicant's Response:

There is a white oak on the east side of the property that has been designated as a heritage tree. This tree will be preserved. The protection of this tree is shown on the tree protection plan.

12.08.045 - Gifts and funding.

The City of Oregon City may accept gifts, which are specifically designated for the purpose of planting or maintaining trees within the city. The community development director may allow a fee in-lieu of planting the tree(s) to be placed into a city fund dedicated to planting trees in Oregon City. The community development director may determine the type, caliper and species of the trees purchased with the fund. The cost of each tree may be adjusted annually based upon current market prices for materials and labor as calculated by the community development director. A separate fund shall be established and maintained for revenues and expenditures created by activities specified in this chapter. The natural resources committee shall have authority on behalf of the city to seek grants and alternative funding for tree projects. Funds from such grant awards shall be administered by the city pursuant to this section.

Applicant's Response:

N/A.

CHAPTER 13.12 - STORMWATER MANAGEMENT

13.12.050 - Applicability and exemptions.

This chapter establishes performance standards for stormwater conveyance, quantity and quality. Additional performance standards for erosion prevention and sediment control are established in OCMC 17.47.

A. Stormwater Conveyance. The stormwater conveyance requirements of this chapter shall apply to all stormwater systems constructed with any development activity, except as follows:

1. The conveyance facilities are located entirely on one privately owned parcel;
2. The conveyance facilities are privately maintained; and
3. The conveyance facilities receive no stormwater runoff from outside the parcel's property limits.

Those facilities exempted from the stormwater conveyance requirements by the above subsection will remain subject to the requirements of the Oregon Uniform Plumbing Code. Those exempted facilities shall be reviewed by the building official.

Applicant's Response:

Stormwater has been designed to flow on the site to an onsite stormwater facility. The facility will have is a direct connection to the city stormwater pipe in Pleasant Avenue.

B. Water Quality and Flow Control. The water quality and flow control requirements of this chapter shall apply to the following proposed uses or developments, unless exempted under subsection C:

1. Activities located wholly or partially within water quality resource areas pursuant to Chapter 17.49 that will result in the creation of more than five hundred square feet of impervious surface within the WQRA or will disturb more than one thousand square feet of existing impervious surface within the WQRA as part of a commercial or industrial redevelopment project. These square footage measurements will be considered cumulative for any given five-year period; or
2. Activities that create or replace more than five thousand square feet of impervious surface per parcel or lot, cumulated over any given five-year period.

Applicant's Response:

The onsite stormwater facility has been designed to meet the water quality and flow control requirements of the Public Works Stormwater and Grading Design Standards.

C. Exemptions. The following exemptions to subsection B of this section apply:

1. An exemption to the flow control requirements of this chapter will be granted when the development site discharges to the Willamette River, Clackamas River or Abernethy Creek; and either lies within the one hundred-year floodplain or is up to ten feet above the design flood elevation as defined in Chapter 17.42, provided that the following conditions are met:
 - a. The project site is drained by a conveyance system that is comprised entirely of manmade elements (e.g. pipes, ditches, culverts outfalls, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and
 - b. The conveyance system between the project site and the exempt receiving water has sufficient hydraulic capacity and erosion stabilization measures to convey discharges from the proposed

conditions of the project site and the existing conditions from non-project areas from which runoff is collected.

2. *Projects in the following categories are generally exempt from the water quality and flow control requirements:*
 - a. *Stream enhancement or restoration projects approved by the city.*
 - b. *Farming practices as defined by ORS 30.960 and farm use as defined in ORS 214.000; except that buildings associated with farm practices and farm use are subject to the requirements of this chapter.*
 - c. *Actions by a public utility or any other governmental agency to remove or alleviate an emergency condition.*
 - d. *Road and parking area preservation/maintenance projects such as pothole and square cut patching, surface sealing, replacing or overlaying of existing asphalt or concrete pavement, provided the preservation/maintenance activity does not expand the existing area of impervious coverage above the thresholds in subsection B of this section.*
 - e. *Pedestrian and bicycle improvements (sidewalks, trails, pathways, and bicycle paths/lands) where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas.*
 - f. *Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics.*
 - g. *Maintenance or repair of existing utilities.*

Applicant's Response:

No exemptions are being requested.

- D. *Uses Requiring Additional Management Practices. In addition to any other applicable requirements of this chapter, the following uses are subject to additional management practices, as defined in the Public Works Stormwater and Grading Design Standards:*
 1. *Bulk petroleum storage facilities;*
 2. *Above ground storage of liquid materials;*
 3. *Solid waste storage areas, containers, and trash compactors for commercial, industrial, or multi-family uses;*
 4. *Exterior storage of bulk construction materials;*
 5. *Material transfer areas and loading docks;*
 6. *Equipment and/or vehicle washing facilities;*
 7. *Development on land with suspected or known contamination;*
 8. *Covered vehicle parking for commercial or industrial uses;*
 9. *Industrial or commercial uses locating in high traffic areas, defined as average daily count trip of two thousand five hundred or more trips per day; and*
 10. *Land uses subject to DEQ 1200-Z Industrial Stormwater Permit Requirements.*

Applicant's Response:

None of the above uses are being proposed.

13.12.080 - Submittal requirements.

- A. *Applications subject to stormwater conveyance, water quality, and/or flow control requirements of this chapter shall prepare engineered drainage plans, drainage reports, and design flow calculation reports in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards.*
- B. *Each project site, which may be composed of one or more contiguous parcels of land, shall have a separate valid city approved plan and report before proceeding with construction.*

Applicant's Response:

A stormwater drainage plan and stormwater drainage report are being submitted as part of this submittal.

13.12.090 - Approval criteria for engineered drainage plans and drainage report.

An engineered drainage plan and/or drainage report shall be approved only upon making the following findings:

- A. *The plan and report demonstrate how the proposed development and stormwater facilities will accomplish the purpose statements of this chapter.*

- B. *The plan and report meet the requirements of the Public Works Stormwater and Grading Design Standards adopted by resolution under Section 13.12.020.*
- C. *The storm drainage design within the proposed development includes provisions to adequately control runoff from all public and private streets and roof, footing, and area drains and ensures future extension of the current drainage system.*
- D. *Streambank erosion protection is provided where stormwater, directly or indirectly, discharges to open channels or streams.*
- E. *Specific operation and maintenance measures are proposed that ensure that the proposed stormwater quantity control facilities will be properly operated and maintained.*

Applicant's Response:

The stormwater drainage system has been designed to meet the requirements of the Public Works Stormwater and Grading Design Standards. Please see the stormwater drainage report.

13.12.100 - Alternative materials, alternative design and methods of construction.

The provisions of this chapter are not intended to prevent the use of any material, alternate design or method of construction not specifically prescribed by this chapter or the Public Works Stormwater and Grading Design Standards, provided any alternate has been approved and its use authorized by the city engineer. The city engineer may approve any such alternate, provided that the city engineer finds that the proposed design is satisfactory and complies with the intent of this chapter and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed by this chapter in effectiveness, suitability, strength, durability and safety. The city engineer shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting approval of an alternate shall be recorded and entered in the city files.

Applicant's Response:

No alternative materials, alternative designs or methods are being proposed.

13.12.120 - Standard construction specifications.

The workmanship and materials shall be in accordance with the edition of the "Standard Specifications for Public Works Construction," as prepared by the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the city, in effect at the time of application. The exception to this requirement is where this chapter and the Public Works Stormwater and Grading Design Standards provide other design details, in which case the requirements of this chapter and the Public Works Stormwater and Grading Design Standards shall be complied with.

Applicant's Response:

Workmanship and materials will be in accordance with the edition of the "Standard Specifications for Public Works Construction".

CHAPTER 15.48 - GRADING, FILLING AND EXCAVATING

15.48.030 Applicability—Grading permit required.

A. *A city-issued grading permit shall be required before the commencement of any of the following filling or grading activities:*

1. *Grading activities in excess of ten cubic yards of earth;*
2. *Grading activities which may result in the diversion of existing drainage courses, both natural and man-made, from their natural point of entry or exit from the grading site;*
3. *Grading and paving activities resulting in the creation of impervious surfaces greater than two thousand square feet or more in area;*
4. *Any excavation beyond the limits of a basement or footing excavation, having an unsupported soil height greater than five feet after the completion of such a structure; or*
5. *Grading activities involving the clearing or disturbance of one-half acres (twenty-one thousand seven hundred eighty square feet) or more of land.*

Applicant's Response:

A grading permit will be requested at the time of the building permit submittal.

15.48.090 Submittal requirements.

An engineered grading plan or an abbreviated grading plan shall be prepared in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards whenever a city approved grading permit is required. In addition, a geotechnical engineering report and/or residential lot grading plan may be required pursuant to the criteria listed below.

A. *Abbreviated Grading Plan.* The city shall allow the applicant to submit an abbreviated grading plan in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards if the following criteria are met:

1. No portion of the proposed site is within the flood management area overlay district pursuant to Chapter 17.42, the unstable soils and hillside constraints overlay district pursuant to Chapter 17.44, or a water quality resource area pursuant to Chapter 17.49; and

2. The proposed filling or grading activity does not involve more than fifty cubic yards of earth.

B. *Engineered Grading Plan.* The city shall require an engineered grading plan in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer if the proposed activities do not qualify for abbreviated grading plan.

C. *Geotechnical Engineering Report.* The city shall require a geotechnical engineering report in compliance with the minimum report requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer who specializes in geotechnical work when any of the following site conditions may exist in the development area:

1. When any publicly maintained facility (structure, street, pond, utility, park, etc.) will be supported by any engineered fill;

2. When an embankment for a stormwater pond is created by the placement of fill;

3. When, by excavation, the soils remaining in place are greater than three feet high and less than twenty feet wide.

D. *Residential Lot Grading Plan.* The city shall require a residential lot grading plan in compliance with the minimum report requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer for all land divisions creating new residential building lots or where a public improvement project is required to provide access to an existing residential lot.

Applicant's Response:

A grading plan has been prepared by a licensed engineer in accordance with Public Works Stormwater and Grading Design Standards. This grading plan is being submitted with this application.

CHAPTER 17.47 - EROSION AND SEDIMENT CONTROL

17.47.070 Erosion and sediment control plans.

A. An application for an erosion and sediment control permit shall include an erosion and sediment control plan, which contains methods and interim measures to be used during and following construction to prevent or control erosion prepared in compliance with City of Oregon City public works standards for erosion and sediment control. These standards are incorporated herein and made a part of this title and are on file in the office of the city recorder.

Applicant's Response:

An erosion and sediment control plan are being submitted as part of this submittal.

CHAPTER 17.41 - TREE PROTECTION STANDARDS

17.41.020 - Tree protection—Applicability.

1. Applications for development subject to Chapters 16.08 or 16.12 (Subdivision or Minor Partition) or Chapter 17.62 (Site Plan and Design Review) shall demonstrate compliance with these standards as part of the review proceedings for those developments.

2. For public capital improvement projects, the city engineer shall demonstrate compliance with these standards pursuant to a Type II process.

3. Tree canopy removal greater than twenty-five percent on sites greater than twenty-five percent slope, unless exempted under Section 17.41.040, shall be subject to these standards.

4. A heritage tree or grove which has been designated pursuant to the procedures of [Chapter 12.08.050](#) shall be subject to the standards of this section.

Applicant's Response:

A tree protection plan is being submitted as part of this submittal. The tree protection plan identifies the heritage tree.

17.41.030 - Tree protection—Conflicting code provisions.

Except as otherwise specified in this section, where these standards conflict with adopted city development codes or policies, the provision which provides the greater protection for regulated trees or groves, as defined in [Section 17.04](#), shall govern.

Applicant's Response:

Okay.

17.41.040 - Same—Exemptions.

These regulations are not intended to regulate normal cutting, pruning and maintenance of trees on private property except where trees are located on lots that are undergoing development review or are otherwise protected within the Natural Resource Overlay District (NROD) of [section 17.49](#). These standards are not intended to regulate farm and forest practices as those practices are defined under ORS 30.930. Farm or forest resources. An applicant for development may claim exemption from compliance with these standards if the development site containing the regulated grove or trees was a designated farm or forest use, tree farm, Christmas tree plantation, or other approved timber use within one year prior to development application. "Forest practices" and "forestlands" as used in this subsection shall have the meaning as set out in ORS 30.930. The community development director has the authority to modify or waive compliance in this case.

Applicant's Response:

Okay.

17.41.050 - Same—Compliance options.

Applicants for review shall comply with these requirements through one or a combination of the following procedures:

A. Option 1—Mitigation. Retention and removal of trees, with subsequent mitigation by replanting pursuant to Sections [17.41.060](#) or [17.41.070](#). All replanted and saved trees shall be protected by a permanent restrictive covenant or easement approved in form by the city.

B. Option 2—Dedicated Tract. Protection of trees or groves by placement in a tract within a new subdivision or partition plat pursuant to Sections [17.41.080](#)—[17.41.100](#); or

C. Option 3—Restrictive Covenant. Protection of trees or groves by recordation of a permanent restrictive covenant pursuant to Sections [17.41.110](#)—[17.41.120](#); or

D. Option 4—Cash-in-lieu of planting pursuant to [Section 17.41.130](#).

A regulated tree that has been designated for protection pursuant to this section must be retained or permanently protected unless it has been determined by a certified arborist to be diseased or hazardous, pursuant to the following applicable provisions.

The community development director, pursuant to a Type II procedure, may allow a property owner to cut a specific number of trees within a regulated grove if preserving those trees would:

1. Preclude achieving eighty percent of minimum density with reduction of lot size; or
2. Preclude meeting minimum connectivity requirements for subdivisions.

Applicant's Response:

This project is pursuing Option 1, and is mitigating the trees that are being removed with new trees on the site. Please see the Tree Protection and Mitigation Plan.

17.41.060 - Tree removal and replanting—Mitigation (Option 1).

A. Applicants for development who select this option shall ensure that all healthy trees shall be preserved outside the construction area as defined in [Chapter 17.04](#) to the extent practicable. Compliance with these standards shall be demonstrated in a tree mitigation plan report prepared by a certified arborist, horticulturalist or forester or other environmental professional with experience and academic credentials in forestry or arboriculture. At the applicant's expense, the city may require the report to be reviewed by a consulting arborist. The number of

replacement trees required on a development site shall be calculated separately from, and in addition to, any public or street trees in the public right-of-way required under [section 12.08—Community Forest and Street Trees](#).

B. The applicant shall determine the number of trees to be mitigated on the site by counting all of the trees six inch DBH (minimum four and one-half feet from the ground) or larger on the entire site and either:

1. Trees that are removed outside of the construction area, shall be replanted with the number of trees specified in Column 1 of Table 17.41.060-1. Trees that are removed within the construction area shall be replanted with the number of replacement trees required in Column 2; or

2. Diseased or hazardous trees, when the condition is verified by a certified arborist to be consistent with the definition in [Section 17.04.1360](#), may be removed from the tree replacement calculation. Regulated healthy trees that are removed outside of the construction area, shall be replanted with the number of trees specified in Column 1 of Table 17.41.060-1. Regulated healthy trees that are removed within the construction area shall be replanted with the number of replacement trees required in Column 2.

Table 17.41.060-1

Tree Replacement Requirements

All replacement trees shall be either:

Two-inch caliper deciduous, or

Six-foot high conifer

| Size of tree removed (DBH) | Column 1 Number of trees to be planted. (If removed Outside of construction area) | Column 2 Number of trees to be planted. (If removed Within the construction area) |
|----------------------------|---|---|
| 6 to 12" | 3 | 1 |
| 13 to 18" | 6 | 2 |
| 19 to 24" | 9 | 3 |
| 25 to 30" | 12 | 4 |
| 31 and over" | 15 | 5 |

Steps for calculating the number of replacement trees:

1. Count all trees measuring six inches DBH (minimum four and one-half feet from the ground) or larger on the entire development site.
2. Designate (in certified arborists report) the condition and size (DBH) of all trees pursuant to accepted industry standards.
3. Document any trees that are currently diseased or hazardous.
4. Subtract the number of diseased or hazardous trees in step 3. from the total number of trees on the development site in step 1. The remaining number is the number of healthy trees on the site. Use this number to determine the number of replacement trees in steps 5. through 8.
5. Define the construction area (as defined in [Chapter 17.04](#)).
6. Determine the number and diameter of trees to be removed within the construction area. Based on the size of each tree, use Column 2 to determine the number of replacement trees required.
7. Determine the number and diameter of trees to be removed outside of the construction area. Based on the size of each tree, use Column 1 to determine the number of replacement trees required.
8. Determine the total number of replacement trees from steps 6. and 7.

Applicant's Response:

Please see the [Tree Protection and Mitigation Plan](#) for a tally of the trees being removed and a calculation of the required and provided mitigation.

17.41.070 - Planting area priority for mitigation (Option 1).

Development applications which opt for removal of trees with subsequent replanting pursuant to section 17.41.050A. shall be required to mitigate for tree cutting by complying with the following priority for replanting standards below:

A. First Priority. Replanting on the development site.

B. Second Priority. Off-site replacement tree planting locations. If the community development director determines that it is not practicable to plant the total number of replacement trees on-site, a suitable off-site planting location for the remainder of the trees may be approved that will reasonably satisfy the objectives of this section. Such locations may include either publicly owned or private land and must be approved by the community development director.

Applicant's Response:

All replanting will occur on site.

17.41.075 - Alternative mitigation plan.

The community development director may, subject to a Type II procedure, approve an alternative mitigation plan that adequately protects habitat pursuant to the standards for the natural resource overlay district alternative mitigation plan, [Section 17.49.190](#).

Applicant's Response:

No alternative mitigation plan is being proposed.

17.41.080 - Tree preservation within subdivisions and partitions—Dedicated tract (Option 2).

A. Applicants for new subdivision and partition plats may delineate and show the regulated trees or groves as either a separate tract or part of a larger tract that meets the requirements of subsection D. of this section.

B. The standards for land divisions subject to this section shall apply in addition to the requirements of the city land division ordinance and zoning ordinance, provided that the minimum lot area, minimum average lot width, and minimum average lot depth standards of the base zone may be superseded in order to allow for a reduction of dimensional standards pursuant to Section 17.41100 below.

C. Prior to preliminary plat approval, the regulated tree or grove area shall be shown either as a separate tract or part of a larger tract that meets the requirements of subsection D. of this section, which shall not be a part of any parcel used for construction of a structure. The size of the tract shall be the minimum necessary as recommended by a consulting arborist to adequately encompass the dripline of the tree, protect the critical root zone and ensure long term survival of the tree or grove.

D. Prior to final plat approval, ownership of the regulated tree or grove tract shall be identified to distinguish it from lots intended for sale. The tract may be identified as any one of the following:

1. Private open space held by the owner or a homeowners association; or
2. For residential land divisions, private open space subject to an easement conveying stormwater and surface water management rights to the city and preventing the owner of the tract from activities and uses inconsistent with the purpose of this document; or
3. At the owners option, public open space where the tract has been dedicated to the city or other governmental unit; or
4. Any other ownership proposed by the owner and approved by the community development director.

Applicant's Response:

N/A.

17.41.090 - Density transfers incentive for tree protection tracts (Option 2).

A. The purpose of this section is to allow dimensional adjustments within a regulated tree protection tract to be transferred outside said tract to the remainder of the site. This provision applies on-site and density shall not be transferred beyond the boundaries of the development site.

B. Development applications for subdivisions and minor partitions that request a density transfer shall:

1. Provide a map showing the net buildable area of the tree protection tract;
2. Provide calculations justifying the requested dimensional adjustments;
3. Demonstrate that the minimum lot size requirements can be met based on an average of all lots created, including the tree protection tract created pursuant to [Section 17.41.080](#);
4. Demonstrate that, with the exception of the tree protection tract created pursuant to [Section 17.41.080](#), no parcels have been created which would be unbuildable in terms of minimum yard setbacks;

5. Meet all other standards of the base zone except as modified in [section 17.41.100](#).

C. The area of land contained in a tree protection tract may be excluded from the calculations for determining compliance with minimum density requirements of the zoning code.

Applicant's Response:

N/A.

17.41.100 - Permitted modifications to dimensional standards (Option 2 only).

A. An applicant proposing to protect trees in a dedicated tract pursuant to [section 17.41.080](#) may request, and the community development director, pursuant to a Type II procedure, may grant a reduction to, the lot size, width, depth, and setbacks of the underlying zone district in approving a subdivision or partition if necessary to retain a regulated tree or grove in a tract, as long as the calculation of average lot size, including tree protection tracts, meet the minimum lot size for the zone. The applicant may choose to make the adjustments over as many lots as required. For example, the lot reduction could be spread across all the remaining lots in the proposed subdivision or partition or could be applied to only those needed to incorporate the area of the tree tract.

Table 17.41.100 A
Lot Size Reduction

| ZONE | Min. Lot Size [sq. feet] | Min. Lot Width | Min. Lot Depth |
|-------|-----------------------------|----------------|----------------|
| R-10 | 5,000 sq. feet | 50' | 65' |
| R-8 | 4,000 sq. feet | 45' | 60' |
| R-6 | 3,500 sq. feet | 35' | 55' |
| R-5 | 3,000 sq. feet | 30' | 50' |
| R-3.5 | 1,800 sq. feet | 20' | 45' |

Table 17.41.100 B
Reduced Dimensional Standards for Detached Single-Family Residential Units

| Size of Reduced Lot | Front Yard Setback | Rear Yard Setback | Side yard Setback | Corner Side | Lot Coverage |
|-------------------------|--------------------|-------------------|-------------------|-------------|--------------|
| 8,000—9,999 square feet | 15 feet | 20 feet | 7/9 feet | 15 feet | 40% |
| 6,000—7,999 square feet | 10 feet | 15 feet | 5/7 feet | 15 feet | 40% |
| 4,000—5,999 square feet | 10 feet | 15 feet | 5/5 feet | 10 feet | 40% |
| 1,800—3,999 square feet | 5 feet | 15 feet | 5/5 feet | 10 feet | 55% |

Table 17.41.100 C
Reduced Dimensional Standards for Single-Family Attached or Two-Family Residential Units

| Size of Reduced Lot | Front Yard Setback | Rear Yard Setback | Side yard Setback | Corner Side | Lot Coverage |
|---------------------|--------------------|-------------------|-------------------|-------------|--------------|
|---------------------|--------------------|-------------------|-------------------|-------------|--------------|

| | | | | | |
|-------------------------|---------|---------|-----------|---------|-----|
| 3,500—7,000 square feet | 10 feet | 15 feet | 5/0* feet | 10 feet | 40% |
| 1,800—3,499 square feet | 5 feet | 15 feet | 5/0* feet | 10 feet | 55% |

*0 foot setback is only allowed on single-family attached units

Applicant's Response:

N/A.

17.41.110 - Tree protection by restrictive covenant (Option 3).

Any regulated tree or grove which cannot be protected in a tract pursuant to [Section 17.41.080](#) above shall be protected with a restrictive covenant in a format to be approved by the community development director. Such covenant shall be recorded against the property deed and shall contain provisions to permanently protect the regulated tree or grove unless such tree or grove, as determined by a certified arborist and approved by the community development director, are determined to be diseased or hazardous.

Applicant's Response:

N/A.

17.41.120 - Permitted adjustments (Option 3 Only).

A. The community development director, pursuant to a Type II procedure, may grant an adjustment to the side, front and rear yard setback standards by up to 50 percent if necessary to retain a Regulated Tree or Grove through a restrictive covenant pursuant to this section. In no case may the side yard setback be reduce less than three feet. The adjustment shall be the minimum necessary to accomplish preservation of trees on the lot and shall not conflict with other conditions imposed on the property.

B. The community development director, pursuant to a Type II procedure, may grant an adjustment to street standards, pursuant to adopted public works standards, in order to preserve a tree. This may include flexibility to redesign sidewalk and planter strip sizes and locations and allow placement of sidewalks and planter strips in an easement within private lots.

C. The community development director, pursuant to a Type II procedure, may allow other adjustments in order to preserve any healthy tree that cannot be moved due to its size, but will contribute to the landscape character of the area and will not present a foreseeable hazard if retained.

Applicant's Response:

N/A.

17.41.1[25] - Cash-in-lieu of planting (tree bank/fund) (Option 4).

The applicant may choose this option in-lieu-of or in addition to Compliance Options 1 through 3. In this case, the community development director may approve the payment of cash-in-lieu into a dedicated fund for the remainder of trees that cannot be replanted in the manner described above.

A. The cash-in-lieu payment per tree shall be as listed on the adopted fee schedule and shall be adjusted annually based on the Consumer Price Index (Index). The price shall include the cost of materials, transportation and planting.

B. The amount of the cash-in-lieu payment into the tree bank shall be calculated as the difference between the value of the total number of trees an applicant is required to plant, including cost of installation and adjusted for Consumer Price Index, minus the value of the trees actually planted. The value of the trees shall be based on the adopted fee schedule.

Applicant's Response:

N/A.

17.41.130 - Regulated tree protection procedures during construction.

A. No permit for any grading or construction of public or private improvements may be released prior to verification by the community development director that regulated trees designated for protection or conservation have been

protected according to the following standards. No trees designated for removal shall be removed without prior written approval from the community development director.

Applicant's Response:

Okay.

B. Tree protection shall be as recommended by a qualified arborist or, as a minimum, to include the following protective measures:

- 1. Except as otherwise determined by the community development director, all required tree protection measures set forth in this section shall be instituted prior to any development activities, including, but not limited to clearing, grading, excavation or demolition work, and such measures shall be removed only after completion of all construction activity, including necessary landscaping and irrigation installation, and any required plat, tract, conservation easement or restrictive covenant has been recorded.*
- 2. Approved construction fencing, a minimum of four feet tall with steel posts placed no farther than ten feet apart, shall be installed at the edge of the tree protection zone or dripline, whichever is greater. An alternative may be used with the approval of the community development director.*
- 3. Approved signs shall be attached to the fencing stating that inside the fencing is a tree protection zone, not to be disturbed unless prior approval has been obtained from the community development director.*
- 4. No construction activity shall occur within the tree protection zone, including, but not limited to; dumping or storage of materials such as building supplies, soil, waste items; nor passage or parking of vehicles or equipment.*
- 5. The tree protection zone shall remain free of chemically injurious materials and liquids such as paints, thinners, cleaning solutions, petroleum products, and concrete or dry wall excess, construction debris, or run-off.*
- 6. No excavation, trenching, grading, root pruning or other activity shall occur within the tree protection zone unless directed by an arborist present on site and approved by the community development director.*
- 7. No machinery repair or cleaning shall be performed within ten feet of the dripline of any trees identified for protection.*
- 8. Digging a trench for placement of public or private utilities or other structure within the critical root zone of a tree to be protected is prohibited. Boring under or through the tree protection zone may be permitted if approved by the community development director and pursuant to the approved written recommendations and on-site guidance and supervision of a certified arborist.*
- 9. The city may require that a certified arborist be present during any construction or grading activities that may affect the dripline of trees to be protected.*
- 10. The community development director may impose conditions to avoid disturbance to tree roots from grading activities and to protect trees and other significant vegetation identified for retention from harm. Such conditions may include, if necessary, the advisory expertise of a qualified consulting arborist or horticulturist both during and after site preparation, and a special maintenance/management program to provide protection to the resource as recommended by the arborist or horticulturist.*

Applicant's Response:

Please see the Tree Protection and Mitigation Plan for a list of tree protection measures that are being proposed.

C. Changes in soil hydrology due to soil compaction and site drainage within tree protection areas shall be avoided. Drainage and grading plans shall include provision to ensure that drainage of the site does not conflict with the standards of this section. Excessive site run-off shall be directed to appropriate storm drainage facilities and away from trees designated for conservation or protection.

Applicant's Response:

The site drainage and site grading have been designed to avoid disturbing the soil within the tree protection areas. All stormwater will be directed to the onsite storm drainage facility and away from trees designated for conservation or protection.

CHAPTER 17.50 - ADMINISTRATION AND PROCEDURES

17.50.050 Preapplication Conference

A. Preapplication Conference. Prior to submitting an application for any form of permit, the applicant shall schedule and attend a preapplication conference with City staff to discuss the proposal. To schedule a preapplication

conference, the applicant shall contact the Planning Division, submit the required materials, and pay the appropriate conference fee. At a minimum, an applicant should submit a short narrative describing the proposal and a proposed site plan, drawn to a scale acceptable to the City, which identifies the proposed land uses, traffic circulation, and public rights-of-way and all other required plans. The purpose of the preapplication conference is to provide an opportunity for staff to provide the applicant with information on the likely impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal. The Planning Division shall provide the applicant(s) with the identity and contact persons for all affected neighborhood associations as well as a written summary of the preapplication conference. Notwithstanding any representations by City staff at a preapplication conference, staff is not authorized to waive any requirements of this code, and any omission or failure by staff to recite to an applicant all relevant applicable land use requirements shall not constitute a waiver by the City of any standard or requirement.

B.A preapplication conference shall be valid for a period of six months from the date it is held. If no application is filed within six months of the conference or meeting, the applicant must schedule and attend another conference before the city will accept a permit application. The community development director may waive the preapplication requirement if, in the Director's opinion, the development does not warrant this step. In no case shall a preapplication conference be valid for more than one year.

Applicant's Response:

[A pre-application conference was held on March 1, 2017.](#)

17.50.055 Neighborhood Association Meeting

The purpose of the meeting with the recognized neighborhood association is to inform the affected neighborhood association about the proposed development and to receive the preliminary responses and suggestions from the neighborhood association and the member residents.

1. Applicants applying for annexations, zone change, comprehensive plan amendments, conditional use, planning commission variances, subdivision, or site plan and design review (excluding minor site plan and design review), general development master plans or detailed development plans applications shall schedule and attend a meeting with the city-recognized neighborhood association in whose territory the application is proposed. Although not required for other projects than those identified above, a meeting with the neighborhood association is highly recommended.

2. The applicant shall send, by certified mail, return receipt requested letter to the chairperson of the neighborhood association and the citizen involvement committee describing the proposed project. Other communication methods may be used if approved by the neighborhood association.

3. A meeting shall be scheduled within thirty days of the notice. A meeting may be scheduled later than thirty days if by mutual agreement of the applicant and the neighborhood association. If the neighborhood association does not want to, or cannot meet within thirty days, the applicant shall hold their own meeting after six p.m. or on the weekend, with notice to the neighborhood association, citizen involvement committee, and all property owners within three hundred feet. If the applicant holds their own meeting, a copy of the certified letter requesting a neighborhood association meeting shall be required for a complete application. The meeting held by the applicant shall be held within the boundaries of the neighborhood association or in a city facility.

4. If the neighborhood association is not currently recognized by the city, is inactive, or does not exist, the applicant shall request a meeting with the citizen involvement committee.

5. To show compliance with this section, the applicant shall submit a sign-in sheet of meeting attendees, a summary of issues discussed, and letter from the neighborhood association or citizen involvement committee indicating that a neighborhood meeting was held. If the applicant held a separately noticed meeting, the applicant shall submit a copy of the meeting flyer, a sign in sheet of attendees and a summary of issues discussed.

Applicant's Response:

[We are scheduled to meet with the Barclay Hills Neighborhood Association during their September 12th meeting.](#)

CHAPTER 17.54 - SUPPLEMENTAL ZONING REGULATIONS AND EXCEPTIONS

CHAPTER 17.54.100 – FENCES, HEDGES AND WALLS

Fence, Setback and Height Limitations.

A fence may be located on the property or in a yard setback area subject to the following:

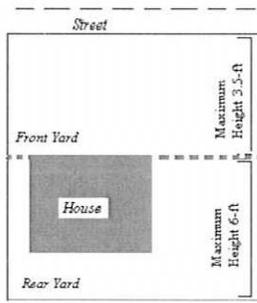


Diagram: Any fence, hedge or wall located in front of your home may be up to three and one-half-feet in total height.

Diagram: A fence, hedge or wall located next to and behind your home may be up to six feet in total height.

A. Generally. Fence, hedge, or wall.

1. Fences and walls—Fences and walls over forty-two inches shall not be located in front of the front façade or within forty feet of the public right-of-way, whichever is less. All other fences (including fences along the side and rear of a property) shall not exceed six feet in total height unless as permitted [in] Section 17.54.100.B.
2. Hedges shall not be more than forty-two inches in the underlying front yard setback. Individual plants and trees taller than forty-two inches tall may be permitted provided there is at least one-foot clearance between each plant.
3. Property owners shall ensure compliance with the traffic sight obstruction requirements in Chapter 10.32 of the Oregon City Municipal Code.
4. It is unlawful for any person to erect any electric fence or any fence constructed in whole or in part of barbed wire or to use barbed wire, except as erected in connection with security installations at a minimum height of six feet, providing further that prior written approval has been granted by the city manager.

B. Exception. Fence, hedge, wall, or other obstructing vegetation on retaining wall. When a fence, hedge, wall, or other obstructing vegetation is built on a retaining wall or an artificial berm that is not adjacent to or abutting a public right-of-way, the following standards shall apply:

1. When the retaining wall or artificial berm is thirty inches or less in height from the finished grade, the maximum fence or wall height on top of the retaining wall shall be six feet.
2. When the retaining wall or earth berm is greater than thirty inches in height, the combined height of the retaining wall and fence or, wall from finished grade shall not exceed eight and one-half feet.
3. Fences, hedges or walls located on top of retaining walls or earth berms in excess of eight and one-half feet in height shall be set back a minimum of two feet from the edge of the retaining wall or earth berm below and shall not exceed a combined height of eight and one-half feet.
4. An alternative height or location requirement may be approved within a land use process for all non-single-family and two-family residential properties. The fence, hedge or wall shall be compatible with the adjacent neighborhood and achieve the same intent of the zoning designation and applicable site plan and design review process. In no case may the fence, hedge or wall exceed eight feet in height without approval of a variance.

Applicant's Response:

No Fences, hedges or walls are being proposed.

III. RESPONSES TO THE OREGON CITY COMPREHENSIVE PLAN:

Goal 2.1 Efficient Use of Land

Ensure that property planned for residential, commercial, office, and industrial uses is used efficiently and that land is developed following principles of sustainable development.

Applicant's Response:

The proposed development utilizes land efficiently and sustainably by creating a higher density development, minimizing onsite parking, locating near a transit street, preserving onsite trees, situating the building and parking to minimize site disturbance, and orienting the building for a southern exposure. At 24 units, this development will result in 1 residential unit per roughly 1,600 square feet of site area. This higher density is feasible for family housing due to the fact that the building and parking only cover 41% of the site; leaving sufficient space for an outdoor community space, the preservation of a heritage

tree and onsite storm detention. Over 1/3 of the required parking will be provided as on-street parking. This allows the development to minimize the amount of onsite parking. The site is located adjacent to Molalla Avenue which is designated as a transit street and served by Trimet bus routes 32 and 99. There is nearly 20 feet of grade across this 1-acre site. By placing the entrance to the parking on Myrtle Street and the main entrance to the building near the intersection of Pleasant Avenue and Caufield Street, the site grading will result in a balanced cut and fill thereby reducing the amount of site disturbance outside the footprint of the building and parking lot. The building primary fronts Caufield Street so that it has predominate southern exposure. This orientation maximizes solar heat gain in the winter and minimizes it in the summer. It also places the roof at a near optimal orientation for the future addition of solar panels.

Goal 2.3 Corridors

Focus transit-oriented, higher intensity, mixed-use development along selected transit corridors.

Applicant's Response:

The site is next to Molalla Avenue which is a transit street that is served by Trimet bus routes 32 and 99. Bus stops for these buses are within 500 feet walking distance of the main entrance of the building. With 2 to 3 busses stopping at these stops every hour during peak hours, the residents who rely on public transportation as their primary means of travel, will be well served.

Goal 2.4 Neighborhood Livability

Provide a sense of place and identity for residents and visitors by protecting and maintaining neighborhoods as the basic unit of community life in Oregon City while implementing the goals and policies of the other sections of the Comprehensive Plan.

Applicant's Response:

The proposed development is within the Barclay Hills neighborhood and is surrounded on the north, west and south sides by houses. This development will help strengthen and maintain the sense of place within the surrounding community through its physical features and character. The proposed 2-story building has been designed with a residential character using siding materials and fenestration patterns that are similar to those used on the adjacent homes in order to create visual compatibility with the neighborhood. Additionally, the building has been setback from Pleasant Avenue in order to preserve a large mature white oak tree that has been designated as a heritage tree. This prominent tree will serve as an identifying landmark for surrounding area.

The neighborhood lacks a transition from an area dominated by single family homes to the commercial uses and high traffic volume of Molalla Avenue. It also suffers from a lack of connectivity at the pedestrian level. The proposed development will act as a buffer between the neighborhood and Molalla Avenue. Sidewalks will be constructed along Pleasant Avenue and Caufield Street where there are currently none. These sidewalks will connect to the ones on Molalla Avenue creating continuity between the residences and the commercial uses on Molalla Avenue.

Goal 10.1 Diverse Housing Opportunities

Provide for the planning, development and preservation of a variety of housing types and lot sizes.

Applicant's Response:

The proposed structure will help add a variety of housing types due to the fact that it is a multifamily apartment building located between an area dominated by single family homes and a transit street dominated by commercial uses.

Policy 10.1.1

Maintain the existing residential housing stock in established older neighborhoods by maintaining existing Comprehensive Plan and zoning designations where appropriate.

Applicant's Response:

The existing site is currently vacant, so the construction of the proposed development will not eliminate existing housing stock.

Policy 10.1.2

Ensure active enforcement of the City of Oregon City Municipal Code regulations to ensure maintenance of housing stock in good condition and to protect neighborhood character and livability.

Applicant’s Response:

The proposed development will add to the neighborhood character and livability by being visually compatible, preserving a heritage white oak, and providing pedestrian connection to Molalla Avenue.

Policy 10.1.3

Designate residential land for a balanced variety of densities and types of housing, such as single-family attached and detached, and a range of multi-family densities and types, including mixed-use development.

Applicant’s Response:

The proposed development is a multifamily apartment building.

Policy 10.1.4

Aim to reduce the isolation of income groups within communities by encouraging diversity in housing types within neighborhoods consistent with the Clackamas County Consolidated Plan, while ensuring that needed affordable housing is provided.

Applicant’s Response:

Home to the third largest veteran population in the state, Clackamas County has a long-established goal to serve veterans and end veteran homelessness, as outlined in the Clackamas County Consolidated Plan identifying veteran housing as a priority need, particularly for the 85 homeless vets found during the 2017 Clackamas County Homeless Count. Consequently, the County provided \$755,000 in gap resources as well committed operating subsidies so that the proposed project is able to provide 24 veterans and their families access to affordable, high quality housing.

According to census data, nearly 10% of residents residing within the same zip code as the proposed project site live below the federal poverty line, which for a family of three is an annual income of \$20,420, just above what a full-time worker can earn making minimum wage. A market study commissioned as part of this project through Prior & Associates (see table below), which uses CoStar data as well as direct surveying of properties within the same market area, shows that typical rents in Oregon City are well above what families living below the poverty line can afford. Further, the income-restricted properties in the area, with rents set at levels affordable to those earning 60% AMI— or roughly \$27,000 annually— are often out of range for those experiencing deeper levels of poverty. For these veterans and their families, there are no housing options within Oregon City available and affordable to them.

| EFFECTIVE RENTS OF SURVEYED UNITS | | | | | | | | | | | |
|-----------------------------------|-----------------|---------|---------|---------------------|---------|---------|---------------------|---------|---------|-------------|-------------|
| Unit Type | Class C 60% AMI | | | Class B Market-Rate | | | Class C Market-Rate | | | Class B SFH | Class C SFH |
| | Range | Avg. | | Range | Avg. | | Range | Avg. | | | |
| Studio | --- | --- | --- | \$1,050 | \$1,050 | \$1,050 | \$675 | \$875 | \$808 | --- | --- |
| One Bedroom | \$740 | \$740 | \$740 | \$1,155 | \$1,155 | \$1,155 | \$795 | \$1,050 | \$978 | --- | --- |
| Two Bedroom | \$830 | \$880 | \$866 | \$1,325 | \$1,415 | \$1,389 | \$950 | \$1,350 | \$1,216 | --- | --- |
| Three Bedroom | \$1,000 | \$1,027 | \$1,005 | \$1,655 | \$1,665 | \$1,662 | \$1,025 | \$1,500 | \$1,453 | --- | --- |
| Four Bedroom | --- | --- | --- | \$1,915 | \$1,915 | \$1,915 | --- | --- | --- | \$2,500 | --- |
| Five Bedroom | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | \$1,995 |

Source: Survey by Prior & Associates, August 2016

However, with full project based operating subsidies provided by Clackamas County, this proposed project will provide housing to veterans experiencing deep poverty and sometimes chronic homelessness. This housing will also include wrap-around resident services administered through the Department of Veteran Affairs and Clackamas County Social Services, to ensure that all of our residents are provided with the support they need to remain stably housed as well as the opportunity to grow and thrive.

Policy 10.1.5

Allow Accessory Dwelling Units under specified conditions in single-family residential designations with the purpose of adding affordable units to the housing inventory and providing flexibility for homeowners to supplement income and obtain companionship and security.

Applicant's Response:

NA

Policy 10.1.6

Allow site-built manufactured housing on individual lots in single-family residential zones to meet the requirements of state and federal law. (Pursuant to state law, this policy does not apply to land within designated historic districts or residential land immediately adjacent to a historic landmark.)

Applicant's Response:

NA

Policy 10.1.7

Use a combination of incentives and development standards to promote and encourage well-designed single-family subdivisions and multi-family developments that result in neighborhood livability and stability.

Applicant's Response:

The proposed development is comprised of a thoughtful well-designed site and building. Working within the numerous constraints of the site, the development preserves a heritage tree that adds character and identity to the neighborhood, mitigates on site trees by introducing a large number of native trees, and creates ample parking in the back of the building and an outdoor community space and storm water detention facility on the northeast side of the building. The building design strives to convey a sense of simplicity and beauty through the use of materials that are consistent with the houses around it and the use of repeating window patterns that complement the surrounding neighborhood. To reduce the building mass, recesses in the building façade and a rhythm of columnar plantings have been utilized at the front of the building. A hip roof has also been used to reduce the perceived height of the building. These design measures have been taken specifically as an alternate means to achieve architectural interest and compatibility in lieu of the prescriptive requirements of the development standards for articulation, maximum façade width, and roof line as outlined in 17.62.057.G.

Goal 10.2 Supply of Affordable Housing

Provide and maintain an adequate supply of affordable housing.

Applicant's Response:

The proposed building will provide affordable housing for veterans with low and very low income.

Policy 10.2.1

Retain affordable housing potential by evaluating and restricting the loss of land reserved or committed to residential use. When considering amendments to the Comprehensive Plan Land-Use Map, ensure that potential loss of affordable housing is replaced.

Applicant's Response:

The proposed development will add new affordable housing to Oregon City.

Policy 10.2.2

Allow increases in residential density (density bonuses) for housing development that would be affordable to Oregon City residents earning less than 50 percent of the median income for Oregon City.

Applicant's Response:

The proposed project will be affordable to residents earning less than 30% of the median income for Oregon City. This will, for example, allow a chronically homeless veteran living in this community to have a stable, permanent place to call home. Each unit will come with supportive services through the

Department of Veteran Affairs and Clackamas County Social Services, so that each resident is supported with resources they might need to become stable and productive members of the community.

Policy 10.2.3

Support the provision of Metro's Title 7 Voluntary Affordable Housing Production Goals.

Applicant's Response:

According to Metro's Title 7 Voluntary Affordable Housing Production Goals established in 2001, Oregon City originally committed to a production goal of 123 units of affordable housing for families earning less than 30% of the median household income. While it is difficult to ascertain how the city has done in achieving this goal, it is still clear that housing affordable to those at this income level will continue to be needed. In the latest Metro inventory of regulated affordable housing, 552 units were identified in Oregon City. With roughly 2220 households in Oregon City making less than 60% of the median family income, the current stock of affordable housing only fulfills one-quarter of the need in this community. With so many households in poverty paying more than a third of their incomes to rent, families are often forced to make impossible financial decisions—sometimes sacrificing money spent on food or medicine to keep themselves housed. This unmet need leads to more unstable communities and more public funds spent on healthcare and homelessness. However, if approved and built, the proposed project would add 24 units, or a 4.3% increase, to the stock of housing affordable to those with very low incomes.

Policy 10.2.4

Provide incentives that encourage the location of affordable housing developments near public transportation routes. Incentives could include reduction of development-related fees and/or increases in residential density (density bonuses).

Applicant's Response:

The development is next to a transit street (Molalla Avenue) that is served by Trimet bus routes 32 and 99. These bus routes have stops that are within 500 feet of the main entrance of the building and provide 2 to 3 busses stopping at these stops every hour during peak hours. An incentive that would help encourage more affordable housing would be to allow a variance to the articulation, maximum façade width, and roof line requirements of 17.62.057.G. These requirements created added cost and inefficiencies that limit the amount of affordable housing that can be provided.



October 12, 2017

Christina Robertson-Gardiner
City of Oregon City
221 Molalla Avenue, Suite 200
Oregon City, Oregon 97045

RE: Pleasant Avenue, Incompleteness Letter Response

Dear Christina:

Below are my responses to the items in the incompleteness letter for SP 17-119 and VR 17-11.

1. Could you please clarify if this comment applies to all sections of the Applicant's Submittal summary (the 68-page document) or just the sections for which variances are being sought.
2. Attached is the transportation analysis letter from Kittleson & Associates.
3. The traffic site distance at the intersection of Myrtle Street and Pearl Street is discussed in the transportation analysis letter. Roadway speed measurements and historical crash data were examined within 500 feet of the intersection. Based on the measured traffic speeds, there is adequate sight stopping distance at this intersection. There are also no reported crashes within the last 5 years at this location. These findings suggest that the proposed site access on Myrtle Street will not have an adverse effect on the surrounding community. It should be noted that only 2/3 of the required parking for the development will be accessing Myrtle Street. The rest of the parking is provided as on-street parking on Caufield Street and Pleasant Avenue.
Per 16.12.070, the front setback for the building is located on Caufield Street which is a local street. Allowing the access driveway on Myrtle Street will not cause a traffic safety hazard for the reasons previously stated.
Section 16.12.080 involves the protection of trees. One of the driving factors in the need for access to Myrtle Street is the preservation of the heritage White Oak tree that is located on the east half of the property. Its location requires the placement of the building on the east half of the site in order not to disturb the drip line and root zone for this tree. By placing the parking lot behind the building as required by 17.62.050.A.2, access to the parking lot is only feasible via Myrtle Street.
I could not find section 16.12.120 as referenced in 17.62.040.I
4. Pete Walter indicated that a downstream analysis can be completed during permitting process, and that it was not required at this stage for land use review. Based on that feedback, we will prepare a downstream analysis prior to submitting for permit. Please note that the storm water system has been designed so that post-development storm water run-offs levels do not exceed pre-development (existing) levels.
5. We have requested a copy of the sign-in sheet for the September 12th neighborhood association meeting that we attended. We have also requested a letter from the association stating that we met with them. I will forward these to you as soon as we receive them.
During the neighborhood meeting, we introduced the project to the attendees, presented a site plan and 3-dimensional rendering, explained the unit mix, on-site parking, and preservation of the heritage tree. Attendees asked about the project schedule, and we informed them that we have submitted for design review, and intend to start construction next year. We were also asked about what types of



residents will be living at the building, whether a manager will be onsite, and if citizens of Oregon City will have preference for placement at the building. We explained that the target population is veterans who are below a certain income level and who are in need of housing, that a rotating manager rather than an onsite manager will be at the building, and that the qualification for placement will given to people in Clackamas County.

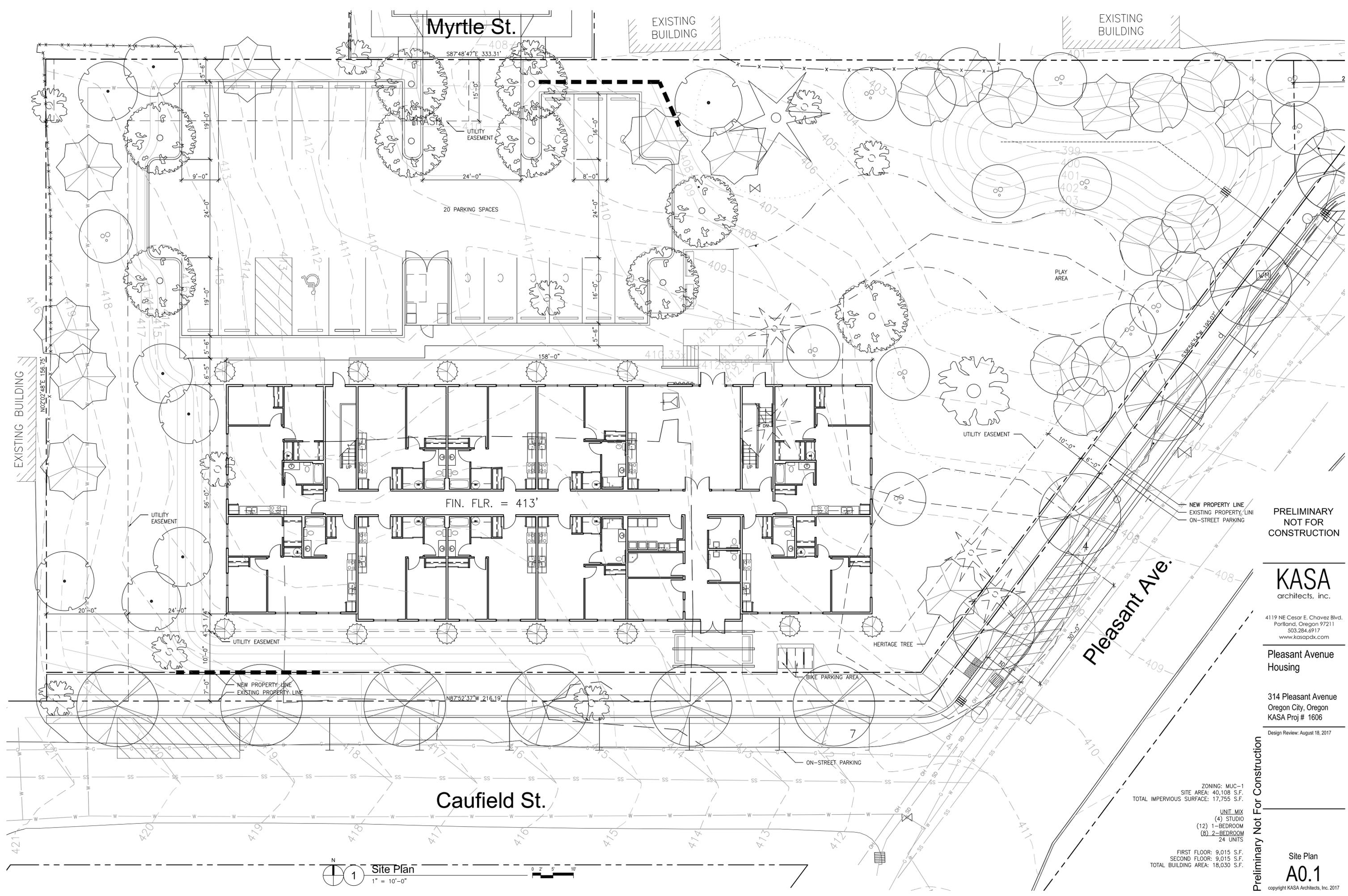
6. Attached is an updated deed showing that Pleasant Street Housing LLC is the owner of the property. Nikolai Ursin is a representative for the owner.
7. We had intended for the colored elevations to act as the materials board. We are using fairly standard materials; Hardie siding, vinyl windows, asphalt shingles, etc. and these are called out on the elevations.
8. The landscape plans have been prepared by Ecotone Environmental and Dan Edwards who is a registered landscape architect in Oregon. Attached are the landscape drawings with an updated title block that includes their contact information. When we submit these for permit review. Dan will stamp and sign them.
Added to sheet L1.01 is a legend that shows the required trees that are being provided. A corresponding label has been added to each tree. One thing we were sure about is the trees that are required for mitigation for setback. Can you let me know what the mitigation for setback is? Dan and I couldn't find that in the municipal code.
9. I have contacted my lighting representative to clarify that the dark cyan contour on the lighting plan represents the 0.5 foot-candle level.

Sincerely,
KASA Architects, Inc.

Kevin Saxton
Principal

Enclosures:

Transportation Analysis Letter
Pleasant Street Warranty Deed
L1.01
L1.02
L1.03
L1.04



Myrtle St.

EXISTING BUILDING

EXISTING BUILDING

20 PARKING SPACES

PLAY AREA

FIN. FLR. = 413'

UTILITY EASEMENT

NEW PROPERTY LINE
EXISTING PROPERTY LINE
ON-STREET PARKING

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Design Review: August 18, 2017

ZONING: MUC-1
SITE AREA: 40,108 S.F.
TOTAL IMPERVIOUS SURFACE: 17,755 S.F.

UNIT MIX
(4) STUDIO
(12) 1-BEDROOM
(8) 2-BEDROOM
24 UNITS

FIRST FLOOR: 9,015 S.F.
SECOND FLOOR: 9,015 S.F.
TOTAL BUILDING AREA: 18,030 S.F.

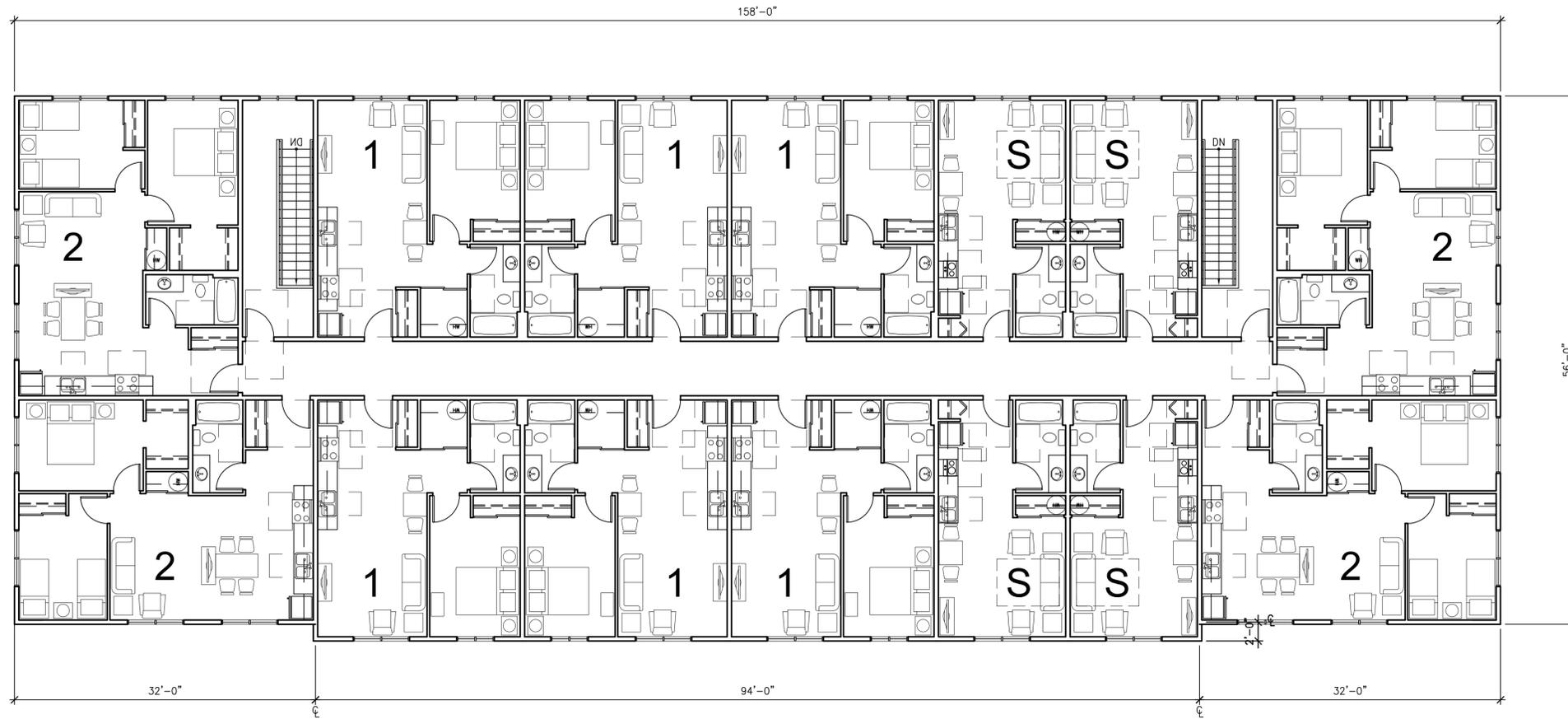
Preliminary Not For Construction

Site Plan
A0.1

copyright KASA Architects, Inc. 2017

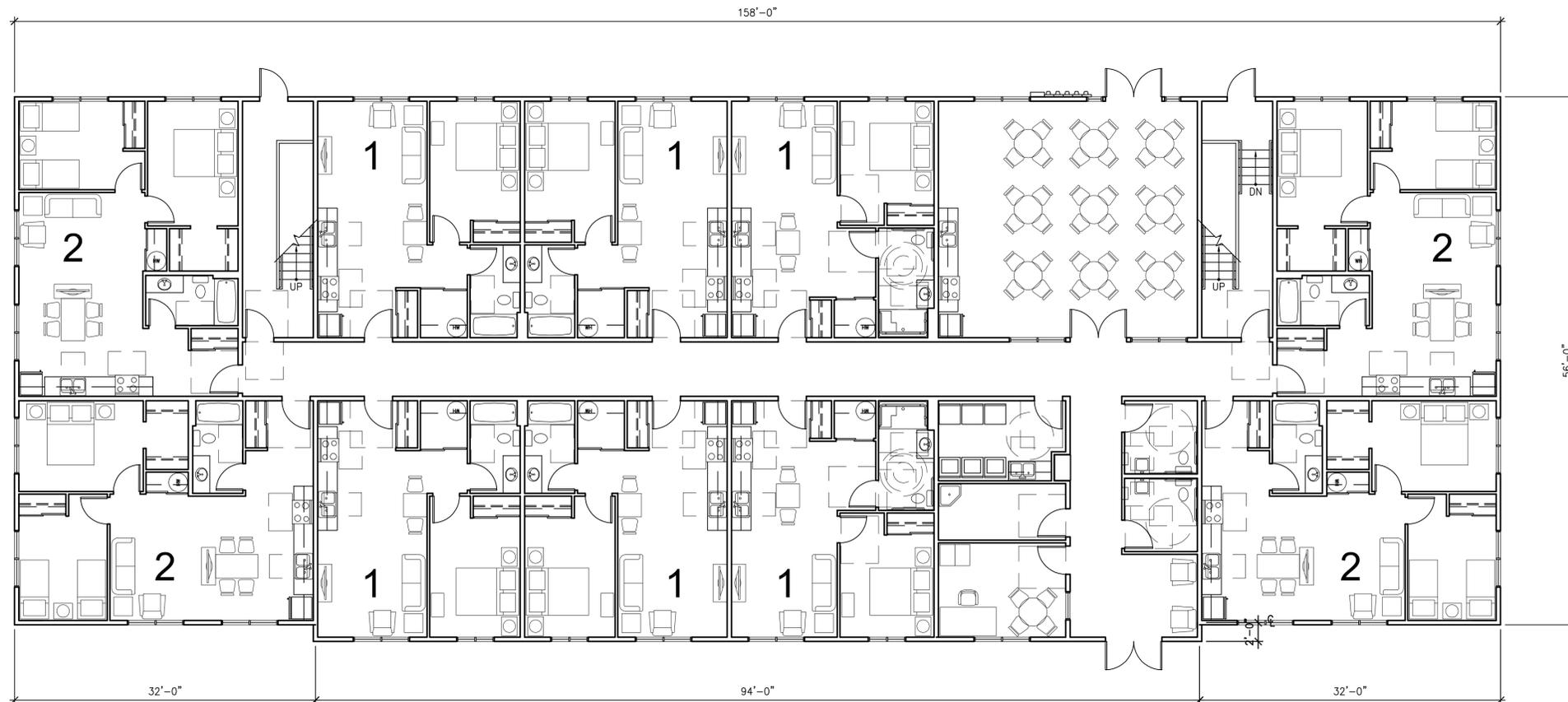
1 Site Plan
1" = 10'-0"







2nd Floor Plan
 1/8" = 1'-0"
 





1st Floor Plan
 1/8" = 1'-0"
 

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Design Review: August 18, 2017

Preliminary Not For Construction

Floor Plans
A2.1

copyright KASA Architects, Inc. 2017



PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

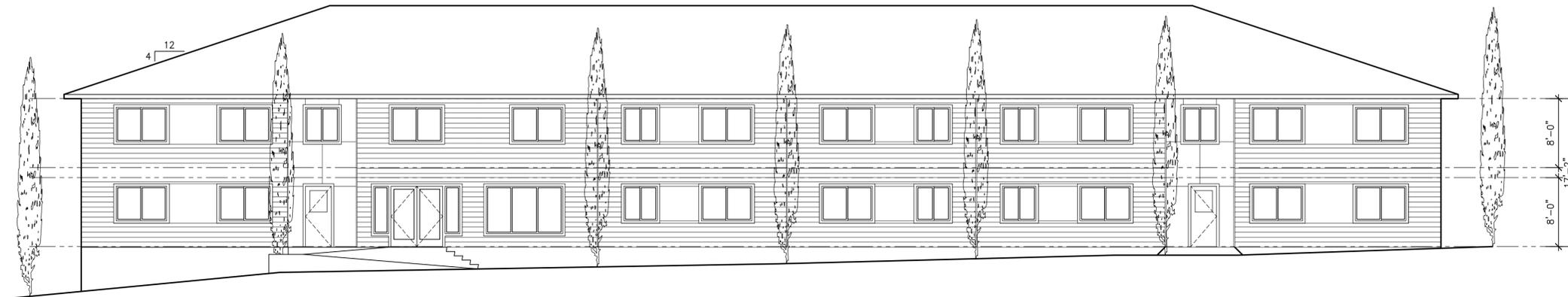
314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Design Review: August 18, 2017

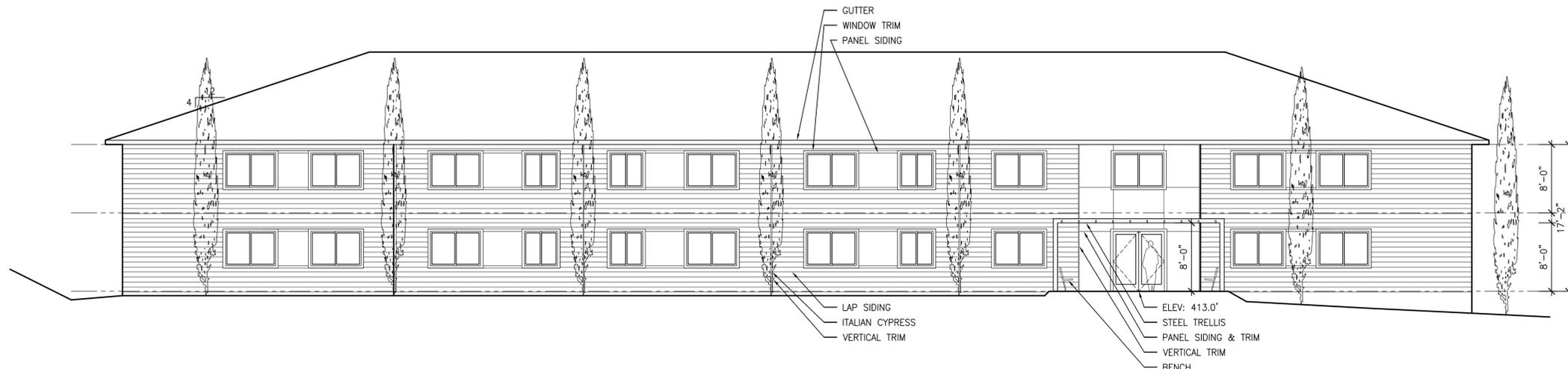
Preliminary Not For Construction

Roof Plan
A2.3

copyright KASA Architects, Inc. 2017



2 North Elevation
 1/8" = 1'-0"



1 South Elevation
 1/8" = 1'-0"

PRELIMINARY
 NOT FOR
 CONSTRUCTION

KASA
 architects, inc.

4119 NE Cesar E. Chavez Blvd.
 Portland, Oregon 97211
 503.284.6917
 www.kasapdx.com

Pleasant Avenue
 Housing

314 Pleasant Avenue
 Oregon City, Oregon
 KASA Proj # 1606

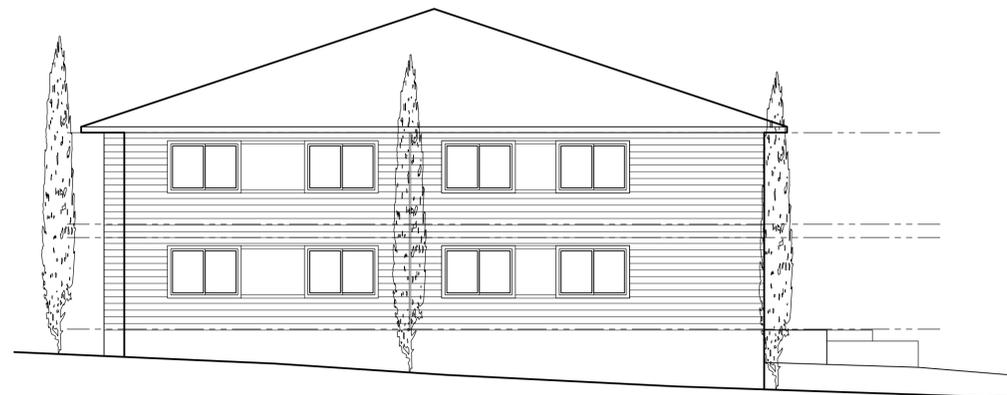
Design Review: August 18, 2017

Preliminary Not For Construction

Exterior Elevations
A3.1
 copyright KASA Architects, Inc. 2017



2 West Elevation
 1/8" = 1'-0"



1 East Elevation
 1/8" = 1'-0"

PRELIMINARY
 NOT FOR
 CONSTRUCTION

KASA
 architects, inc.

4119 NE Cesar E. Chavez Blvd.
 Portland, Oregon 97211
 503.284.6917
 www.kasapdx.com

Pleasant Avenue
 Housing

314 Pleasant Avenue
 Oregon City, Oregon
 KASA Proj # 1606

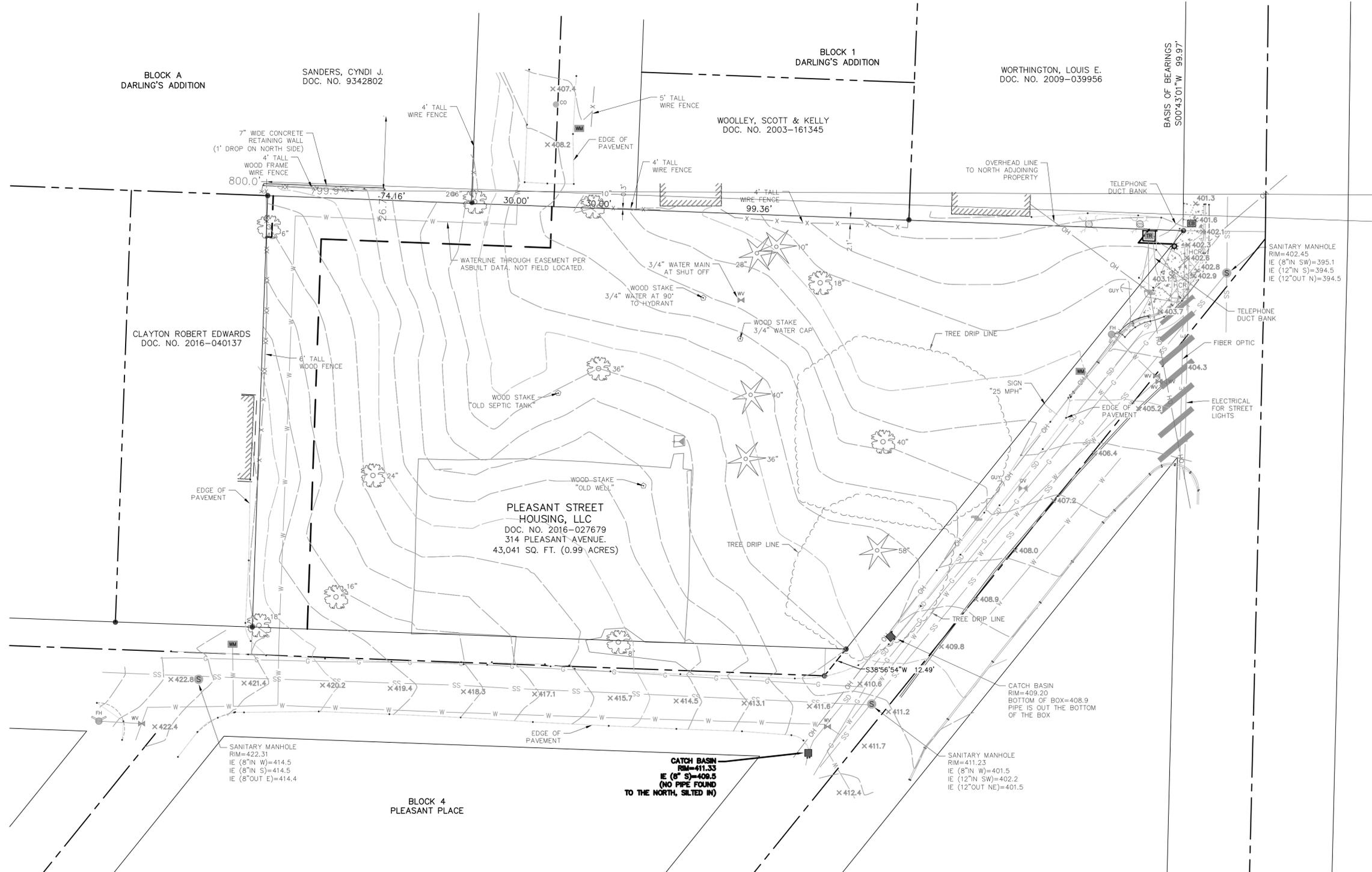
Preliminary Elevations: Aug. 07, 2017

Preliminary Not For Construction

Exterior Elevations

A3.2

copyright KASA Architects, Inc. 2017



EASEMENTS & ENCUMBRANCES:

- PLEASE SEE THE TITLE REPORT FOR ITEMS CONCERNING TAXES, LEASES, LIENS, AGREEMENTS, WAIVERS AND OTHER MATTERS OF RECORD WHICH ARE NOT SURVEY MATTERS AND ARE NOT LISTED BELOW. NUMBERS LISTED REFLECT EXCEPTIONS IN SUBJECT TITLE REPORT. THE FOLLOWING ITEMS LISTED IN THE TITLE REPORT LISTED ON OUR NOTE NUMBER 1 AND ARE LISTED HERE WITH COMMENTS.
- ⑨ EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:
 ENTITLED: EASEMENT, INCLUDING THE TERMS AND PROVISIONS THEREOF.
 IN FAVOR OF: OREGON CITY
 PURPOSES: UTILITIES (INSTALLATION AND MAINTENANCE OF)
 RECORDING DATE: MARCH 30, 1972
 RECORDING NO.: 72-008501
 AFFECTS: THE WESTERLY 20' AND THE NORTHERLY 15' OF THE WEST 103.5 FEET OF SUBJECT SITE. PLOTTED.
 - ⑩ ANY IRREGULARITIES, RESERVATIONS, EASEMENTS OR OTHER MATTERS IN THE PROCEEDINGS OCCASIONING THE ABANDONMENT OR VACATION OF THE STREET/ROAD SHOWN BELOW:
 NAME: PORTION OF MAIN STREET (PLEASANT AVENUE)
 RECORDED: JULY 1, 1979
 RECORDERS NO.: 79-028946
 AFFECTS: NO EASEMENT APPARENT. AFFECTS FRONTAGE ALONG PLEASANT AVENUE. PLOTTED.
 - ⑪ EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:
 ENTITLED: EASEMENT, INCLUDING THE TERMS AND PROVISIONS THEREOF.
 IN FAVOR OF: PACIFIC NORTHWEST BELL TELEPHONE COMPANY
 PURPOSES: UNDERGROUND COMMUNICATION LINES AND ABOVE GROUND CABINET
 RECORDING DATE: NOVEMBER 17, 1986
 RECORDING NO.: 86-045874
 AFFECTS: 5'x10' STRIP AT THE NORTHEAST CORNER OF SUBJECT SITE. PLOTTED.
 - ⑫ DECLARATION OF COVENANTS AND RESTRICTIONS, INCLUDING THE TERMS AND PROVISIONS THEREOF:
 AGREEMENT EXECUTED BY: CLACKAMAS SOIL AND WATER CONSERVATION DISTRICT, AN OREGON SPECIAL SERVICE DISTRICT
 RECORDING DATE: DECEMBER 18, 2015
 RECORDING NO.: 2015-083575
 AFFECTS: A HERITAGE TREE IN THE EASTERLY PORTION OF SUBJECT PROPERTY. PLOTTED.



PRELIMINARY
NOT FOR
CONSTRUCTION

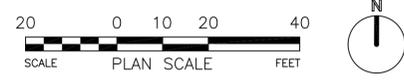


4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

- First Issue
- First Revision
- Second Revision
- Third Revision
- Fourth Revision
- Fifth Revision
- Sixth Revision
- Seventh Revision

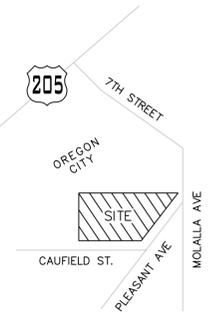


**EXISTING CONDITIONS
SITE PLAN**
SCALE: 1" = 20'

1
C-1

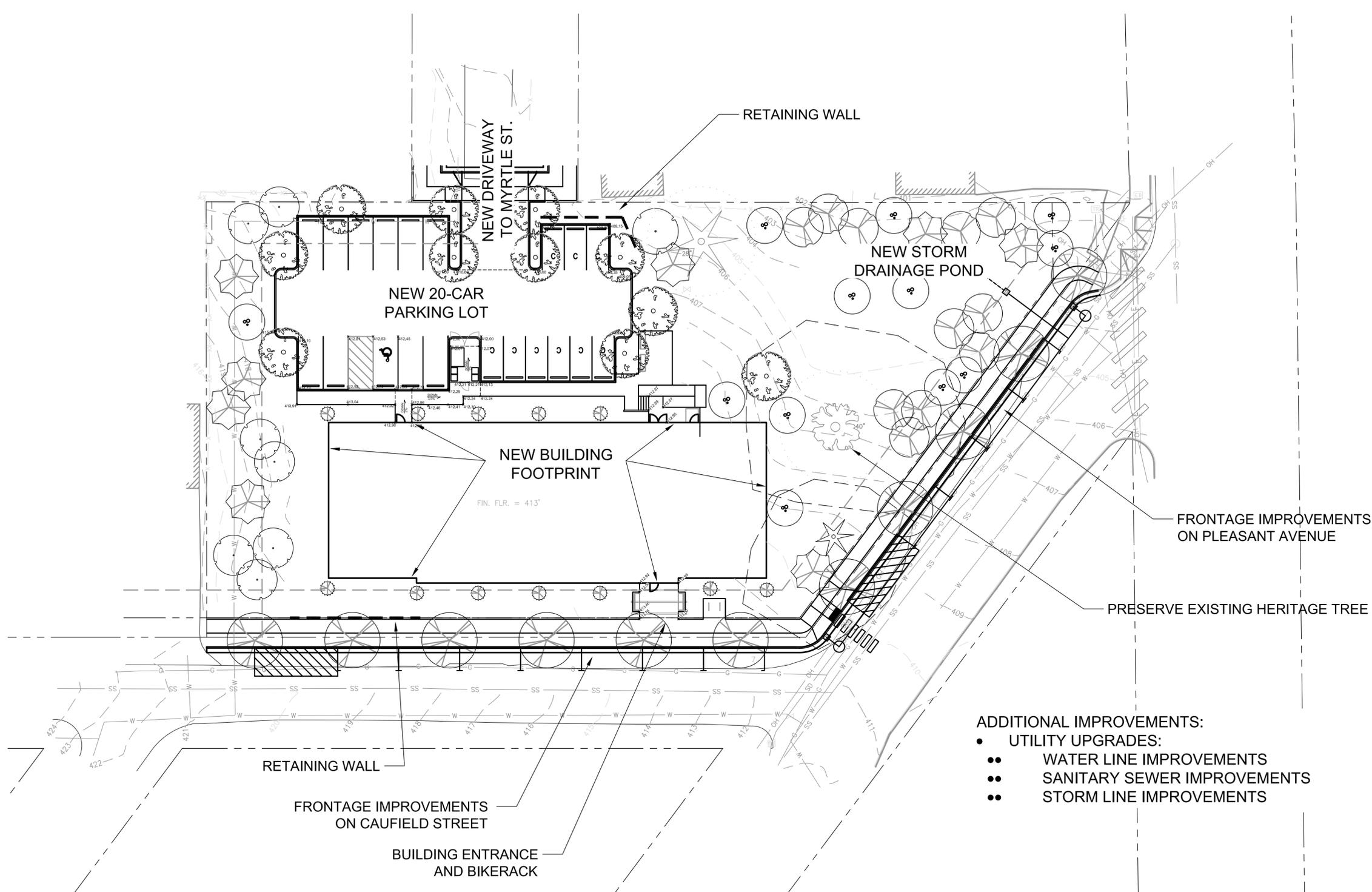
TOPOGRAPHY LEGEND:

- FOUND SURVEY MONUMENT AS NOTED
- ELECTRIC BOX
- TELEPHONE RISER
- ⚡ POWER POLE
- ☀ LIGHT POLE
- ⚡ FIRE HYDRANT
- ⚡ WATER VALVE
- ⚡ WATER METER
- BOLLARD
- ⚡ SIGN
- CLEAN OUT
- SANITARY SEWER MANHOLE
- CATCH BASIN
- STORM SEWER MANHOLE
- MAIL BOX
- ⚡ HOSE BIB
- I.R. IRON ROD
- W/YPC WITH YELLOW PLASTIC CAP
- P.P. PARTITION PLAT NUMBER
- HCR HANDICAP RAMP
- REC. NO. RECORDING NUMBER
- x401.1 SPOT ELEVATION
- ⑩ EXCEPTION PER TITLE REPORT
- ⊙ DECIDUOUS TREE - "MULTIPLE TRUNK #"- "SIZE DBH"
- ⊙ EVERGREEN TREE - "MULTIPLE TRUNK #"- "SIZE DBH"
- ⊙ TREE STUMP
- SD STORM DRAIN SEWER
- SS SANITARY SEWER
- W WATER LINE
- G GAS LINE
- E ELECTRICAL LINE
- T
- X-X-X CHAIN LINK FENCE
- OH OVERHEAD LINE



VICINITY MAP
NOT TO SCALE

EXISTING CONDITIONS
SITE PLAN
C1
copyright KASA Architects, Inc. 2017



- ADDITIONAL IMPROVEMENTS:**
- UTILITY UPGRADES:
 - WATER LINE IMPROVEMENTS
 - SANITARY SEWER IMPROVEMENTS
 - STORM LINE IMPROVEMENTS



**PROPOSED CONDITIONS
SITE PLAN**
SCALE: 1" = 20'

1
C2

PER
PIETROK ENGINEERING
AND RESOURCES
11732 NW Laidlaw Rd.
Portland, OR 97229
www.PER-eng.com

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.
4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing
314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

- Preliminary Not For Construction
- First Issue
 - First Revision
 - Second Revision
 - Third Revision
 - Fourth Revision
 - Fifth Revision
 - Sixth Revision
 - Seventh Revision

PROPOSED CONDITIONS
SITE PLAN
C2
copyright KASA Architects, Inc. 2017

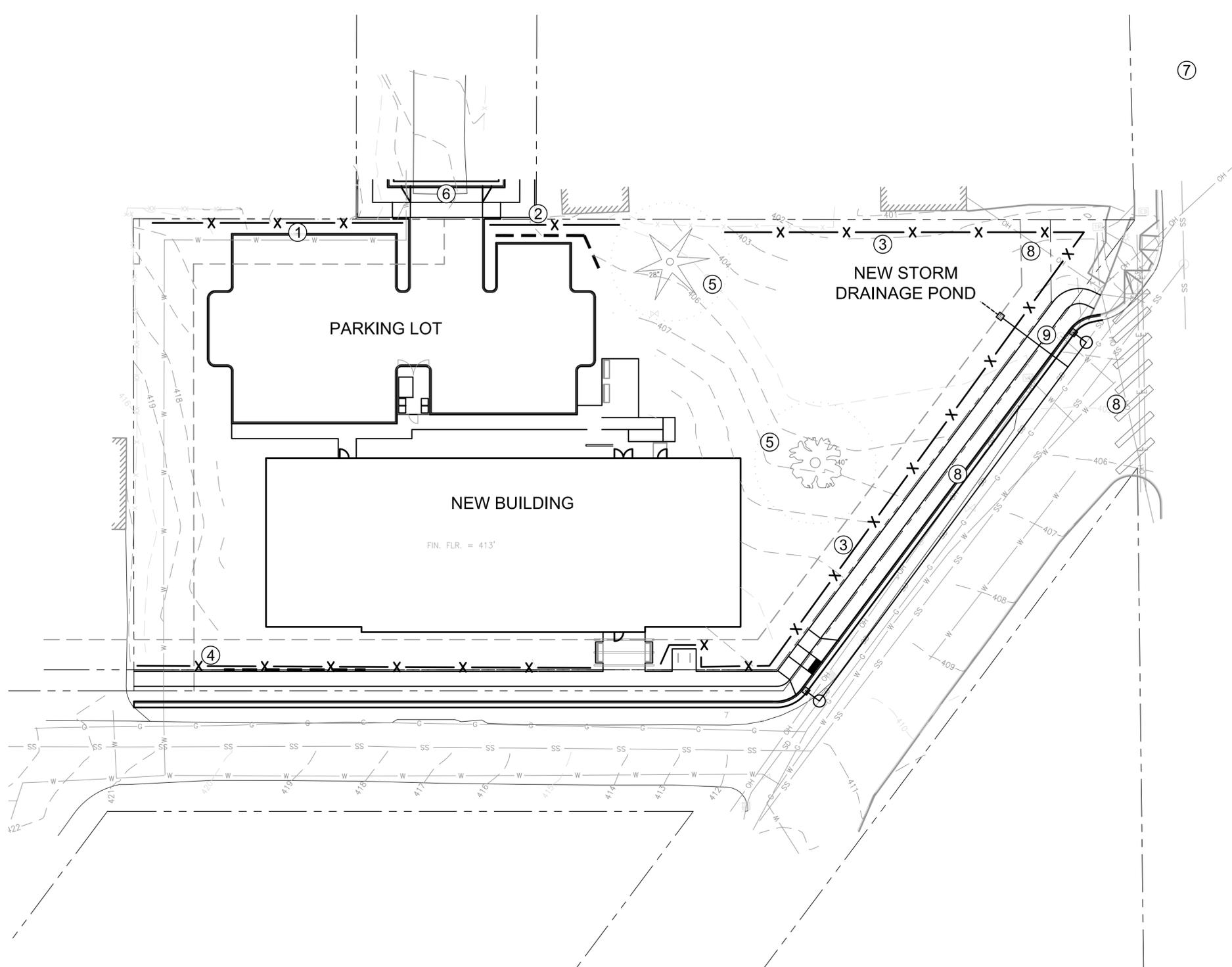
STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

- All permit registrants must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit.
- The ESCP measures shown on this plan are minimum requirements for anticipated site conditions. During the construction period, upgrade these measures as needed to comply with all applicable local, state, and federal erosion and sediment control regulations.
- Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions.
- Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion.
- Identify, mark, and protect (by fencing off or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas.
- Preserve existing vegetation when practical and re-vegetate open areas. Re-vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used.
- Erosion and sediment control measures including perimeter sediment control must be in place before vegetation is disturbed and must remain in place and be maintained, repaired, and promptly implemented following procedures established for the duration of construction, including protection for active storm drain inlets and catch basins and appropriate non-stormwater pollution controls.
- Establish concrete truck and other concrete equipment washout areas before beginning concrete work. Direct all wash water into a pit or leak-proof container. Handle wash water as waste, concrete discharge to waters of the state is prohibited.
- Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses and for all roadways including gravel roadways.
- Establish material and waste storage areas, and other non-stormwater controls.
- Prevent tracking of sediment onto public or private roads using BMPs such as: graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities.
- When trucking saturated soils from the site, either use water-tight trucks or drain loads on site.
- Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations.
- Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies.
- Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil.
- The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone.
- If a stormwater treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain plan approval before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications.
- At the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters.
- Construction activities must avoid or minimize excavation and creation of bare ground during wet weather October 01 - May 31.
- Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal.
- Other sediment barriers (such as biobags); remove sediment before it reaches two inches depth above ground height, and before BMP removal.
- Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project.
- Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in-stream clean up of sediment shall be performed according to the Oregon Division of State Lands required timeframe.
- The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments.
- Provide permanent erosion control measures on all exposed areas. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. However, do remove all temporary erosion control measures as exposed areas become stabilized, unless doing so conflicts with local requirements. Properly dispose of construction materials and waste, including sediment retained by temporary BMPs.
- If vegetative seed mixes are specified, seeding must take place no later than September 1; the type and percentages of seed in the mix must be identified on the plans.
- All pumping of sediment laden water shall be discharged over an undisturbed, preferably vegetated area, and through a sediment control BMP i.e. (filter bag).
- All exposed soils must be covered during the wet weather period, October 01 - May 31.
- If water of the state is within the project site or within 50 feet of the project boundary, maintain the existing natural buffer within the 50-foot zone for the duration of the permit coverage, or maintain less than the entire existing natural buffer and provide additional erosion and sediment control BMPs.

EROSION CONTROL KEY NOTES

- INSTALL 85 LF OF EROSION CONTROL FENCING
- INSTALL 50 LF OF EROSION CONTROL FENCING
- INSTALL 350 LF OF EROSION CONTROL FENCING
- INSTALL 150 LF OF EROSION CONTROL FENCING
- INSTALL CONSTRUCTION FENCING AROUND EXISTING TREES
- INSTALL CONSTRUCTION ENTRANCE
- INSTALL CATCH BASIN PROTECTION.
- INSTALL CAUTION TAPE ON OVERHEAD POWER LINES
- PROTECT EXISTING FIRE HYDRANT

NOTE:
EXISTING CONTOURS SHOWN WHERE GRADES WILL NOT CHANGE.



EROSION CONTROL PLAN
SCALE: 1" = 20'

1
C3



PIETROK ENGINEERING
AND RESOURCES
11732 NW Laidlaw Rd,
Portland, OR 97229
www.PER-eng.com

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

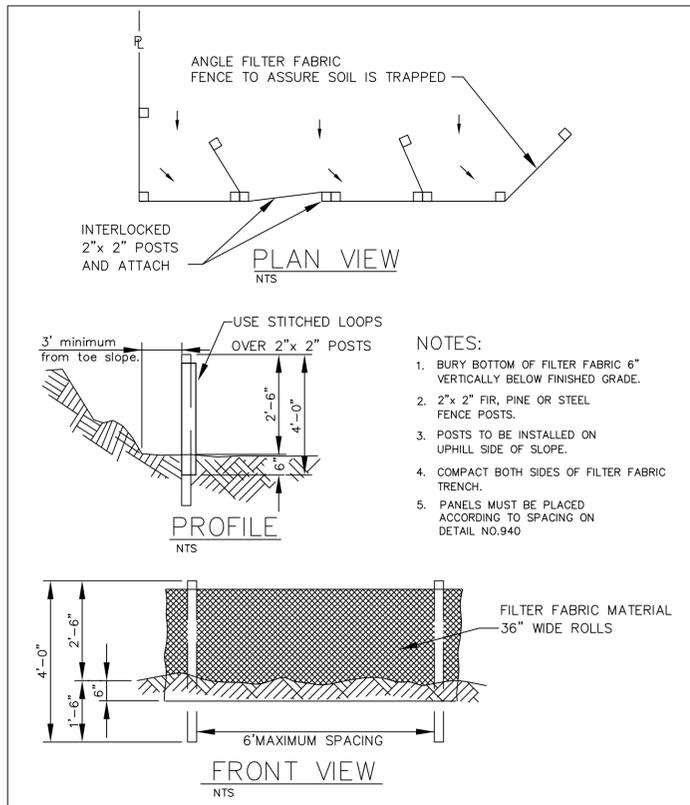
- First Issue
- First Revision
- Second Revision
- Third Revision
- Fourth Revision
- Fifth Revision
- Sixth Revision
- Seventh Revision

EROSION CONTROL
PLAN

C3

copyright KASA Architects, Inc. 2017

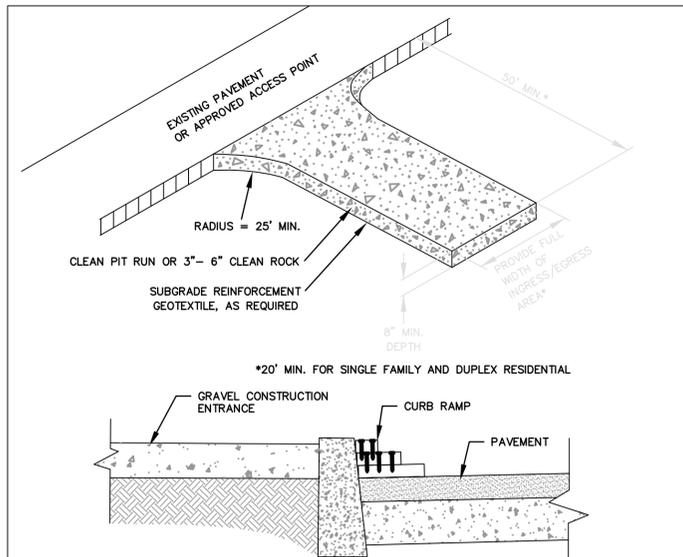
Preliminary Not For Construction



SEDIMENT FENCE

DETAIL DRAWING 4-23

REVISED 01-09

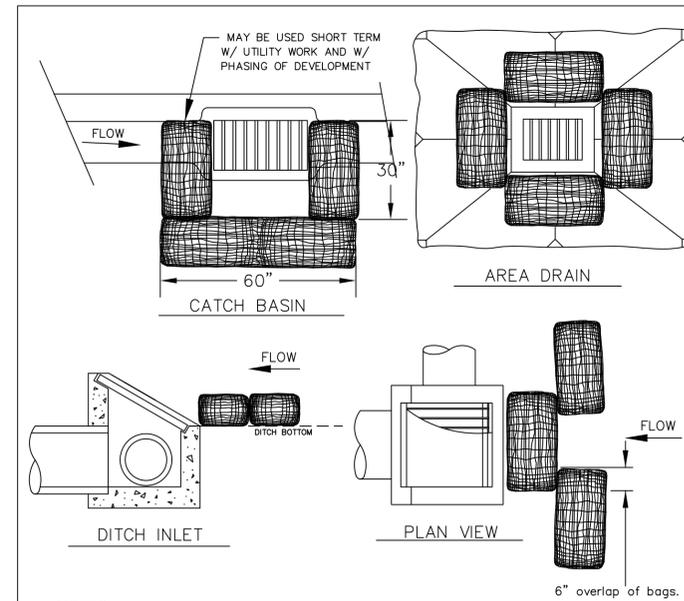


- NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
 4. WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
 5. DIMENSIONS:
SINGLE FAMILY
20' LONG BY 20' WIDE 8" DEEP OF 3/4" MINUS CLEAN ROCK.
COMMERCIAL
50' LONG BY 20' WIDE 3-6" CLEAN ROCK.
GOVERNING AUTHORITY MAY REQUIRE GEOTEXTILE FABRIC TO PREVENT SUB-SOIL PUMPING.

CONSTRUCTION ENTRANCE

DETAIL DRAWING 4-13

REVISED 01-09



- NOTES:
1. ADDITIONAL MEASURES MUST BE CONSIDERED DEPENDING ON SOIL TYPES.
 2. BIO-FILTER BAGS SHOULD BE STAKED WHERE APPLICABLE USING (2) 1"x2" WOODEN STAKES OR APPROVED EQUAL PER BAG.
 3. WHEN USING 30" BIO-BAGS TO PROTECT A CATCH BASIN YOU MUST HAVE 4 BAGS AND THEY SHALL BE OVERLAPPED BY 6".

INLET PROTECTION TYPE 4

DETAIL DRAWING 4-18

REVISED 01-09



PIETROK ENGINEERING AND RESOURCES
11732 NW Laidlaw Rd,
Portland, OR 97229
www.PER-eng.com

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

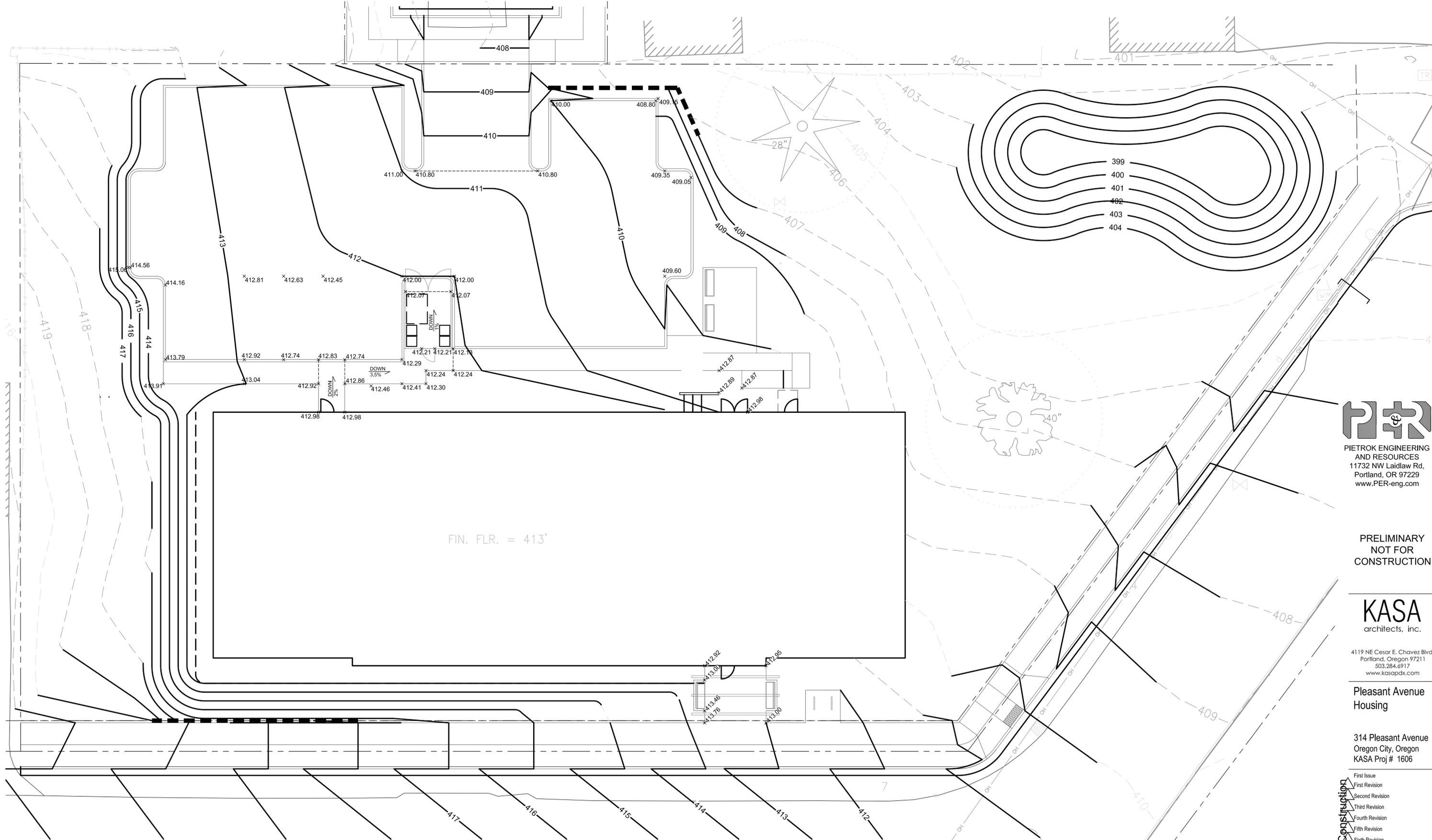
- First Issue
First Revision
Second Revision
Third Revision
Fourth Revision
Fifth Revision
Sixth Revision
Seventh Revision

EROSION CONTROL
DETAILS

C4

copyright KASA Architects, Inc. 2017

Preliminary Not For Construction



**GRADING
SITE PLAN**
SCALE: 1" = 10'



STREET GRADING NOTES:

1. HALF STREET IMPROVEMENTS SHALL MATCH CENTERLINE GRADE, SLOPE DOWN AT A MAXIMUM 5% CROSS SLOPE TO THE GUTTER. THE SIDEWALK SHALL SLOPE UP AT A MAXIMUM 2% GRADE. FILL BEHIND THE SIDEWALK SHALL NOT EXCEED 4h:1v UP/DOWN. CONTRACTOR SHALL VERIFY CENTERLINE GRADE.

PER
PIETROK ENGINEERING
AND RESOURCES
11732 NW Laidlaw Rd,
Portland, OR 97229
www.PER-eng.com

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

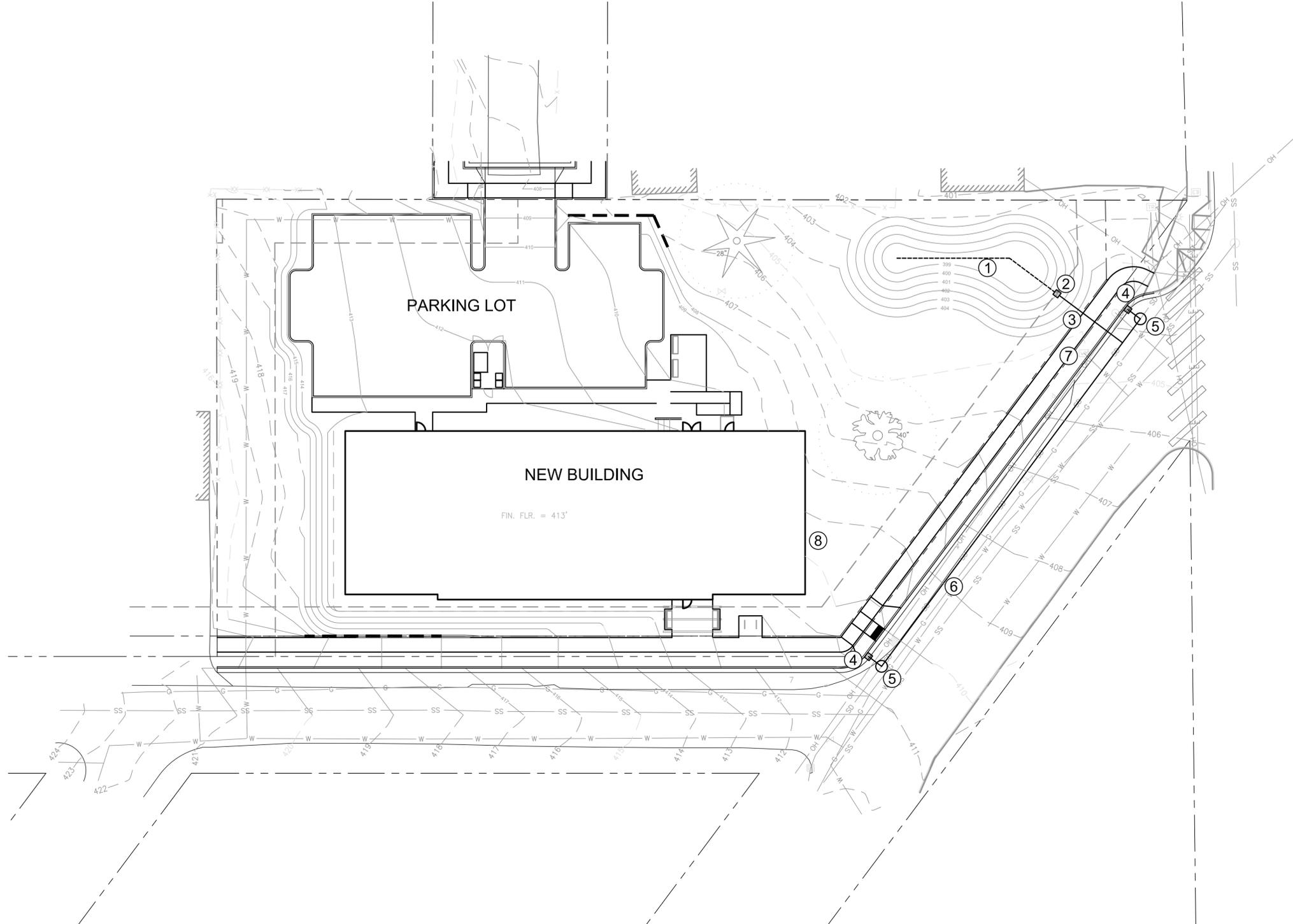
Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

- Preliminary Not For Construction**
- First Issue
 - First Revision
 - Second Revision
 - Third Revision
 - Fourth Revision
 - Fifth Revision
 - Sixth Revision
 - Seventh Revision

GRADING
SITE PLAN

C5



UTILITY NOTES

- ① INSTALL 60 LF OF PERFORATED PIPING IN POND, SEE SHEET C12
- ② INSTALL POND INLET, SEE SHEET C12
- ③ INSTALL 30 LF OF 10" STORM PIPE FROM INLET TO NEW STORM LINE
- ④ INSTALL NEW CATCH BASIN AND APPROXIMATELY 5 LF OF 10" STORM LINE
- ⑤ INSTALL NEW 48" STORM MANHOLE
- ⑥ REPLACE EXISTING STORM LINE WITH 150LF OF NEW 12" SD LINE
- ⑦ REPLACE EXISTING 1.5" WATER SERVICE WITH NEW 2" WATER SERVICE.
- ⑧ SEE PLUMBING DRAWINGS FOR SANITARY SEWER CONNECTION.



UTILITY PLAN
SCALE: 1" = 20'

1
C10

PER
PIETROK ENGINEERING
AND RESOURCES
11732 NW Laidlaw Rd,
Portland, OR 97229
www.PER-eng.com

PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.
4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

- First Issue
- First Revision
- Second Revision
- Third Revision
- Fourth Revision
- Fifth Revision
- Sixth Revision
- Seventh Revision

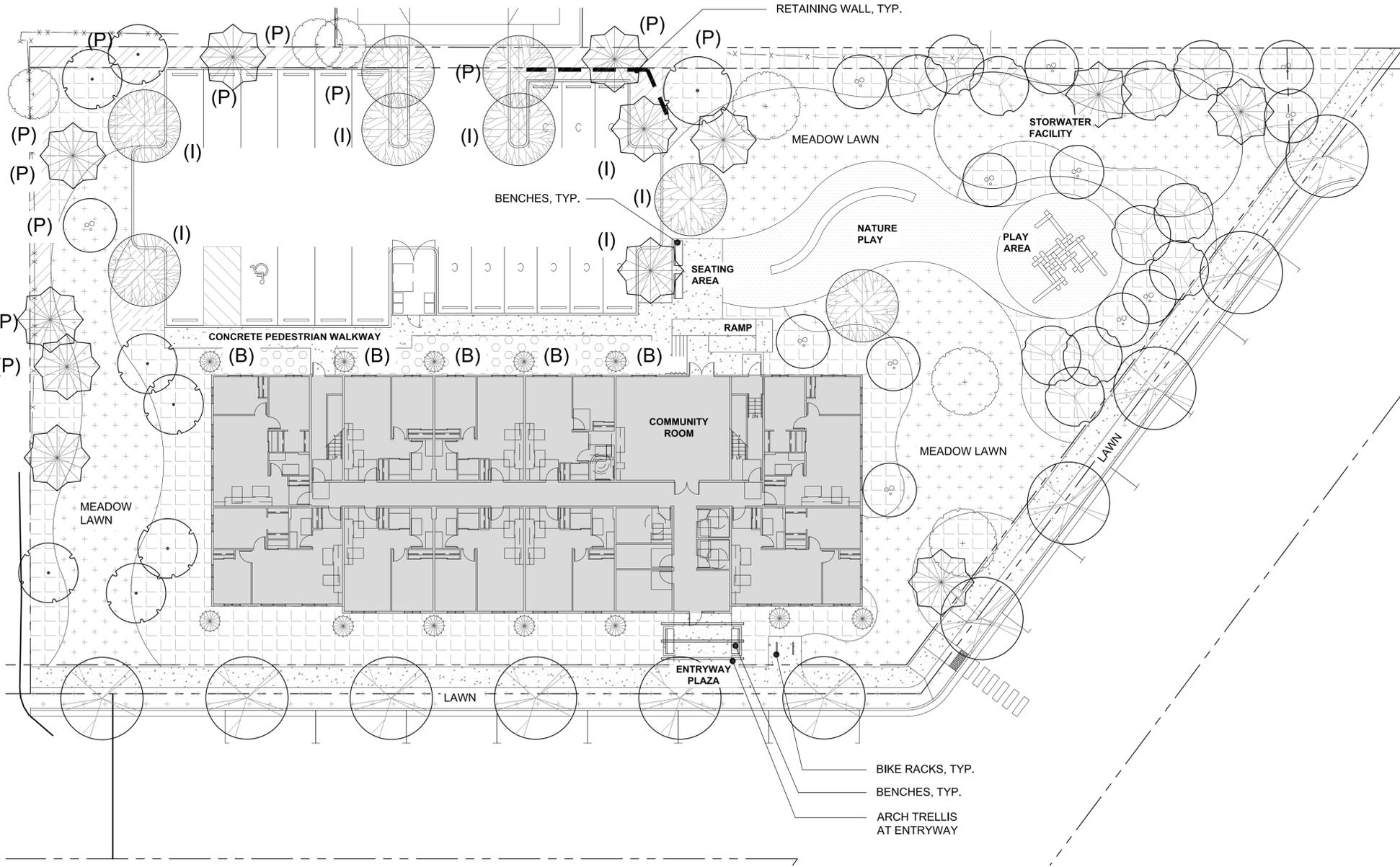
Preliminary Not For Construction

UTILITY PLAN
-
C10
copyright KASA Architects, Inc. 2017

| PLANTING LEGEND | |
|--|--|
| PERIMETER PARKING LOT PLANTING (978 S.F.) | |
| INTERIOR PARKING LOT PLANTING (899 S.F.) | |
| PARKING LOT/ BUILDING BUFFER (829 S.F.) | |
| GENERAL SITE LANDSCAPING (8,747 S.F.) | |
| DWARF MEADOW LAWN (ON PROPERTY - 7,976 S.F.) (RIGHT OF WAY - 2,092 S.F.) | |

| PLANTING REQUIREMENTS |
|---|
| MINIMUM LANDSCAPE REQUIREMENT |
| (15% OF TOTAL LANDSCAPE AREA REQUIRED) |
| <ul style="list-style-type: none"> TOTAL SITE AREA = 39,958 S.F. TOTAL REQUIRED LANDSCAPE AREA = 5,993 S.F. |
| TOTAL LANDSCAPE AREA PROVIDED = 19,425 S.F. TOTAL LANDSCAPE PERCENTAGE PROVIDED = 48.61% |
| INTERIOR PARKING REQUIREMENTS |
| (10% OF TOTAL PARKING LOT AREA REQUIRED) |
| <ul style="list-style-type: none"> TOTAL PARKING LOT AREA = 7,096 S.F. TOTAL REQUIRED LANDSCAPE AREA = 710 S.F. |
| TOTAL LANDSCAPE AREA PROVIDED = 899 S.F. TOTAL LANDSCAPE PERCENTAGE PROVIDED = 12.67% |

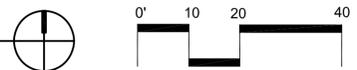
| NOTES |
|---|
| 1. PLANT SELECTIONS MEET ALL PERIMETER PARKING LOT SCREENING, AND INTERIOR PARKING LOT REQUIREMENTS AS SET FORTH BY THE OREGON CITY CODE. |
| 2. ALL PLANTS CHOSEN WERE CHOSEN FROM THE FOLLOWING SOURCES: SUNSET WESTERN GARDEN BOOK, B. OREGON CITY NATIVE PLANT LIST, C. CITY OF PORTLAND NATIVE PLANT LIST, METRO NATIVE PLANT LIST. |
| 3. A MINIMUM OF 15% LANDSCAPE AREA HAS BEEN PROVIDED EXCLUDING PARKING LOT PERIMETER AND INTERIOR PLANTING. |
| 4. ADDITIONAL PLANTING AROUND AND IN PARKING WHICH TOTALS 10% OF THE OVERALL PARKING LOT AREA HAS BEEN PROVIDED. |
| 5. PERIMETER PARKING LOT LANDSCAPING INCLUDES 1 TREE AT 35 S.F. ON CENTER, GROUNDCOVER PLANTED AT A MAXIMUM OF 16" ON CENTER, AND AN EVERGREEN HEDGE 30-42" HIGH OR SHRUBS PLANTED 4' ON CENTER CONTINUOUS. |
| 6. 2 BIKE RACKS ARE INCLUDED IN THE DESIGN SINCE THERE ARE 22 UNITS AND (1) BIKE PARKING SPACE PER 10 UNITS IS REQUIRED. |
| 7. LANDSCAPE ARCHITECT SHALL APPROVE ALL PLANTS PRIOR TO PLANTING. ONLY PLANTS IN GOOD HEALTH WILL BE ACCEPTED. LOCATIONS OF PLANTINGS SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. |
| 8. IF CONTRACTOR IS UNABLE TO FIND PLANTS ON LIST, SUBSTITUTIONS SHALL BE APPROVED BY LANDSCAPE ARCHITECT. SEE SPECIFICATIONS. |
| 9. AN AUTOMATIC IRRIGATION SYSTEM WILL BE INSTALLED PER OREGON CITY CODE. SEE SHEET L1.02 FOR NARRATIVE. |
| 10. PLANTS, TREES, GROUNDCOVER, GRASSES AND VINES SHALL ALL BE INSTALLED PER DETAILS AND SPECIFICATIONS. |
| 11. SOIL PREPARATION AND MULCHING SHALL BE PERFORMED PER SPECIFICATIONS. |



| REQUIRED TREES PROVIDED | |
|---|-----|
| INTERIOR PARKING LOT TREES - (1) TREE PER 6 PARKING STALLS | |
| NUMBER OF PARKING STALLS - 20 | |
| TREES REQUIRED - 4 | (I) |
| TREES PROVIDED - 7 | |
| PERIMETER PARKING LOT TREES - 35' ON CENTER REQUIRED AT PARKING LOT PERIMETER | |
| LINEAR FEET OF PARKING LOT ADJACENT TO BUILDING - 210 L.F. | |
| TREES REQUIRED - 6 | (P) |
| TREES PROVIDED - 12 | |
| PARKING LOT / BUILDING BUFFER | |
| LINEAR FEET OF PARKING LOT ADJACENT TO BUILDING - 109 L.F. | |
| TREES REQUIRED - 4 | (B) |
| TREES PROVIDED - 5 | |
| MITIGATION FOR SETBACK - ??? | (I) |

LANDSCAPE PLAN

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



PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.
4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing
314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Preliminary Not For Construction

LANDSCAPE
PLAN

L1.01
copyright KASA Architects, Inc. 2017

NOTES

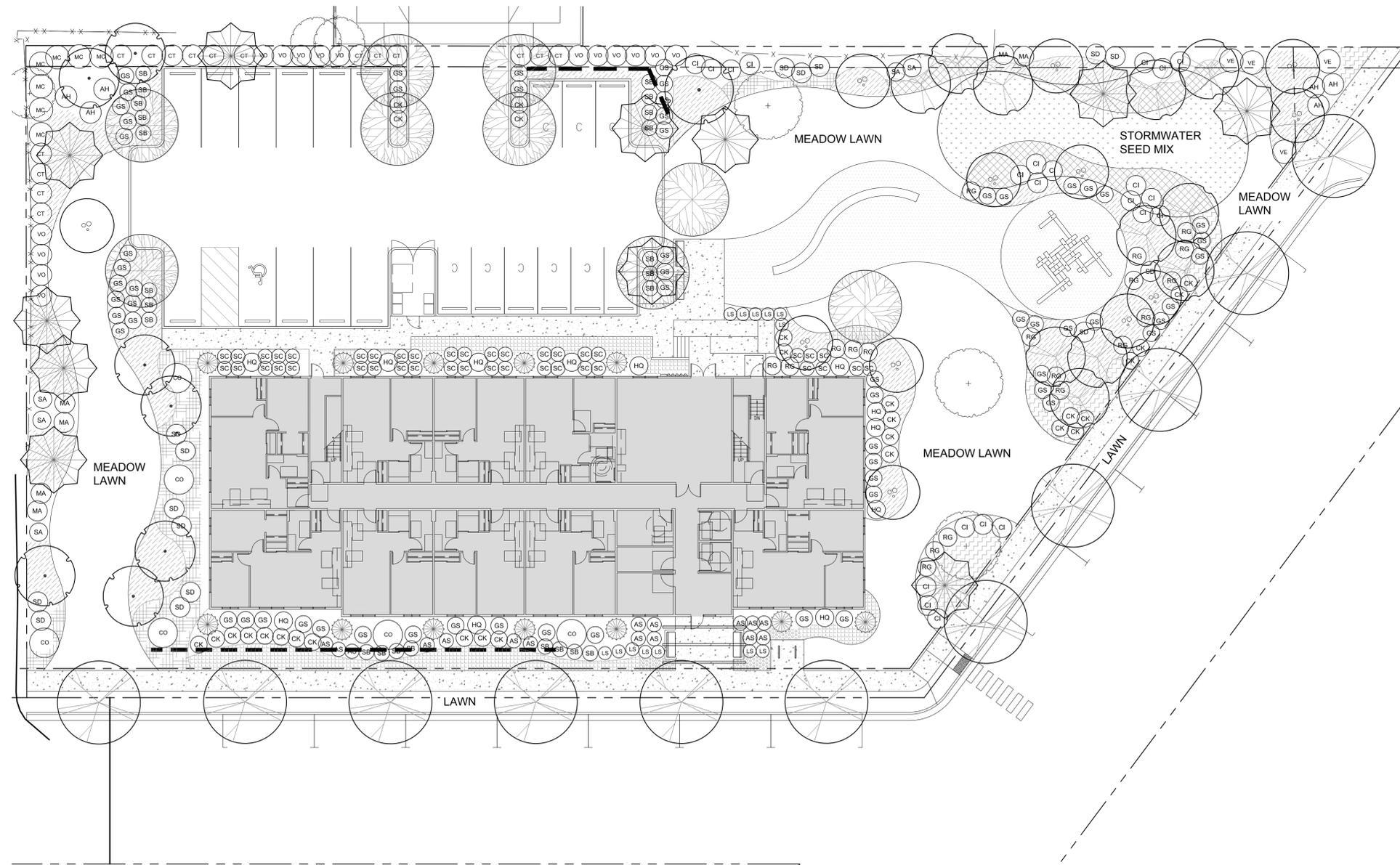
1. PLANT SELECTIONS MEET ALL PERIMETER PARKING LOT SCREENING, AND INTERIOR PARKING LOT REQUIREMENTS AS SET FORTH BY THE OREGON CITY CODE.
2. ALL PLANTS CHOSEN WERE CHOSEN FROM THE FOLLOWING SOURCES: SUNSET WESTERN GARDEN BOOK, B. OREGON CITY NATIVE PLANT LIST, C. CITY OF PORTLAND NATIVE PLANT LIST, METRO NATIVE PLANT LIST.
3. A MINIMUM OF 15% LANDSCAPE AREA HAS BEEN PROVIDED EXCLUDING PARKING LOT PERIMETER AND INTERIOR PLANTING.
4. ADDITIONAL PLANTING AROUND AND IN PARKING WHICH TOTALS 10% OF THE OVERALL PARKING LOT AREA HAS BEEN PROVIDED.
5. PERIMETER PARKING LOT LANDSCAPING INCLUDES 1 TREE AT 35 S.F. ON CENTER, GROUNDCOVER PLANTED AT A MAXIMUM OF 16" ON CENTER, AND AN EVERGREEN HEDGE 30-42" HIGH OR SHRUBS PLANTED 4' ON CENTER CONTINUOUS.
6. 3 BIKE RACKS ARE INCLUDED IN THE DESIGN SINCE THERE ARE 22 UNITS AND (1) BIKE RACK PER 10 UNITS IS REQUIRED.
7. LANDSCAPE ARCHITECT SHALL APPROVE ALL PLANTS PRIOR TO PLANTING. ONLY PLANTS IN GOOD HEALTH WILL BE ACCEPTED. LOCATIONS OF PLANTINGS SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING.
8. IF CONTRACTOR IS UNABLE TO FIND PLANTS ON LIST, SUBSTITUTIONS SHALL BE APPROVED BY LANDSCAPE ARCHITECT. SEE SPECIFICATIONS.
9. AN AUTOMATIC IRRIGATION SYSTEM WILL BE INSTALLED PER OREGON CITY CODE.
10. PLANTS, TREES, GROUNDCOVER, GRASSES AND VINES SHALL ALL BE INSTALLED PER DETAILS AND SPECIFICATIONS.
11. SOIL PREPARATION AND MULCHING SHALL BE PERFORMED PER SPECIFICATIONS.

IRRIGATION SYSTEM NARRATIVE

AN EFFICIENT IRRIGATION SYSTEM WILL BE INSTALLED WHICH WILL PROVIDE WATER TO ENSURE CONSISTENT HEALTH FOR PLANTINGS ON SITE. A DOUBLE CHECK VALVE ASSEMBLY WILL ENSURE THE SYSTEM IS SAFE AND TO CODE.

AUTOMATIC CONTROL VALVES, SIMPLE WEATHER TECHNOLOGY, AND NECESSARY GATES, DRAIN AND QUICK COUPLING VALVES WILL BE PROVIDED.

ALL ZONES WILL BE DESIGNED TO IRRIGATION BY MICROCLIMATE, SUN EXPOSURE, AND MOISTURE AVAILABILITY. MP ROTATORS WILL BE USED WHEREVER POSSIBLE AND DRIP IRRIGATION WILL BE USED ELSEWHERE.



PLANTING PLAN

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



PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Preliminary Not For Construction

PLANTING
PLAN

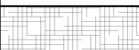
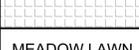
L1.02

copyright KASA Architects, Inc. 2017

| TREE SCHEDULE <small>DECIDUOUS = (D); EVERGREEN = (E)</small> | | | | | |
|---|--|-----------------------|-----------|-----------|----------|
| SYMBOL | BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QUANTITY |
|  | PSEUDOTSUGA MENZIESII (E) | DOUGLAS FIR | 6-8' | B&B | 11 |
|  | POPULUS TREMULOIDES | QUAKING ASPEN | 1.5" CAL. | B&B | 11 |
|  | ALNUS RUBRA | RED ALDER | 1.5" CAL. | B&B | 7 |
|  | CORNUS X NUTTALLII | PACIFIC DOGWOOD | 2" CAL. | B&B | 7 |
|  | ACER CIRCINATUM | VINE MAPLE | 6-8' | B&B | 9 |
|  | CUPRESSUS SEMPERVIRENS 'MONSHEL' | DWARF ITALIAN CYPRESS | 6-8' | B&B | 15 |
|  | PYRUS CALLERYANA 'CHANTICLEER' (STREET TREES) | CHANTICLEER PEAR | 2" CAL. | B&B | 11 |

| NOTES | |
|-------|--|
| 1. | PLANT SELECTIONS MEET ALL PERIMETER PARKING LOT SCREENING, AND INTERIOR PARKING LOT REQUIREMENTS AS SET FORTH BY THE OREGON CITY CODE. |
| 2. | ALL PLANTS CHOSEN WERE CHOSEN FROM THE FOLLOWING SOURCES: SUNSET WESTERN GARDEN BOOK, B. OREGON CITY NATIVE PLANT LIST, C. CITY OF PORTLAND NATIVE PLANT LIST, METRO NATIVE PLANT LIST. |
| 3. | A MINIMUM OF 15% LANDSCAPE AREA HAS BEEN PROVIDED EXCLUDING PARKING LOT PERIMETER AND INTERIOR PLANTING. |
| 4. | ADDITIONAL PLANTING AROUND AND IN PARKING WHICH TOTALS 10% OF THE OVERALL PARKING LOT AREA HAS BEEN PROVIDED. |
| 5. | PERIMETER PARKING LOT LANDSCAPING INCLUDES 1 TREE AT 35 S.F. ON CENTER, GROUNDCOVER PLANTED AT A MAXIMUM OF 16" ON CENTER, AND AN EVERGREEN HEDGE 30-42" HIGH OR SHRUBS PLANTED 4' ON CENTER CONTINUOUS. |
| 6. | 2 BIKE RACKS ARE INCLUDED IN THE DESIGN SINCE THERE ARE 22 UNITS AND (1) BIKE PARKING SPACE PER 10 UNITS IS REQUIRED. |
| 7. | LANDSCAPE ARCHITECT SHALL APPROVE ALL PLANTS PRIOR TO PLANTING. ONLY PLANTS IN GOOD HEALTH WILL BE ACCEPTED. LOCATIONS OF PLANTINGS SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. |
| 8. | IF CONTRACTOR IS UNABLE TO FIND PLANTS ON LIST, SUBSTITUTIONS SHALL BE APPROVED BY LANDSCAPE ARCHITECT. SEE SPECIFICATIONS. |
| 9. | AN AUTOMATIC IRRIGATION SYSTEM WILL BE INSTALLED PER OREGON CITY CODE. SEE SHEET L1.02 FOR NARRATIVE. |
| 10. | PLANTS, TREES, GROUNDCOVER, GRASSES AND VINES SHALL ALL BE INSTALLED PER DETAILS AND SPECIFICATIONS. |
| 11. | SOIL PREPARATION AND MULCHING SHALL BE PERFORMED PER SPECIFICATIONS. |

| SHRUB SCHEDULE <small>DECIDUOUS = (D); EVERGREEN = (E)</small> | | | | | |
|--|-----------------------------------|------------------------|--------|-----------|----------|
| SYMBOL | BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QUANTITY |
| AH | ARCTOSTAPHYLOS HOOKERI (E) | HAIRY MANZANITA | 5 GAL. | CONTAINER | 6 |
| AS | ARCTOSTAPHYLOS 'SUNSET' (E) | SUNSET MANZANITA | 2 GAL. | CONTAINER | 16 |
| CT | CEANOTHUS THYSIFLORUS (E) | BLUE CUSHION CEANOTHUS | 5 GAL. | CONTAINER | 16 |
| CO | CERCIS OCCIDENTALIS (D) | WESTERN REDBUD | 7 GAL. | CONTAINER | 6 |
| CI | CORNUS STOLONIFERA 'ISANTI' (D) | REDTWIG DOGWOOD | 2 GAL. | CONTAINER | 22 |
| CK | CORNUS STOLONIFERA 'KELSEYI' (D) | DWARF REDTWIG DOGWOOD | 2 GAL. | CONTAINER | 29 |
| GS | GAULTHERIA SHALLON (E) | SALAL | 2 GAL. | CONTAINER | 63 |
| HQ | HYDRANGEA QUERCIFOLIA (D) | OAKLEAF HYDRANGEA | 2 GAL. | CONTAINER | 12 |
| LS | LAVANDULA STOECHAS (E) | SPANISH LAVENDER | 1 GAL. | CONTAINER | 13 |
| MA | MAHONIA AQUIFOLIUM 'COMPACTA' (E) | COMPACT OREGON GRAPE | 2 GAL. | CONTAINER | 6 |
| MC | MYRICA CALIFORNICA (E) | PACIFIC WAX MYRTLE | 5 GAL. | CONTAINER | 7 |
| RG | ROSA GYMNOCARPA (D) | LITTLE WOOD ROSE | 2 GAL. | CONTAINER | 19 |
| SC | SARCOCOCCA CONFUSA (E) | SWEET BOX | 2 GAL. | CONTAINER | 41 |
| SB | SPIREA BETULIFOLIA (D) | BIRCH LEAF SPIREA | 2 GAL. | CONTAINER | 23 |
| SD | SPIREA DOUGLASII (D) | DOUGLAS SPIREA | 2 GAL. | CONTAINER | 15 |
| SA | SYMPHORICARPUS ALBA (D) | SNOWBERRY | 2 GAL. | CONTAINER | 5 |
| VO | VACCINIUM OVATUM (E) | EVERGREEN HUCKLEBERRY | 5 GAL. | CONTAINER | 15 |
| VE | VIBURNUM ELLIPTICUM (D) | OVAL LEAFED VIBURNUM | 2 GAL. | CONTAINER | 4 |

| GROUNDCOVER/GRASS SCHEDULE <small>DECIDUOUS = (D); EVERGREEN = (E)</small> | | | | | |
|---|--------------------------------------|------------------------|--------|-----------------------|----------|
| SYMBOL | BOTANICAL NAME | COMMON NAME | SIZE | SPACING | QUANTITY |
|  | CEANOTHUS GLORIOSUS 'ANCHOR BAY' | CALIFORNIA LILAC | 1 GAL. | 30" O.C. | 102 |
|  | JUNCUS PATENS | CALIFORNIA RUSH | 4" POT | 16" O.C. | 240 |
|  | GRASSY SWALE SEED MIX | FOR STORMWATER AREAS | SEED | 1 LB. PER ACRE | .25 LB. |
|  | MAHONIA NERVOSA | CREeping MAHONIA | 4" POT | 30" O.C. | 83 |
|  | POLYSTICHUM MUNITUM | SWORD FERN | 1 GAL. | 30" O.C. | 295 |
|  | RUDBECKIA FULGIDA 'LITTLE GOLD STAR' | DWARF BLACK EYED SUSAN | 1 GAL. | 24" O.C. | 35 |
|  | RIBES LAURIFOLIUM | EVERGREEN CURRANT | 1 GAL. | 30" O.C. | 140 |
| MEADOW LAWN | FLEUR DE LAWN | DWARF MEADOW SEED MIX | SEED | 2 LBS. PER 1,000 S.F. | 15 LBS. |



PRELIMINARY
NOT FOR
CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Preliminary Not For Construction

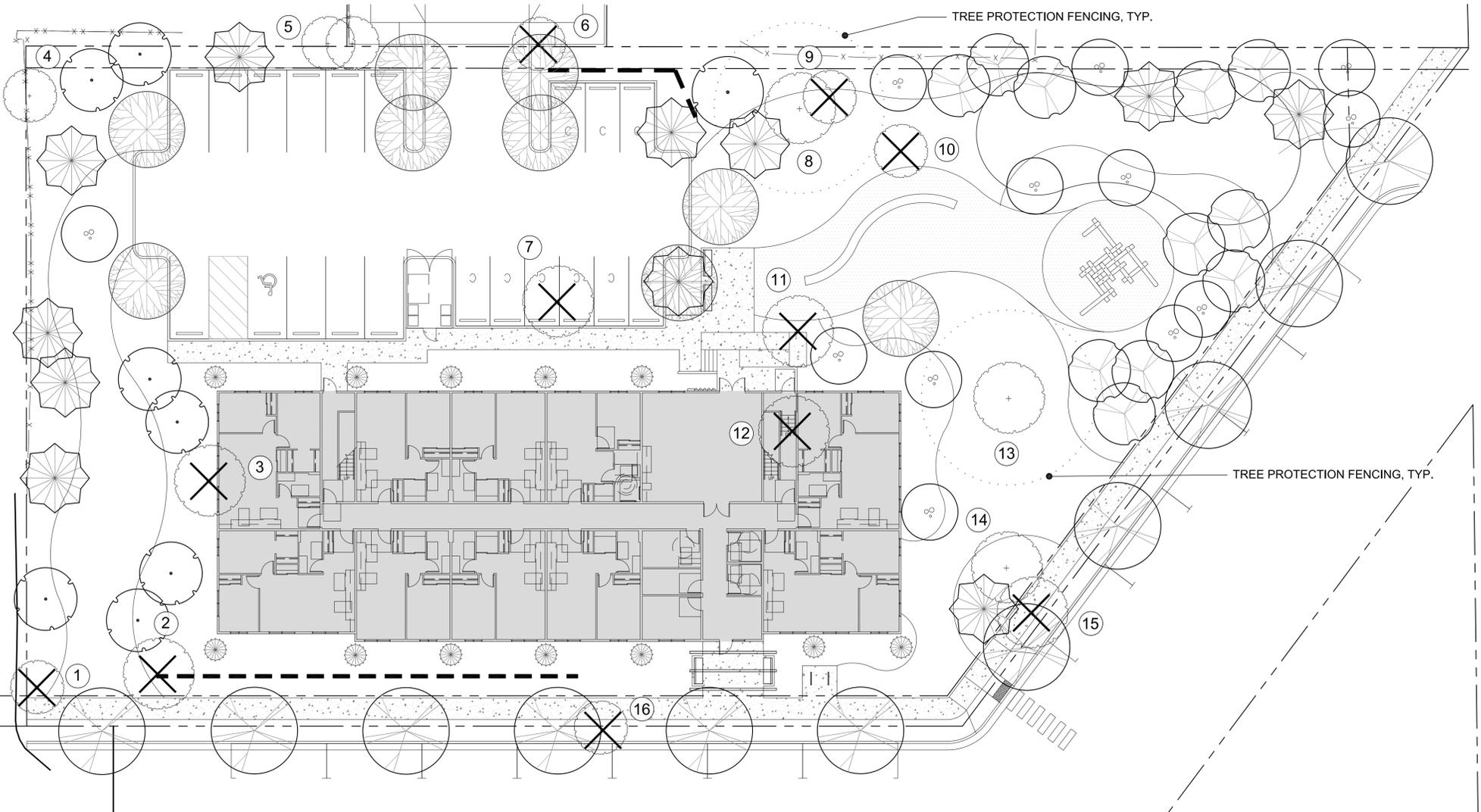
TREE AND
PLANT
SCHEDULE

L1.03

copyright KASA Architects, Inc. 2017

| TREE PROTECTION/MITIGATION SCHEDULE | | | | | | | | |
|-------------------------------------|-------------------|-----------|--------------|------------------|---------------------|---------------------|----------------------|---------------------|
| TREE # | TREE SPECIES | CONDITION | TREE CALIPER | INVASIVE SPECIES | MITIGATION REQUIRED | INSIDE CONSTRUCTION | OUTSIDE CONSTRUCTION | # OF TREES REQUIRED |
| 1 | ENGLISH HOLLY | GOOD | 18 | X | | | | |
| 2 | FRUITING APPLE | FAIR | 17 | | X | 17 | | 2 |
| 3 | FRUITING APPLE | FAIR | 24 | | X | | 24 | 9 |
| 4 | FRUITING PLUM | POOR | 6 | | | | | |
| 5 | FRUITING PLUM | FAIR | 8 | | | | | |
| 6 | BIGLEAF MAPLE | GOOD | 12 | | X | | 12 | 3 |
| 7 | BIGLEAF MAPLE | POOR | 41 | | | | | |
| 8 | WESTERN RED CEDAR | GOOD | 27 | | | | | |
| 9 | SWEET CHERRY | GOOD | 10 | X | | | | |
| 10 | SWEET CHERRY | GOOD | 17 | X | | | | |
| 11 | WESTERN RED CEDAR | GOOD | 42 | | X | | 42 | 15 |
| 12 | WESTERN RED CEDAR | GOOD | 36 | | X | 36 | | 5 |
| 13 | WHITE OAK | GOOD | 39 | | | | | |
| 14 | DOUGLAS FIR | GOOD | 59 | | X | | 59 | 15 |
| 15 | WESTERN RED CEDAR | GOOD | 7 | | X | | 7 | 3 |
| 16 | MOUNTAIN ASH | FAIR | 12 | X | | | | |
| TOTAL | | | | | | | | 52 |

| TREE SCHEDULE <small>DECIDUOUS = (D); EVERGREEN = (E)</small> | | | | | |
|---|---|-----------------------|-----------|-----------|----------|
| SYMBOL | BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QUANTITY |
| | PSEUDOTSUGA MENZIESII (E) | DOUGLAS FIR | 6-8' | B&B | 11 |
| | POPULUS TREMULOIDES | QUAKING ASPEN | 1.5" CAL. | B&B | 11 |
| | ALNUS RUBRA | RED ALDER | 1.5" CAL. | B&B | 7 |
| | CORNUS X NUTTALLII | PACIFIC DOGWOOD | 2" CAL. | B&B | 7 |
| | ACER CIRCINATUM | VINE MAPLE | 6-8' | B&B | 12 |
| | CUPRESSUS SEMPERVIRENS 'MONSHEL' | DWARF ITALIAN CYPRESS | 6-8' | B&B | 15 |
| TOTAL | | | | | 60 |
| | PYRUS CALLERYANA 'CHANTICLEER' (STREET TREES) | CHANTICLEER PEAR | 2" CAL. | B&B | 11 |



- ### NOTES
- NO PERMIT FOR ANY GRADING OR CONSTRUCTION OF PUBLIC OR PRIVATE IMPROVEMENTS MAY BE RELEASED PRIOR TO VERIFICATION BY THE COMMUNITY DEVELOPMENT DIRECTOR THAT REGULATED TREES DESIGNATED FOR PROTECTION OR CONSERVATION HAVE BEEN PROTECTED ACCORDING TO THE FOLLOWING STANDARDS. NO TREES DESIGNATED FOR REMOVAL SHALL BE REMOVED WITHOUT PRIOR WRITTEN APPROVAL FROM THE COMMUNITY DEVELOPMENT DIRECTOR PER OREGON CITY CODE SECTION 17.41.130.
 - DISEASED AND HAZARDOUS TREES CAN BE REMOVED FROM TREE MITIGATION LIST.
 - INVASIVE TREES CAN BE REMOVED FROM TREE MITIGATION LIST.
 - ALL TREES 6" CALIPER AT DBH HAVE BEEN RECORDED BY A LICENSED ARBORIST. TREE CALIPER FOR EACH TREE HAS BEEN ESTABLISHED BY A LICENSED ARBORIST.
 - 2 TREES ARE BEING PROTECTED AS RECOMMENDED BY THE ARBORIST. TREE PROTECTION FENCING WILL BE PLACED AT THE DRIPLINE OF EACH OF THE TREES AS RECOMMENDED BY THE ARBORIST.
 - APPROVED CONSTRUCTION FENCING, A MINIMUM OF FOUR FEET TALL WITH STEEL POSTS PLACED NO FARTHER THAN 10' APART, SHALL BE INSTALLED AT THE EDGE OF THE DRIPLINE.
 - APPROVED SIGNS SHALL BE ATTACHED TO THE FENCING STATING THAT INSIDE THE FENCING IS A TREE PROTECTION ZONE, NOT TO BE DISTURBED UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE COMMUNITY DIRECTOR.

TREE PROTECTION AND MITIGATION PLAN

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



PRELIMINARY
NOT FOR
CONSTRUCTION



4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

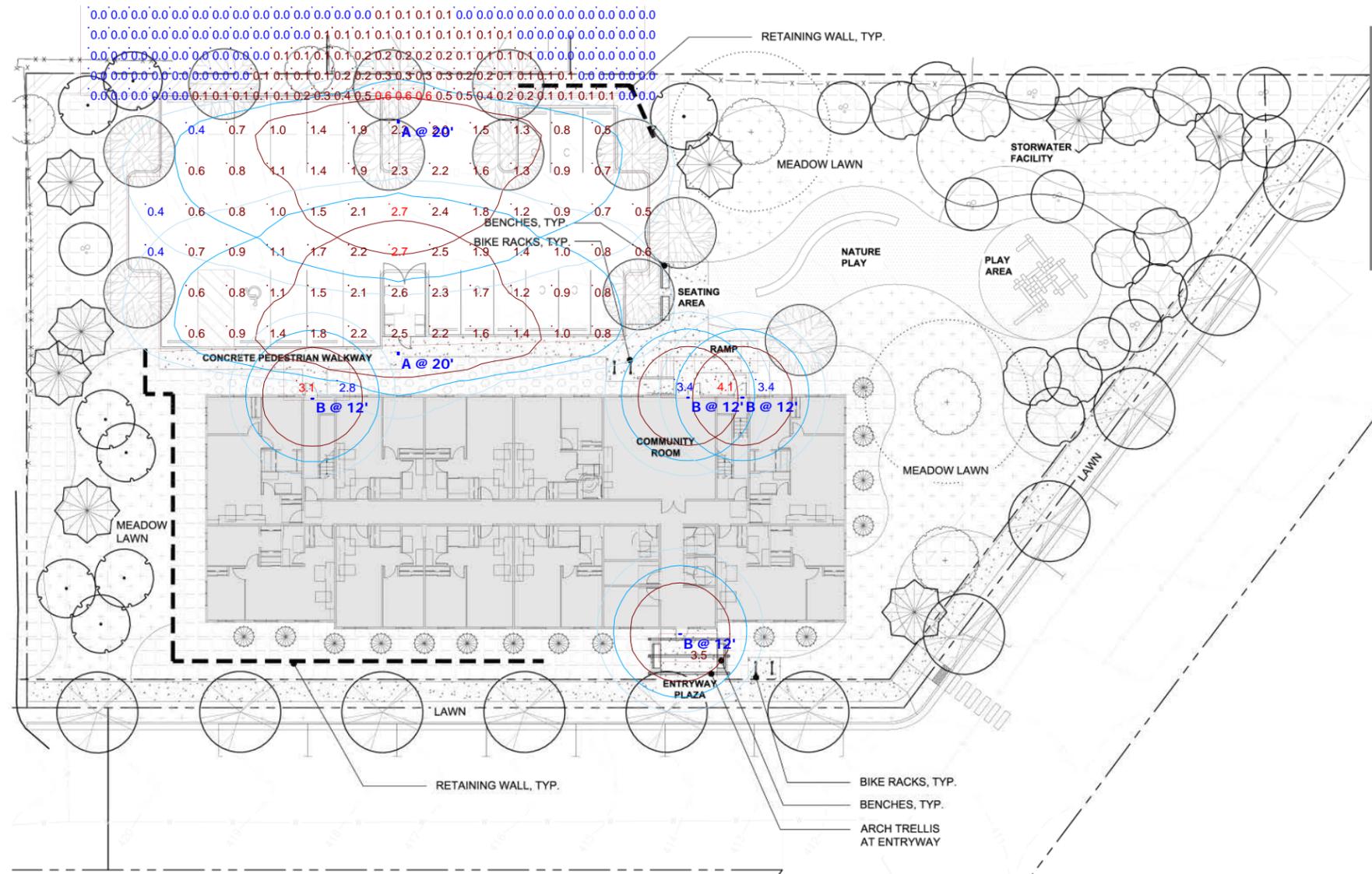
314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Preliminary Not For Construction

TREE
PROTECTION
PLAN

L1.04
copyright KASA Architects, Inc. 2017

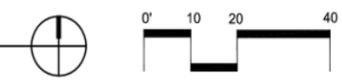
Plan View
Scale - 1" = 35ft



| Statistics | | | | | | |
|--------------------|--------|--------|--------|--------|---------|---------|
| Description | Symbol | Avg | Max | Min | Max/Min | Avg/Min |
| NE Building Entry | + | 3.6 fc | 4.1 fc | 3.4 fc | 1.2:1 | 1.1:1 |
| Near Property Line | + | 0.1 fc | 0.6 fc | 0.0 fc | N/A | N/A |
| NW Building Entry | + | 2.9 fc | 3.1 fc | 2.8 fc | 1.1:1 | 1.0:1 |
| Parking Lot | + | 1.4 fc | 2.7 fc | 0.4 fc | 6.8:1 | 3.5:1 |
| SE Building Entry | + | 3.5 fc | 3.5 fc | 3.5 fc | 1.0:1 | 1.0:1 |

SCHEMATIC LANDSCAPE PLAN

| Schedule | | | | | | |
|----------|-------|----------|-------------------|----------------------------------|--|---------|
| Symbol | Label | Quantity | Manufacturer | Catalog Number | Description | Wattage |
| | A | 2 | Lithonia Lighting | KAD LED 20C 1000 40K R2 MVOLT HS | KAD LED, 20 LED, 1 AMP MVOLT DRIVER, 4000K, TYPE 2 OPTICS WITH HOUSE SIDE SHIELDS. | 73 |
| | B | 4 | Lithonia Lighting | OLWX1 LED 20W 40K DDB | 20W 4000K LED WALL PACK | 21.77 |



October 5, 2017

Project #: 21949

John Replinger
 Replinger & Associates LLC
 6330 SE 36th Avenue
 Portland, OR 97202

RE: Pleasant Avenue Housing Development - Transportation Analysis Letter

Dear John,

The following Transportation Analysis Letter (TAL) has been prepared for the proposed Pleasant Avenue Housing development in Oregon City, OR. The project will include 24 affordable housing units designed specifically for veterans. Based on feedback from City staff, it was determined that a TAL was required to support the land use application. The requirements for a TAL are outlined below, followed by an explanation as to how the requirements are being met.

1. *The expected trip generation of the proposed development including the AM peak hour, the PM peak hour, daily traffic, and other germane periods as may be appropriate, together with appropriate documentation and references.*

Northwest Housing Alternatives is proposing to develop a 24-unit veteran affordable housing project. The most common source for estimating a development’s trip generation profile is the Institute of Transportation Engineer’s (ITE) *Trip Generation*; however there is no measured data for this specific land use. Instead, a conservative approximation of daily and peak hour trips was developed using the Apartment land use category. Table 1 summarizes the resulting trip generation estimate for the 24-unit development.

Table 1 - Pleasant Avenue Housing Trip Generation Estimate

| | ITE Land Use | Size | Daily Trips | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|----------------------|-----------------|----------|-------------|----------------------|----|-----|----------------------|----|-----|
| | | | | Total | In | Out | Total | In | Out |
| Pleasant Ave Housing | Apartment (220) | 24-units | 160 | 12 | 2 | 10 | 15 | 10 | 5 |

As shown in Table 1, the proposed development (under the Apartment land use category) could be expected to generate 160 daily trips, 12 weekday AM peak hour trips, and 15 weekday PM peak hour trips. Based on discussions with the development team, the actual trip profile of the affordable housing development is likely to be less than this estimate given the propensity for lower vehicle ownership rates among the target residents.

2. *Site plan showing the location of all access driveways or private streets where they intersect with public streets plus driveways of abutting properties and driveways on the opposite side of the street from the proposed development.*

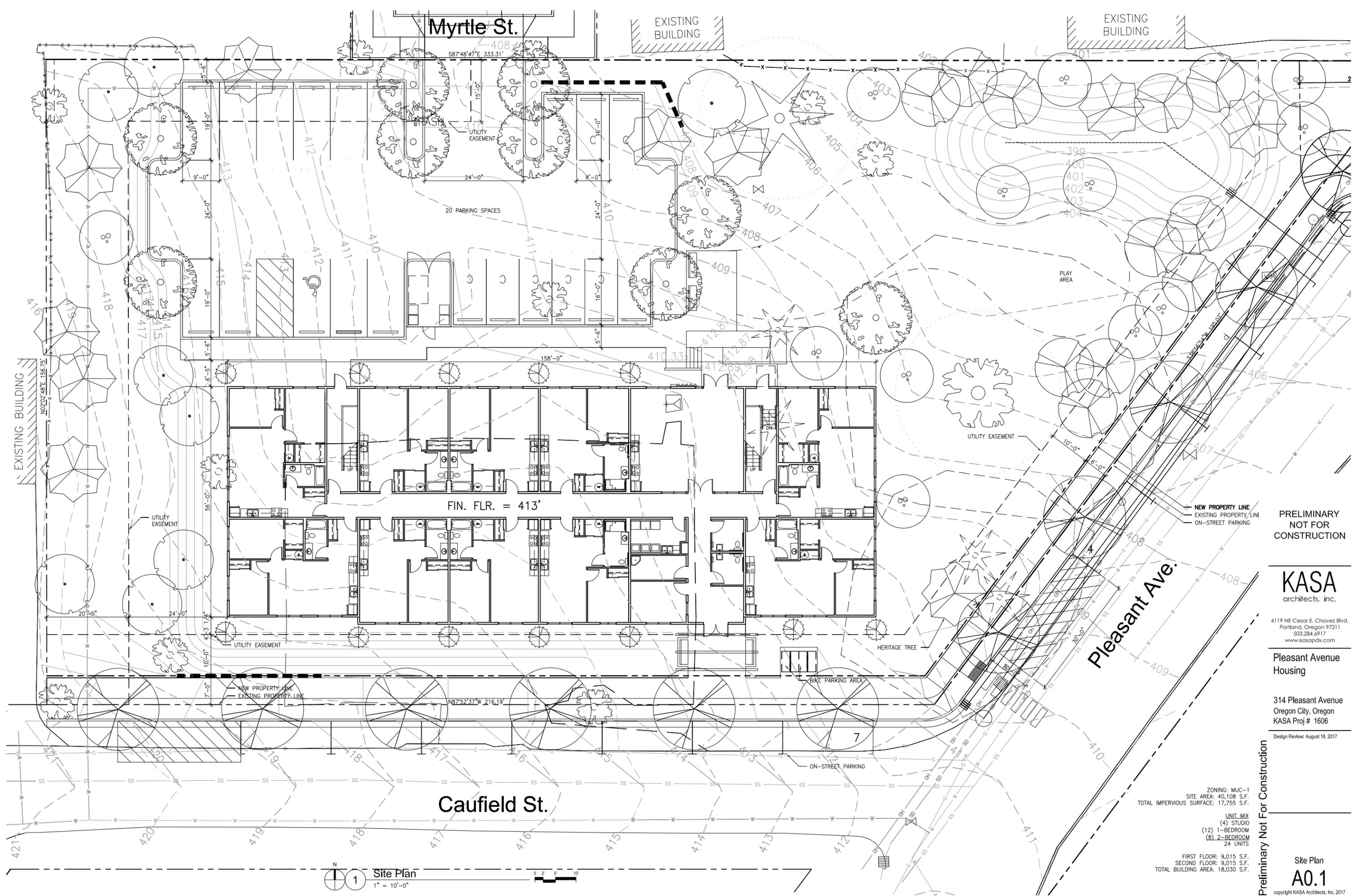
Figure 1 illustrates a site plan showing the proposed Pleasant Avenue Housing residential structure and parking lot. Figure 2 illustrates the location of the site in relation to adjacent properties and their access driveways. As shown, vehicular access to the site is proposed via a driveway that would be placed at the southerly tip of Myrtle Street. This driveway location would not conflict with any other driveways on adjacent properties.

3. *Documentation that all site access driveways meet Oregon City Private Access Driveway Width Standards.*

Section 12.04.025 of the Oregon City Municipal Code requires that a multi-family residential driveway access be a minimum of 15 feet in width and a maximum of 40 feet in width. The site driveway off of Myrtle Street is proposed to be 24 feet wide, thereby meeting the private access driveway width standards.

4. *Documentation that all site access driveways meet Oregon City's Minimum City Street Intersection Spacing Standards.*

Section 12.04.195 of the Oregon City Municipal Code requires that the minimum driveway spacing along a Local Street is 25 feet. Myrtle Street is classified as a Local Street. The southerly terminus of Myrtle Street is at the northern boundary of the proposed site. The site access driveway to the proposed residential parking lot would be located at this terminus. There is one private residential driveway serving the single family residence on the east side of Myrtle Street that is very near the property boundary line and the end of Myrtle Street. However, the proposed site layout would include a 30' long driveway throat into the site to delineate the end of Myrtle Street and the beginning of the site driveway and parking area. This driveway throat will provide effective separation between the adjacent single family home driveway and the proposed parking area.



Myrtle St.

EXISTING BUILDING

EXISTING BUILDING

FIN. FLR. = 413'

Caufield St.

Pleasant Ave.

PRELIMINARY NOT FOR CONSTRUCTION

KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Design Review: August 18, 2017

ZONING: MUC-1
SITE AREA: 40,108 S.F.
TOTAL IMPERVIOUS SURFACE: 17,755 S.F.

UNIT MIX
(4) STUDIO
(12) 1-BEDROOM
(8) 2-BEDROOM
24 UNITS

FIRST FLOOR: 9,015 S.F.
SECOND FLOOR: 9,015 S.F.
TOTAL BUILDING AREA: 18,030 S.F.

Preliminary Not For Construction

Site Plan
A0.1
copyright KASA Architects, Inc. 2017

1 Site Plan
1" = 10'-0"



Figure 2 – Aerial Image



5. Documentation that all site accesses and/or private street intersections meet AASHTO intersection sight distance guidelines.

The proposed site driveway would be located at what is currently the southern terminus of Myrtle Street. Based on a review of the proposed site plan and the straight alignment of Myrtle Street, no intersection sight distance constraints are anticipated with the development of a driveway at this location.

At the request of City staff, intersection sight distance was measured at the northbound Myrtle Street approach to Pearl Street. Looking east from this intersection, intersection sight distance is limited to approximately 185 feet (measured from an offset observation point of 14.5 feet) primarily due to the sloped embankment of the adjacent property. However, field observations noted that most vehicles moved forward at the intersection beyond the 14.5 foot standard observation point in order to improve their sight lines around the sloped embankment. Based on these observed patterns, approximately 220 feet of intersection sight distance was measured from an offset observation distance of 7 feet. No additional intersection sight distance could be achieved beyond a 7-foot offset distance due to the crest vertical curve of Pearl Street. Photos of these findings are included below.

Exhibit 1 – Facing East Along Pearl Street from Driver Viewpoint on Myrtle Street

14.5-Foot Offset Observation Point

7-Foot Offset Observation Point



Based on these initial intersection sight distance measurements and the limiting vertical profile of Pearl Street, roadway speed measurements were taken along Pearl Street near the crest of the vertical curve to determine the 85th percentile speed of approaching Pearl Street vehicles. The speed measurements found that the 85th percentile speed for approaching eastbound vehicles was 26 mph. With a 26 mph approaching speed, *A Policy on Geometric Design of Highways and Streets*, 6th Edition (published by the American Association of State Highway Transportation Officials, AASHTO), identifies a desired 287 feet of intersection sight distance for the side street left-turn movement.

As noted previously, the available intersection sight distance for a left-turning vehicle off of Myrtle Street (assuming a 7-foot offset observation point) is 220 feet. This distance is less than the desired 287 feet. However, the stopping sight distance for an eastbound vehicle on Pearl Street was measured to be 220 feet which exceeds the desired minimum distance of 160 feet as identified by AASHTO.

Considering these findings, historical crash data was collected at the Pearl Street/Myrtle Street intersection and along Pearl Street for a distance of 500 feet west of the intersection to determine if there is a crash history associated the intersection and the sight distance limitations. A review of the most recent five years of crash data revealed no reported intersection or segment crashes associated with movements at the Pearl Street/Myrtle Street intersection (a copy of the crash data is attached). Given the lack of crash history and the fact that eastbound vehicles on Pearl Street have sufficient stopping sight distance, the City could deem the sight distance at the Pearl Street/Myrtle Street intersection sufficient.

6. *Documentation that there are no inherent safety issues associated with the design and location of the site access driveways.*

Please see the responses to Items #4 and #5 above.

7. *Documentation that the applicant has reviewed the City's TSP and that proposed streets and frontage improvements do or will comply with any applicable standards regarding the functional classification, typical sections, access management, traffic calming and other attributes as appropriate.*

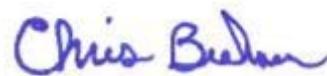
A review of the Oregon City TSP indicates that there are no improvements planned within the immediate vicinity of the proposed site. Caufield Street and Pleasant Avenue are both classified as Local streets. Frontage along Pleasant Avenue and Caufield Street will be improved to a local mixed use commercial street standard as outlined in Section 12.04.180 of the Oregon City Municipal Code.

We trust this letter adequately addresses the requirements for a TAL. Please let us know if you have any questions.

Sincerely,
KITTELSON & ASSOCIATES, INC.



Matt Hughart, AICP
Associate Planner



Chris Brehmer, PE
Senior Principal Engineer

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-------------|-------------------|---|
| 000 | NONE | NO ACTION OR NON-WARRANTED |
| 001 | SKIDDED | SKIDDED |
| 002 | ON/OFF V | GETTING ON OR OFF STOPPED OR PARKED VEHICLE |
| 003 | LOAD OVR | OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC. |
| 006 | SLOW DN | SLOWED DOWN |
| 007 | AVOIDING | AVOIDING MANEUVER |
| 008 | PAR PARK | PARALLEL PARKING |
| 009 | ANG PARK | ANGLE PARKING |
| 010 | INTERFERE | PASSENGER INTERFERING WITH DRIVER |
| 011 | STOPPED | STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN |
| 012 | STP/L TRN | STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC. |
| 013 | STP TURN | STOPPED WHILE EXECUTING A TURN |
| 014 | EMR V PKD | EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY |
| 015 | GO A/STOP | PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED. |
| 016 | TRN A/RED | TURNE D ON RED AFTER STOPPING |
| 017 | LOSTCTRL | LOST CONTROL OF VEHICLE |
| 018 | EXIT DWY | ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY |
| 019 | ENTR DWY | ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY |
| 020 | STR ENTR | BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER |
| 021 | NO DRVR | CAR RAN AWAY - NO DRIVER |
| 022 | PREV COL | STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED |
| 023 | STALLED | VEHICLE STALLED OR DISABLED |
| 024 | DRVR DEAD | DEAD BY UNASSOCIATED CAUSE |
| 025 | FATIGUE | FATIGUED, SLEEPY, ASLEEP |
| 026 | SUN | DRIVER BLINDED BY SUN |
| 027 | HDLGHTS | DRIVER BLINDED BY HEADLIGHTS |
| 028 | ILLNESS | PHYSICALLY ILL |
| 029 | THRU MED | VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER |
| 030 | PURSUIT | PURSUIING OR ATTEMPTING TO STOP A VEHICLE |
| 031 | PASSING | PASSING SITUATION |
| 032 | PRKOFFRD | VEHICLE PARKED BEYOND CURB OR SHOULDER |
| 033 | CROS MED | VEHICLE CROSSED EARTH OR GRASS MEDIAN |
| 034 | X N/SGNL | CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT |
| 035 | X W/ SGNL | CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT |
| 036 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 037 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 038 | DISTRACT | DRIVER'S ATTENTION DISTRACTED |
| 039 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 040 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 041 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 042 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 043 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 044 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 045 | WORK ON | WORKING IN ROADWAY OR ALONG SHOULDER |
| 046 | W/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC |
| 047 | A/ TRAFIC | NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC |
| 050 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 051 | ENT OFFRD | ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD |
| 052 | MERGING | MERGING |
| 055 | SPRAY | BLINDED BY WATER SPRAY |

ACTION CODE TRANSLATION LIST

| ACTION CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|----------------|----------------------|------------------|
| 088 | OTHER | OTHER ACTION |
| 099 | UNK | UNKNOWN ACTION |

CAUSE CODE TRANSLATION LIST

| CAUSE CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| 00 | NO CODE | NO CAUSE ASSOCIATED AT THIS LEVEL |
| 01 | TOO-FAST | TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED) |
| 02 | NO-YIELD | DID NOT YIELD RIGHT-OF-WAY |
| 03 | PAS-STOP | PASSED STOP SIGN OR RED FLASHER |
| 04 | DIS SIG | DISREGARDED TRAFFIC SIGNAL |
| 05 | LEFT-CTR | DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING |
| 06 | IMP-OVER | IMPROPER OVERTAKING |
| 07 | TOO-CLOS | FOLLOWED TOO CLOSELY |
| 08 | IMP-TURN | MADE IMPROPER TURN |
| 09 | DRINKING | ALCOHOL OR DRUG INVOLVED |
| 10 | OTHR-IMP | OTHER IMPROPER DRIVING |
| 11 | MECH-DEF | MECHANICAL DEFECT |
| 12 | OTHER | OTHER (NOT IMPROPER DRIVING) |
| 13 | IMP LN C | IMPROPER CHANGE OF TRAFFIC LANES |
| 14 | DIS TCD | DISREGARDED OTHER TRAFFIC CONTROL DEVICE |
| 15 | WRNG WAY | WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO |
| 16 | FATIGUE | DRIVER DROWSY/FATIGUED/SLEEPY |
| 17 | ILLNESS | PHYSICAL ILLNESS |
| 18 | IN RDWY | NON-MOTORIST ILLEGALLY IN ROADWAY |
| 19 | NT VISBL | NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN |
| 20 | IMP PKNG | VEHICLE IMPROPERLY PARKED |
| 21 | DEF STER | DEFECTIVE STEERING MECHANISM |
| 22 | DEF BRKE | INADEQUATE OR NO BRAKES |
| 24 | LOADSHFT | VEHICLE LOST LOAD OR LOAD SHIFTED |
| 25 | TIREFAIL | TIRE FAILURE |
| 26 | PHANTOM | PHANTOM / NON-CONTACT VEHICLE |
| 27 | INATTENT | INATTENTION |
| 28 | NM INATT | NON-MOTORIST INATTENTION |
| 29 | F AVOID | FAILED TO AVOID VEHICLE AHEAD |
| 30 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 31 | RACING | SPEED RACING (PER PAR) |
| 32 | CARELESS | CARELESS DRIVING (PER PAR) |
| 33 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 34 | AGGRESV | AGGRESSIVE DRIVING (PER PAR) |
| 35 | RD RAGE | ROAD RAGE (PER PAR) |
| 40 | VIEW OBS | VIEW OBSCURED |
| 50 | USED MDN | IMPROPER USE OF MEDIAN OR SHOULDER |
| 51 | FAIL LN | FAILED TO MAINTAIN LANE |
| 52 | OFF RD | RAN OFF ROAD |

COLLISION TYPE CODE TRANSLATION LIST

| COLL CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|-----------|-------------------|------------------------------|
| & | OTH | MISCELLANEOUS |
| - | BACK | BACKING |
| 0 | PED | PEDESTRIAN |
| 1 | ANGL | ANGLE |
| 2 | HEAD | HEAD-ON |
| 3 | REAR | REAR-END |
| 4 | SS-M | SIDESWIPE - MEETING |
| 5 | SS-O | SIDESWIPE - OVERTAKING |
| 6 | TURN | TURNING MOVEMENT |
| 7 | PARK | PARKING MANEUVER |
| 8 | NCOL | NON-COLLISION |
| 9 | FIX | FIXED OBJECT OR OTHER OBJECT |

CRASH TYPE CODE TRANSLATION LIST

| CRASH TYPE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|---|
| & | OVERTURN | OVERTURNED |
| 0 | NON-COLL | OTHER NON-COLLISION |
| 1 | OTH RDWY | MOTOR VEHICLE ON OTHER ROADWAY |
| 2 | PRKD MV | PARKED MOTOR VEHICLE |
| 3 | PED | PEDESTRIAN |
| 4 | TRAIN | RAILWAY TRAIN |
| 6 | BIKE | PEDALCYCLIST |
| 7 | ANIMAL | ANIMAL |
| 8 | FIX OBJ | FIXED OBJECT |
| 9 | OTH OBJ | OTHER OBJECT |
| A | ANGL-STP | ENTERING AT ANGLE - ONE VEHICLE STOPPED |
| B | ANGL-OTH | ENTERING AT ANGLE - ALL OTHERS |
| C | S-STRGHT | FROM SAME DIRECTION - BOTH GOING STRAIGHT |
| D | S-1TURN | FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT |
| E | S-1STOP | FROM SAME DIRECTION - ONE STOPPED |
| F | S-OTHER | FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING |
| G | O-STRGHT | FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT |
| H | O-1 L-TURN | FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT |
| I | O-1STOP | FROM OPPOSITE DIRECTION - ONE STOPPED |
| J | O-OTHER | FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING |

DRIVER LICENSE CODE TRANSLATION LIST

| LIC CODE | SHORT DESC | LONG DESCRIPTION |
|-------------|---------------|--|
| 0 | NONE | NOT LICENSED (HAD NEVER BEEN LICENSED) |
| 1 | OR-Y | VALID OREGON LICENSE |
| 2 | OTH-Y | VALID LICENSE, OTHER STATE OR COUNTRY |
| 3 | SUSP | SUSPENDED/REVOKED |

DRIVER RESIDENCE CODE TRANSLATION LIST

| RES CODE | SHORT DESC | LONG DESCRIPTION |
|-------------|---------------|--|
| 1 | OR<25 | OREGON RESIDENT WITHIN 25 MILE OF HOME |
| 2 | OR>25 | OREGON RESIDENT 25 OR MORE MILES FROM HOME |
| 3 | OR-? | OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME |
| 4 | N-RES | NON-RESIDENT |
| 9 | UNK | UNKNOWN IF OREGON RESIDENT |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|---------------|----------------------|---|
| 000 | NONE | NO ERROR |
| 001 | WIDE TRN | WIDE TURN |
| 002 | CUT CORN | CUT CORNER ON TURN |
| 003 | FAIL TRN | FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS |
| 004 | L IN TRF | LEFT TURN IN FRONT OF ONCOMING TRAFFIC |
| 005 | L PROHIB | LEFT TURN WHERE PROHIBITED |
| 006 | FRM WRNG | TURNED FROM WRONG LANE |
| 007 | TO WRONG | TURNED INTO WRONG LANE |
| 008 | ILLEG U | U-TURNED ILLEGALLY |
| 009 | IMP STOP | IMPROPERLY STOPPED IN TRAFFIC LANE |
| 010 | IMP SIG | IMPROPER SIGNAL OR FAILURE TO SIGNAL |
| 011 | IMP BACK | BACKING IMPROPERLY (NOT PARKING) |
| 012 | IMP PARK | IMPROPERLY PARKED |
| 013 | UNPARK | IMPROPER START LEAVING PARKED POSITION |
| 014 | IMP STRT | IMPROPER START FROM STOPPED POSITION |
| 015 | IMP LGHT | IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC) |
| 016 | INATTENT | INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97) |
| 017 | UNSF VEH | DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT) |
| 018 | OTH PARK | ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER |
| 019 | DIS DRIV | DISREGARDED OTHER DRIVER'S SIGNAL |
| 020 | DIS SGNL | DISREGARDED TRAFFIC SIGNAL |
| 021 | RAN STOP | DISREGARDED STOP SIGN OR FLASHING RED |
| 022 | DIS SIGN | DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER |
| 023 | DIS OFCR | DISREGARDED POLICE OFFICER OR FLAGMAN |
| 024 | DIS EMER | DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE |
| 025 | DIS RR | DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN |
| 026 | REAR-END | FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS |
| 027 | BIKE ROW | DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST |
| 028 | NO ROW | DID NOT HAVE RIGHT-OF-WAY |
| 029 | PED ROW | FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN |
| 030 | PAS CURV | PASSING ON A CURVE |
| 031 | PAS WRNG | PASSING ON THE WRONG SIDE |
| 032 | PAS TANG | PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS |
| 033 | PAS X-WK | PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN |
| 034 | PAS INTR | PASSING AT INTERSECTION |
| 035 | PAS HILL | PASSING ON CREST OF HILL |
| 036 | N/PAS ZN | PASSING IN "NO PASSING" ZONE |
| 037 | PAS TRAF | PASSING IN FRONT OF ONCOMING TRAFFIC |
| 038 | CUT-IN | CUTTING IN (TWO LANES - TWO WAY ONLY) |
| 039 | WRNGSIDE | DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS) |
| 040 | THRU MED | DRIVING THROUGH SAFETY ZONE OR OVER ISLAND |
| 041 | F/ST BUS | FAILED TO STOP FOR SCHOOL BUS |

ERROR CODE TRANSLATION LIST

| ERROR CODE | SHORT DESCRIPTION | FULL DESCRIPTION |
|------------|-------------------|---|
| 042 | F/SLO MV | FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE |
| 043 | TOO CLOSE | FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT) |
| 044 | STRDL LN | STRADDLING OR DRIVING ON WRONG LANES |
| 045 | IMP CHG | IMPROPER CHANGE OF TRAFFIC LANES |
| 046 | WRNG WAY | WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD |
| 047 | BASCRULE | DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED) |
| 048 | OPN DOOR | OPENED DOOR INTO ADJACENT TRAFFIC LANE |
| 049 | IMPEDING | IMPEDING TRAFFIC |
| 050 | SPEED | DRIVING IN EXCESS OF POSTED SPEED |
| 051 | RECKLESS | RECKLESS DRIVING (PER PAR) |
| 052 | CARELESS | CARELESS DRIVING (PER PAR) |
| 053 | RACING | SPEED RACING (PER PAR) |
| 054 | X N/SGNL | CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT |
| 055 | X W/SGNL | CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT |
| 056 | DIAGONAL | CROSSING AT INTERSECTION - DIAGONALLY |
| 057 | BTWN INT | CROSSING BETWEEN INTERSECTIONS |
| 059 | W/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC |
| 060 | A/TRAF-S | WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC |
| 061 | W/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC |
| 062 | A/TRAF-P | WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC |
| 063 | PLAYINRD | PLAYING IN STREET OR ROAD |
| 064 | PUSH MV | PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER |
| 065 | WORK IN RD | WORKING IN ROADWAY OR ALONG SHOULDER |
| 070 | LAY ON RD | STANDING OR LYING IN ROADWAY |
| 071 | NM IMP USE | IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST |
| 073 | ELUDING | ELUDING / ATTEMPT TO ELUDE |
| 079 | F NEG CURV | FAILED TO NEGOTIATE A CURVE |
| 080 | FAIL LN | FAILED TO MAINTAIN LANE |
| 081 | OFF RD | RAN OFF ROAD |
| 082 | NO CLEAR | DRIVER MISJUDGED CLEARANCE |
| 083 | OVRSTEER | OVER-CORRECTING |
| 084 | NOT USED | CODE NOT IN USE |
| 085 | OVRLOAD | OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS |
| 097 | UNA DIS TC | UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 001 | FEL/JUMP | OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE |
| 002 | INTERFER | PASSENGER INTERFERED WITH DRIVER |
| 003 | BUG INTF | ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER |
| 004 | INDRCT PED | PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK) |
| 005 | SUB-PED | "SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC. |
| 006 | INDRCT BIK | PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK) |
| 007 | HITCHIKR | HITCHHIKER (SOLICITING A RIDE) |
| 008 | PSNGR TOW | PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE |
| 009 | ON/OFF V | GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC |
| 010 | SUB OTRN | OVERTURNED AFTER FIRST HARMFUL EVENT |
| 011 | MV PUSHD | VEHICLE BEING PUSHED |
| 012 | MV TOWED | VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE |
| 013 | FORCED | VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN |
| 014 | SET MOTN | VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.) |
| 015 | RR ROW | AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL) |
| 016 | LT RL ROW | AT OR ON LIGHT-RAIL RIGHT-OF-WAY |
| 017 | RR HIT V | TRAIN STRUCK VEHICLE |
| 018 | V HIT RR | VEHICLE STRUCK TRAIN |
| 019 | HIT RR CAR | VEHICLE STRUCK RAILROAD CAR ON ROADWAY |
| 020 | JACKNIFE | JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE |
| 021 | TRL OTRN | TRAILER OR TOWED VEHICLE OVERTURNED |
| 022 | CN BROKE | TRAILER CONNECTION BROKE |
| 023 | DETACH TRL | DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT |
| 024 | V DOOR OPN | VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE |
| 025 | WHEELOFF | WHEEL CAME OFF |
| 026 | HOOD UP | HOOD FLEW UP |
| 028 | LOAD SHIFT | LOST LOAD, LOAD MOVED OR SHIFTED |
| 029 | TIREFAIL | TIRE FAILURE |
| 030 | PET | PET: CAT, DOG AND SIMILAR |
| 031 | LVSTOCK | STOCK: COW, CALF, BULL, STEER, SHEEP, ETC. |
| 032 | HORSE | HORSE, MULE, OR DONKEY |
| 033 | HRSE&RID | HORSE AND RIDER |
| 034 | GAME | WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK) |
| 035 | DEER ELK | DEER OR ELK, WAPITI |
| 036 | ANML VEH | ANIMAL-DRAWN VEHICLE |
| 037 | CULVERT | CULVERT, OPEN LOW OR HIGH MANHOLE |
| 038 | ATENUATN | IMPACT ATTENUATOR |
| 039 | PK METER | PARKING METER |
| 040 | CURB | CURB (ALSO NARROW SIDEWALKS ON BRIDGES) |
| 041 | JIGGLE | JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION |
| 042 | GDRL END | LEADING EDGE OF GUARDRAIL |
| 043 | GARDRAIL | GUARD RAIL (NOT METAL MEDIAN BARRIER) |
| 044 | BARRIER | MEDIAN BARRIER (RAISED OR METAL) |
| 045 | WALL | RETAINING WALL OR TUNNEL WALL |
| 046 | BR RAIL | BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013) |
| 048 | BR COLMN | BRIDGE PILLAR OR COLUMN |
| 049 | BR GIRDR | BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD) |
| 050 | ISLAND | TRAFFIC RAISED ISLAND |
| 051 | GORE | GORE |
| 052 | POLE UNK | POLE - TYPE UNKNOWN |
| 053 | POLE UTL | POLE - POWER OR TELEPHONE |
| 054 | ST LIGHT | POLE - STREET LIGHT ONLY |
| 055 | TRF SGNL | POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY |
| 056 | SGN BRDG | POLE - SIGN BRIDGE |
| 057 | STOPSIGN | STOP OR YIELD SIGN |
| 058 | OTH SIGN | OTHER SIGN, INCLUDING STREET SIGNS |
| 059 | HYDRANT | HYDRANT |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|------------|-------------------|--|
| 060 | MARKER | DELINEATOR OR MARKER (REFLECTOR POSTS) |
| 061 | MAILBOX | MAILBOX |
| 062 | TREE | TREE, STUMP OR SHRUBS |
| 063 | VEG OHED | TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC. |
| 064 | WIRE/CBL | WIRE OR CABLE ACROSS OR OVER THE ROAD |
| 065 | TEMP SGN | TEMPORARY SIGN OR BARRICADE IN ROAD, ETC. |
| 066 | PERM SGN | PERMANENT SIGN OR BARRICADE IN/OFF ROAD |
| 067 | SLIDE | SLIDES, FALLEN OR FALLING ROCKS |
| 068 | FRGN OBJ | FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL) |
| 069 | EQP WORK | EQUIPMENT WORKING IN/OFF ROAD |
| 070 | OTH EQP | OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT) |
| 071 | MAIN EQP | WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT |
| 072 | OTHER WALL | ROCK, BRICK OR OTHER SOLID WALL |
| 073 | IRRGL PVMT | OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE |
| 075 | CAVE IN | BRIDGE OR ROAD CAVE IN |
| 076 | HI WATER | HIGH WATER |
| 077 | SNO BANK | SNOW BANK |
| 078 | LO-HI EDGE | LOW OR HIGH SHOULDER AT PAVEMENT EDGE |
| 079 | DITCH | CUT SLOPE OR DITCH EMBANKMENT |
| 080 | OBJ FRM MV | STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS) |
| 081 | FLY-OBJ | STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE) |
| 082 | VEH HID | VEHICLE OBSCURED VIEW |
| 083 | VEG HID | VEGETATION OBSCURED VIEW |
| 084 | BLDG HID | VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC. |
| 085 | WIND GUST | WIND GUST |
| 086 | IMMERSED | VEHICLE IMMERSED IN BODY OF WATER |
| 087 | FIRE/EXP | FIRE OR EXPLOSION |
| 088 | FENC/BLD | FENCE OR BUILDING, ETC. |
| 089 | OTHR CRASH | CRASH RELATED TO ANOTHER SEPARATE CRASH |
| 090 | TO 1 SIDE | TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE |
| 091 | BUILDING | BUILDING OR OTHER STRUCTURE |
| 092 | PHANTOM | OTHER (PHANTOM) NON-CONTACT VEHICLE |
| 093 | CELL PHONE | CELL PHONE (ON PAR OR DRIVER IN USE) |
| 094 | VIOL GDL | TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM |
| 095 | GUY WIRE | GUY WIRE |
| 096 | BERM | BERM (EARTHEN OR GRAVEL MOUND) |
| 097 | GRAVEL | GRAVEL IN ROADWAY |
| 098 | ABR EDGE | ABRUPT EDGE |
| 099 | CELL WTNSD | CELL PHONE USE WITNESSED BY OTHER PARTICIPANT |
| 100 | UNK FIXD | FIXED OBJECT, UNKNOWN TYPE. |
| 101 | OTHER OBJ | NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE |
| 102 | TEXTING | TEXTING |
| 103 | WZ WORKER | WORK ZONE WORKER |
| 104 | ON VEHICLE | PASSENGER RIDING ON VEHICLE EXTERIOR |
| 105 | PEDAL PSGR | PASSENGER RIDING ON PEDALCYCLE |
| 106 | MAN WHLCHR | PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR |
| 107 | MTR WHLCHR | PEDESTRIAN IN MOTORIZED WHEELCHAIR |
| 108 | OFFICER | LAW ENFORCEMENT / POLICE OFFICER |
| 109 | SUB-BIKE | "SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC. |
| 110 | N-MTR | NON-MOTORIST STRUCK VEHICLE |
| 111 | S CAR VS V | STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE |
| 112 | V VS S CAR | VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) |
| 113 | S CAR ROW | AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY |
| 114 | RR EQUIP | VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS |
| 115 | DSTRCT GPS | DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE |
| 116 | DSTRCT OTH | DISTRACTED BY OTHER ELECTRONIC DEVICE |
| 117 | RR GATE | RAIL CROSSING DROP-ARM GATE |

EVENT CODE TRANSLATION LIST

| EVENT CODE | SHORT DESCRIPTION | LONG DESCRIPTION |
|---------------|----------------------|---|
| 118 | EXPNSN JNT | EXPANSION JOINT |
| 119 | JERSEY BAR | JERSEY BARRIER |
| 120 | WIRE BAR | WIRE OR CABLE MEDIAN BARRIER |
| 121 | FENCE | FENCE |
| 123 | OBJ IN VEH | LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT |
| 124 | SLIPPERY | SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL) |
| 125 | SHLDR | SHOULDER GAVE WAY |
| 126 | BOULDER | ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE) |
| 127 | LAND SLIDE | ROCK SLIDE OR LAND SLIDE |
| 128 | CURVE INV | CURVE PRESENT AT CRASH LOCATION |
| 129 | HILL INV | VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION |
| 130 | CURVE HID | VIEW OBSCURED BY CURVE |
| 131 | HILL HID | VIEW OBSCURED BY VERTICAL GRADE / HILL |
| 132 | WINDOW HID | VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS |
| 133 | SPRAY HID | VIEW OBSCURED BY WATER SPRAY |

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

| FUNC CLASS | DESCRIPTION |
|------------|---|
| 01 | RURAL PRINCIPAL ARTERIAL - INTERSTATE |
| 02 | RURAL PRINCIPAL ARTERIAL - OTHER |
| 06 | RURAL MINOR ARTERIAL |
| 07 | RURAL MAJOR COLLECTOR |
| 08 | RURAL MINOR COLLECTOR |
| 09 | RURAL LOCAL |
| 11 | URBAN PRINCIPAL ARTERIAL - INTERSTATE |
| 12 | URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP |
| 14 | URBAN PRINCIPAL ARTERIAL - OTHER |
| 16 | URBAN MINOR ARTERIAL |
| 17 | URBAN MAJOR COLLECTOR |
| 18 | URBAN MINOR COLLECTOR |
| 19 | URBAN LOCAL |
| 78 | UNKNOWN RURAL SYSTEM |
| 79 | UNKNOWN RURAL NON-SYSTEM |
| 98 | UNKNOWN URBAN SYSTEM |
| 99 | UNKNOWN URBAN NON-SYSTEM |

HIGHWAY COMPONENT TRANSLATION LIST

| CODE | DESCRIPTION |
|------|------------------------|
| 0 | MAINLINE STATE HIGHWAY |
| 1 | COUPLET |
| 3 | FRONTAGE ROAD |
| 6 | CONNECTION |
| 8 | HIGHWAY - OTHER |

INJURY SEVERITY CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--|
| 1 | KILL | FATAL INJURY |
| 2 | INJA | INCAPACITATING INJURY - BLEEDING, BROKEN BONES |
| 3 | INJB | NON-INCAPACITATING INJURY |
| 4 | INJC | POSSIBLE INJURY - COMPLAINT OF PAIN |
| 5 | PRI | DIED PRIOR TO CRASH |
| 7 | NO<5 | NO INJURY - 0 TO 4 YEARS OF AGE |

LIGHT CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|-------------------------------|
| 0 | UNK | UNKNOWN |
| 1 | DAY | DAYLIGHT |
| 2 | DLIT | DARKNESS - WITH STREET LIGHTS |
| 3 | DARK | DARKNESS - NO STREET LIGHTS |
| 4 | DAWN | DAWN (TWILIGHT) |
| 5 | DUSK | DUSK (TWILIGHT) |

MEDIAN TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------------------|
| 0 | NONE | NO MEDIAN |
| 1 | RSDMD | SOLID MEDIAN BARRIER |
| 2 | DIVMD | EARTH, GRASS OR PAVED MEDIAN |

MILEAGE TYPE CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|------------------|
| 0 | REGULAR MILEAGE |
| T | TEMPORARY |
| Y | SPUR |
| Z | OVERLAPPING |

MOVEMENT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---------------------|
| 0 | UNK | UNKNOWN |
| 1 | STRGHT | STRAIGHT AHEAD |
| 2 | TURN-R | TURNING RIGHT |
| 3 | TURN-L | TURNING LEFT |
| 4 | U-TURN | MAKING A U-TURN |
| 5 | BACK | BACKING |
| 6 | STOP | STOPPED IN TRAFFIC |
| 7 | PRKD-P | PARKED - PROPERLY |
| 8 | PRKD-I | PARKED - IMPROPERLY |

PARTICIPANT TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---|
| 0 | OCC | UNKNOWN OCCUPANT TYPE |
| 1 | DRVR | DRIVER |
| 2 | PSNG | PASSENGER |
| 3 | PED | PEDESTRIAN |
| 4 | CONV | PEDESTRIAN USING A PEDESTRIAN CONVEYANCE |
| 5 | PTOW | PEDESTRIAN TOWING OR TRAILERING AN OBJECT |
| 6 | BIKE | PEDALCYCLIST |
| 7 | BTOW | PEDALCYCLIST TOWING OR TRAILERING AN OBJECT |
| 8 | PRKD | OCCUPANT OF A PARKED MOTOR VEHICLE |
| 9 | UNK | UNKNOWN TYPE OF NON-MOTORIST |

PEDESTRIAN LOCATION CODE TRANSLATION LIST

| CODE | LONG DESCRIPTION |
|------|--|
| 00 | AT INTERSECTION - NOT IN ROADWAY |
| 01 | AT INTERSECTION - INSIDE CROSSWALK |
| 02 | AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK |
| 03 | AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN |
| 04 | NOT AT INTERSECTION - IN ROADWAY |
| 05 | NOT AT INTERSECTION - ON SHOULDER |
| 06 | NOT AT INTERSECTION - ON MEDIAN |
| 07 | NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY |
| 08 | NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE |
| 09 | NOT-AT INTERSECTION - ON SIDEWALK |
| 10 | OUTSIDE TRAFFICWAY BOUNDARIES |
| 13 | AT INTERSECTION - IN BIKE LANE |
| 14 | NOT AT INTERSECTION - IN BIKE LANE |
| 15 | NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK |
| 16 | NOT AT INTERSECTION - IN PARKING LANE |

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|-------------|--|
| 000 | NONE | NO CONTROL |
| 001 | TRF SIGNAL | TRAFFIC SIGNALS |
| 002 | FLASHBCN-R | FLASHING BEACON - RED (STOP) |
| 003 | FLASHBCN-A | FLASHING BEACON - AMBER (SLOW) |
| 004 | STOP SIGN | STOP SIGN |
| 005 | SLOW SIGN | SLOW SIGN |
| 006 | REG-SIGN | REGULATORY SIGN |
| 007 | YIELD | YIELD SIGN |
| 008 | WARNING | WARNING SIGN |
| 009 | CURVE | CURVE SIGN |
| 010 | SCHL X-ING | SCHOOL CROSSING SIGN OR SPECIAL SIGNAL |
| 011 | OFCR/FLAG | POLICE OFFICER, FLAGMAN - SCHOOL PATROL |
| 012 | BRDG-GATE | BRIDGE GATE - BARRIER |
| 013 | TEMP-BARR | TEMPORARY BARRIER |
| 014 | NO-PASS-ZN | NO PASSING ZONE |
| 015 | ONE-WAY | ONE-WAY STREET |
| 016 | CHANNEL | CHANNELIZATION |
| 017 | MEDIAN BAR | MEDIAN BARRIER |
| 018 | PILOT CAR | PILOT CAR |
| 019 | SP PED SIG | SPECIAL PEDESTRIAN SIGNAL |
| 020 | X-BUCK | CROSSBUCK |
| 021 | THR-GN-SIG | THROUGH GREEN ARROW OR SIGNAL |
| 022 | L-GRN-SIG | LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 023 | R-GRN-SIG | RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL |
| 024 | WIGWAG | WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE |
| 025 | X-BUCK WRN | CROSSBUCK AND ADVANCE WARNING |
| 026 | WW W/ GATE | FLASHING LIGHTS WITH DROP-ARM GATES |
| 027 | OVRHD SGNL | SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY) |
| 028 | SP RR STOP | SPECIAL RR STOP SIGN |
| 029 | ILLUM GRD X | ILLUMINATED GRADE CROSSING |
| 037 | RAMP METER | METERED RAMPS |
| 038 | RUMBLE STR | RUMBLE STRIP |
| 090 | L-TURN REF | LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED) |
| 091 | R-TURN ALL | RIGHT TURN AT ALL TIMES SIGN, ETC. |
| 092 | EMR SGN/FL | EMERGENCY SIGNS OR FLARES |
| 093 | ACCEL LANE | ACCELERATION OR DECELERATION LANES |
| 094 | R-TURN PRO | RIGHT TURN PROHIBITED ON RED AFTER STOPPING |

ROAD CHARACTER CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|--------------------------|
| 0 | UNK | UNKNOWN |
| 1 | INTER | INTERSECTION |
| 2 | ALLEY | DRIVEWAY OR ALLEY |
| 3 | STRGHT | STRAIGHT ROADWAY |
| 4 | TRANS | TRANSITION |
| 5 | CURVE | CURVE (HORIZONTAL CURVE) |
| 6 | OPENAC | OPEN ACCESS OR TURNOUT |
| 7 | GRADE | GRADE (VERTICAL CURVE) |
| 8 | BRIDGE | BRIDGE STRUCTURE |
| 9 | TUNNEL | TUNNEL |

095 BUS STPSGN BUS STOP SIGN AND RED LIGHTS
099 UNKNOWN UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|---|
| 00 | PDO | NOT COLLECTED FOR PDO CRASHES |
| 01 | PSNGR CAR | PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC. |
| 02 | BOBTAIL | TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL) |
| 03 | FARM TRCTR | FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT |
| 04 | SEMI TOW | TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW |
| 05 | TRUCK | TRUCK WITH NON-DETACHABLE BED, PANEL, ETC. |
| 06 | MOPED | MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE |
| 07 | SCHL BUS | SCHOOL BUS (INCLUDES VAN) |
| 08 | OTH BUS | OTHER BUS |
| 09 | MTRCYCLE | MOTORCYCLE, DIRT BIKE |
| 10 | OTHER | OTHER: FORKLIFT, BACKHOE, ETC. |
| 11 | MOTRHOME | MOTORHOME |
| 12 | TROLLEY | MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | MOTORIZED SCOOTER (STANDING) |
| 15 | SNOWMOBILE | SNOWMOBILE |
| 99 | UNKNOWN | UNKNOWN VEHICLE TYPE |

WEATHER CONDITION CODE TRANSLATION LIST

| CODE | SHORT DESC | LONG DESCRIPTION |
|------|------------|------------------|
| 0 | UNK | UNKNOWN |
| 1 | CLR | CLEAR |
| 2 | CLD | CLOUDY |
| 3 | RAIN | RAIN |
| 4 | SLT | SLEET |
| 5 | FOG | FOG |
| 6 | SNOW | SNOW |
| 7 | DUST | DUST |
| 8 | SMOK | SMOKE |
| 9 | ASH | ASH |

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CITY STREET LOCATIONS BY COUNTY - DRIVER BEHAVIOR FORMAT

Pearl St West of Myrtle St
 January 1, 2011 through December 31, 2015

CLACKAMAS COUNTY

| SERIAL NO | DATE | TIME | DAY | *COUNTY OR CITY NAME | CRASH LOCATION | COLL TYPE | EVENT | CAUSE | ERROR | PEOPLE | | | | | | | |
|--------------|------------|------|-----|-------------------------|--------------------------------|--------------|-------|-------|-------|-------------|-------------|-----------------------------|-------------|-------------|-------------|-------------|---|
| | | | | | | | | | | U R F | V E H | VEHICLE TYP/OWN #1 #2 | I I L | A A J | E E C | S P D | |
| 00397 | 02/02/2011 | 3P | WE | Oregon City | PEARL ST 379 FT W OF MYRTLE ST | REAR | | 07 | 042 | DRY | 2 | 011 | 011 | 0 | 0 | N | N |

VEHICLE OWNERSHIP CODES

| Code | Short Description | Long Description |
|------|-------------------|-------------------------------|
| 0 | N/A | Not collected for PDO Crashes |
| 1 | PRVTE | Private |
| 2 | GOVMT | Government |
| 3 | PUBLC | Public |
| 4 | RENTL | Rental vehicle |
| 5 | STOLN | Stolen vehicle |
| 9 | UNKN | Unknown ownership |

VEHICLE TYPE CODES

| Code | Short Description | Long Description |
|------|-------------------|---|
| 00 | PDO | Not collected for PDO Crashes |
| 01 | PSNGR CAR | Passenger car, pickup, light delivery, etc. |
| 02 | BOBTAIL | Truck tractor with no trailers (bobtail) |
| 03 | FARM TRCTR | Farm tractor or self-propelled farm equipment |
| 04 | SEMI TOW | Truck Tractor with trailer/mobile home in tow |
| 05 | TRUCK | Truck with non-detachable bed, panel, etc. |
| 06 | MOPED | Moped, minibike, seated motor scooter, motor bike |
| 07 | SCHL BUS | School bus (includes van) |
| 08 | OTH BUS | Other bus |
| 09 | MTRCYCLE | Motorcycle, dirt bike |
| 10 | OTHER | Other: forklift, backhoe, etc. |
| 11 | MOTRHOME | Motorhome |
| 12 | TROLLEY | Motorized Street Car/Trolley (no rails/wires) |
| 13 | ATV | ATV |
| 14 | MTRSCTR | Motorized scooter (standing) |
| 15 | SNOWMOBILE | Snowmobile |
| 99 | UNKNOWN | Unknown vehicle type |

CAUSE CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|----------------------|--|
| 00 | NO CODE | NO CODE APPLICABLE | No cause associated at this level |
| 01 | TOO-FAST | TOO FAST FOR COND | Too fast for conditions (not exceed posted speed) |
| 02 | NO-YIELD | FAILED YIELD ROW | Did not yield right-of-way |
| 03 | PAS-STOP | PASSED STOP SIGN | Passed stop sign or red flasher |
| 04 | DIS SIG | DISREGRD TRAF SIGNAL | Disregarded traffic signal |
| 05 | LEFT-CTR | LEFT OF CTR/STRADDLE | Drove left of center on two-way road; straddling |
| 06 | IMP-OVER | IMPROPER PASSING | Improper overtaking |
| 07 | TOO-CLOS | FOLLOW TOO CLOSE | Followed too closely |
| 08 | IMP-TURN | IMPROPER TURN | Made improper turn |
| 09 | DRINKING | ALC OR DRUGS | Alcohol or Drug Involved |
| 10 | OTHR-IMP | OTHER DRIVE ERR | Other improper driving |
| 11 | MECH-DEF | MECH DEFECT | Mechanical defect |
| 12 | OTHER | OTHER | Other (not improper driving) |
| 13 | IMP LN C | IMP LANE CHANGE | Improper change of traffic lanes |
| 14 | DIS TCD | DISRG OTHR TCD | Disregarded other traffic control device |
| 15 | WRNG WAY | WRONG WAY / 1-WAY RD | Wrong way on one-way road; wrong side divided road |
| 16 | FATIGUE | DRIVER FATIGUED | Driver drowsy/fatigued/sleepy |
| 17 | ILLNESS | PHYSICAL ILLNESS | Physical illness |
| 18 | IN RDWY | ILLEGALLY IN RDWY | Non-motorist illegally in roadway |
| 19 | NT VISBL | NOT VISIBLE | Non-motorist not visible; non-reflective clothing |
| 20 | IMP PKNG | IMPROPER PARKING | Vehicle improperly parked |
| 21 | DEF STER | DEFECTIVE STEERING | Defective steering mechanism |
| 22 | DEF BRKE | DEFECTIVE BRAKES | Inadequate or no brakes |
| 24 | LOADSHFT | LOAD SHIFTED | Vehicle lost load or load shifted |
| 25 | TIREFAIL | TIRE FAILURE | Tire Failure |
| 26 | PHANTOM | PHANTOM VEHICLE | Phantom / Non-contact Vehicle |
| 27 | INATTENT | INATTENTION | Inattention |
| 28 | NM INATT | NON-MTRST INATTENT | Non-Motorist Inattention |
| 29 | F AVOID | FAIL AVOID VEH AHEAD | Failed to avoid vehicle ahead |
| 30 | SPEED | EXCED POSTED SPEED | Driving in excess of posted speed |
| 31 | RACING | SPEED RACING | Speed Racing (per PAR) |
| 32 | CARELESS | CARELESS DRIVING | Careless Driving (per PAR) |
| 33 | RECKLESS | RECKLESS DRIVING | Reckless Driving (per PAR) |
| 34 | AGGRESV | AGGRESSIVE DRIVING | Aggressive Driving (per PAR) |
| 35 | RD RAGE | ROAD RAGE | Road Rage (per PAR) |
| 40 | VIEW OBS | VIEW OBSCURED | View obscured |
| 50 | USED MDN | IMP USE MEDIAN/SHLDR | Improper use of median or shoulder |
| 51 | FAIL LN | F MAINT LANE | Failed to maintain lane |
| 52 | OFF RD | RAN OFF RD | Ran off road |

ERR CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|--------------------|---|
| 000 | NONE | NO ERROR | No error |
| 001 | WIDE TRN | WIDE TURN | Wide turn |
| 002 | CUT CORN | CUT CORNER | Cut corner on turn |
| 003 | FAIL TRN | F OBEY TRN | Failed to obey mandatory traffic turn signal, sign or lane markings |
| 004 | L IN TRF | LTRN FNT TRAF | Left turn in front of oncoming traffic |
| 005 | L PROHIB | LTRN PROHIB | Left turn where prohibited |
| 006 | FRM WRNG | T FRM WRNG LN | Turned from wrong lane |
| 007 | TO WRONG | T TO WRONG LN | Turned into wrong lane |
| 008 | ILLEG U | ILLEG U-TURN | U-turned illegally |
| 009 | IMP STOP | IMP STOP | Improperly stopped in traffic lane |
| 010 | IMP SIG | IMP/FAIL SIG | Improper signal or failure to signal |
| 011 | IMP BACK | IMP BACKING | Backing improperly (not parking) |
| 012 | IMP PARK | IMP PARKED | Improperly parked |
| 013 | UNPARK | IMP STRT PARK | Improper start leaving parked position |
| 014 | IMP STRT | IMP STRT STOP | Improper start from stopped position |
| 015 | IMP LGHT | IMP/NO LIGHTS | Improper or no lights (vehicle in traffic) |
| 016 | INATTENT | INATTENTION | Inattention (Failure to Dim Lights prior to 4/1/97) |
| 017 | UNSF VEH | DR UNSAFE VEH | Driving unsafe vehicle (no other error apparent) |
| 018 | OTH PARK | PRK MAN N/CLR | Entering/exiting parked position w/ insufficient clearance; other improper parking maneuver |
| 019 | DIS DRIV | DISRG DR SIG | Disregarded other driver's signal |
| 020 | DIS SGNL | DISRG TRF SIG | Disregarded traffic signal |
| 021 | RAN STOP | DISRG STP SGN | Disregarded stop sign or flashing red |
| 022 | DIS SIGN | DISRG WRN SGN | Disregarded warning sign, flares or flashing amber |
| 023 | DIS OFCR | DISRG POL/FLG | Disregarded police officer or flagman |
| 024 | DIS EMER | DISRG SIR/EMR | Disregarded siren or warning of emergency vehicle |
| 025 | DIS RR | DISRG RR SIG | Disregarded RR signal, RR sign, or RR flagman |
| 026 | REAR-END | F AVOID STP V | Failed to avoid stopped or parked vehicle ahead other than school bus |
| 027 | BIKE ROW | F/YLD ROW BIK | Did not have right-of-way over pedalcyclist |
| 028 | NO ROW | NO R-O-W | Did not have right-of-way |
| 029 | PED ROW | F/YLD ROW PED | Failed to yield right-of-way to pedestrian |
| 030 | PAS CURV | PASS ON CURVE | Passing on a curve |
| 031 | PAS WRNG | PASS WRNG SID | Passing on the wrong side |
| 032 | PAS TANG | PASS TANGENT | Passing on straight road under unsafe conditions |
| 033 | PAS X-WK | PASS STP4PED | Passed vehicle stopped at crosswalk for pedestrian |
| 034 | PAS INTR | PASS AT INTER | Passing at intersection |
| 035 | PAS HILL | PASS ON HILL | Passing on crest of hill |
| 036 | N/PAS ZN | PASS N/PASSNG | Passing in "No Passing" zone |
| 037 | PAS TRAF | PASS ONC TRAF | Passing in front of oncoming traffic |
| 038 | CUT-IN | CUTTING IN | Cutting in (two lanes - two way only) |
| 039 | WRNGSIDE | DR WRONG SIDE | Driving on wrong side of the road (2-way undivided roadways) |
| 040 | THRU MED | DR THRU MEDN | Driving through safety zone or over island |
| 041 | F/ST BUS | F/STP SCHLBUS | Failed to stop for school bus |
| 042 | F/SLO MV | F/SLO SLO VEH | Failed to decrease speed for slower moving vehicle |
| 043 | TOO CLOSE | FOLLW TO CLOS | Following too closely (must be on officer's report) |
| 044 | STRDL LN | STRD/DR WRNG | Straddling or driving on wrong lanes |
| 045 | IMP CHG | IMP LANE CHG | Improper change of traffic lanes |

ERR CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|--------------------|---|
| 046 | WRNG WAY | WRNG WY/1 WAY | Wrong way on one-way roadway; wrong side divided road |
| 047 | BASCRULE | V BASIC RULE | Driving too fast for conditions (not exceeding posted speed) |
| 048 | OPN DOOR | OPN DOOR TRAF | Opened door into adjacent traffic lane |
| 049 | IMPEDING | IMPEDING TRAF | Impeding Traffic |
| 050 | SPEED | SPEED | Driving in excess of posted speed |
| 051 | RECKLESS | RECKLSS DRVNG | Reckless driving (per PAR) |
| 052 | CARELESS | CARELSS DRVNG | Careless driving (per PAR) |
| 053 | RACING | RACING | Speed Racing (per PAR) |
| 054 | X N/SGNL | X-INT NO SGNL | Crossing at intersection, no traffic signal present |
| 055 | X W/SGNL | X-INT W/ SGNL | Crossing at intersection, traffic signal present |
| 056 | DIAGONAL | X-INT DIAGNL | Crossing at intersection - diagonally |
| 057 | BTWN INT | X-BTWN INTER | Crossing between intersections |
| 059 | W/TRAF-S | W SHLD W/TRAF | Walking, running, riding, etc., on shoulder WITH traffic |
| 060 | A/TRAF-S | W SHLD A/TRAF | Walking, running, riding, etc., on shoulder FACING traffic |
| 061 | W/TRAF-P | W PAVE W/TRAF | Walking, running, riding, etc., on pavement WITH traffic |
| 062 | A/TRAF-P | W PAVE A/TRAF | Walking, running, riding, etc., on pavement FACING traffic |
| 063 | PLAYINRD | PLAY IN RDWY | Playing in street or road |
| 064 | PUSH MV | PUSH MV IN RD | Pushing or working on vehicle in road or on shoulder |
| 065 | WORK IN RD | WORK IN RD | Working in roadway or along shoulder |
| 070 | LAY ON RD | LYING IN RD | Standing or lying in roadway |
| 071 | NM IMP USE | N-M IMP USE | Improper use of traffic lane by non-motorist |
| 073 | ELUDING | ELUDING | Eluding / Attempt to elude |
| 079 | F NEG CURV | FAIL NEG CURV | Failed to negotiate a curve |
| 080 | FAIL LN | F MAINT LANE | Failed to maintain lane |
| 081 | OFF RD | RAN OFF RD | Ran off road |
| 082 | NO CLEAR | MISJUDGE CLR | Driver misjudged clearance |
| 083 | OVRSTEER | OVERSTEER | Over-correcting |
| 084 | NOT USED | NOT USED | Code not in use |
| 085 | OVRLOAD | OVERLOAD | Overloading or improper loading of vehicle with cargo or passengers |
| 097 | UNA DIS TC | UNA DISRG TCD | Unable to determine which driver disregarded traffic control device |

EVENT CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|---------------------|---|
| 001 | FEL/JUMP | FELL/JUMPED MV | Occupant fell, jumped or was ejected from moving vehicle |
| 002 | INTERFER | PSNGR INTERFERED | Passenger interfered with driver |
| 003 | BUG INTF | ANML INTERFERED | Animal or insect in vehicle interfered with driver |
| 004 | INDRCT PED | PED INDRCTLY INVLV | Pedestrian indirectly involved (not struck) |
| 005 | SUB-PED | SUBSEQUENT PED | "Sub-Ped": pedestrian injured subsequent to collision, etc. |
| 006 | INDRCT BIK | BIKE INDRCTLY INVLV | Pedalcyclist indirectly involved (not struck) |
| 007 | HITCHIKR | HITCHHIKER | Hitchhiker (soliciting a ride) |
| 008 | PSNGR TOW | PSNGR TOWED | Passenger or non-motorist being towed or pushed on conveyance |
| 009 | ON/OFF V | ON/OFF STOP VEH | Getting on/off stopped/parked vehicle (occupants only; must have physical contact w/ vehicle) |
| 010 | SUB OTRN | SUBSEQ OVERTURN | Overtuned after first harmful event |
| 011 | MV PUSHD | VEH BEING PUSHED | Vehicle being pushed |
| 012 | MV TOWED | VEH TOWED/TOWING | Vehicle towed or had been towing another vehicle |
| 013 | FORCED | FORCED BY IMPACT | Vehicle forced by impact into another vehicle, pedalcyclist or pedestrian |
| 014 | SET MOTN | MV SET IN MOTION | Vehicle set in motion by non-driver (child released brakes, etc.) |
| 015 | RR ROW | RAILROAD ROW | At or on railroad right-of-way (not Light Rail) |
| 016 | LT RL ROW | LIGHT RAIL ROW | At or on Light-Rail right-of-way |
| 017 | RR HIT V | TRAIN HIT VEH | Train struck vehicle |
| 018 | V HIT RR | VEH HIT TRAIN | Vehicle struck train |
| 019 | HIT RR CAR | VEH HIT RR CAR | Vehicle struck railroad car on roadway |
| 020 | JACKKNIFE | JACKKNIFE | Jackknife; trailer or towed vehicle struck towing vehicle |
| 021 | TRL OTRN | TRAILER O'TURN | Trailer or towed vehicle overturned |
| 022 | CN BROKE | TRLR CONN BROKE | Trailer connection broke |
| 023 | DETACH TRL | DETCHD TRLR STRKNG | Detached trailing object struck other vehicle, non-motorist, or object |
| 024 | V DOOR OPN | V DOOR OPN IN TRAF | Vehicle door opened into adjacent traffic lane |
| 025 | WHEELOFF | WHEEL CAME OFF | Wheel came off |
| 026 | HOOD UP | HOOD FLEW UP | Hood flew up |
| 028 | LOAD SHIFT | LOAD SHIFTED | Lost load, load moved or shifted |
| 029 | TIREFAIL | TIRE FAILURE | Tire failure |
| 030 | PET | PET | Pet: cat, dog and similar |
| 031 | LVSTOCK | LIVESTOCK | Stock: cow, calf, bull, steer, sheep, etc. |
| 032 | HORSE | HORSE | Horse, mule, or donkey |
| 033 | HRSE&RID | HORSE & RIDER | Horse and rider |
| 034 | GAME | GAME NO DEER/ELK | Wild animal, game (includes birds; not deer or elk) |
| 035 | DEER ELK | DEER OR ELK | Deer or elk, wapiti |
| 036 | ANML VEH | ANIMAL-DRAWN VEH | Animal-drawn vehicle |
| 037 | CULVERT | CULVERT/MANHOLE | Culvert, open low or high manhole |
| 038 | ATENUATN | IMPACT CUSHION | Impact attenuator |
| 039 | PK METER | PARKING METER | Parking meter |
| 040 | CURB | CURB | Curb (also narrow sidewalks on bridges) |
| 041 | JIGGLE | JIGGLE BAR N/MED | Jiggle bar or traffic snake for channelization |

EVENT CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|---------------------|--|
| 042 | GDRL END | GUARDRAIL END | Leading edge of guardrail |
| 043 | GARDRAIL | GUARDRAIL | Guard rail (not metal median barrier) |
| 044 | BARRIER | MEDIAN BARRIER | Median barrier (raised or metal) |
| 045 | WALL | WALL | Retaining wall or tunnel wall |
| 046 | BR RAIL | BRIDGE RAIL | Bridge railing or parapet (on bridge or approach) |
| 047 | BR ABUTMNT | BRIDGE ABUTMENT | Bridge abutment (included "approach end" thru 2013) |
| 048 | BR COLMN | BRIDGE COLUMN | Bridge pillar or column |
| 049 | BR GIRDR | BRIDGE GIRDER | Bridge girder (horizontal bridge structure overhead) |
| 050 | ISLAND | TRAFFIC ISLAND | Traffic raised island |
| 051 | GORE | GORE | Gore |
| 052 | POLE UNK | POLE-UNKNOWN | Pole – type unknown |
| 053 | POLE UTL | POLE-UTILITY | Pole – power or telephone |
| 054 | ST LIGHT | POLE-ST LIGHT | Pole – street light only |
| 055 | TRF SGNL | POLE-TRAF SIGNAL | Pole – traffic signal and ped signal only |
| 056 | SGN BRDG | POLE-SIGN BRIDGE | Pole – sign bridge |
| 057 | STOPSIGN | STOP/YIELD SIGN | Stop or yield sign |
| 058 | OTH SIGN | OTHER SIGN | Other sign, including street signs |
| 059 | HYDRANT | HYDRANT | Hydrant |
| 060 | MARKER | DELINEATOR | Delineator or marker (reflector posts) |
| 061 | MAILBOX | MAILBOX | Mailbox |
| 062 | TREE | TREE/STUMP | Tree, stump or shrubs |
| 063 | VEG OHED | VEGTN OVER RDWY | Tree branch or other vegetation overhead, etc. |
| 064 | WIRE/CBL | CABLE ACROSS RD | Wire or cable across or over the road |
| 065 | TEMP SGN | TEMP SIGN/BARR | Temporary sign or barricade in road, etc. |
| 066 | PERM SGN | PERM SIGN/BARR | Permanent sign or barricade in/off road |
| 067 | SLIDE | SLIDE/ROCKS | Slides, fallen or falling rocks |
| 068 | FRGN OBJ | FOREIGN OBJECT | Foreign obstruction/debris in road (not gravel) |
| 069 | EQP WORK | EQUIP WORKING | Equipment working in/off road |
| 070 | OTH EQP | OTHER EQUIPMENT | Other equipment in or off road (includes parked trailer, boat) |
| 071 | MAIN EQP | MAINTNCE EQUIP | Wrecker, street sweeper, snow plow or sanding equipment |
| 072 | OTHER WALL | OTHER WALL | Rock, brick or other solid wall |
| 073 | IRRGL PVMT | IRREGULAR PAVEMENT | Other bump (not speed bump), pothole or pavement irregularity (per PAR) |
| 074 | OVERHD OBJ | OTHER OVERHEAD OBJ | Other overhead object (highway sign, signal head, etc.); not bridge |
| 075 | CAVE IN | CAVE IN | Bridge or road cave in |
| 076 | HI WATER | HIGH WATER | High Water |
| 077 | SNO BANK | SNOW BANK | Snow Bank |
| 078 | LO-HI EDGE | LOW-HIGH PVMNT EDGE | Low or high shoulder at pavement edge |
| 079 | DITCH | CUT SLOPE/DITCH | Cut slope or ditch embankment |
| 080 | OBJ FRM MV | OBJ FRM OTHR VEH | Struck by rock or other object set in motion by other vehicle (incl. lost loads) |
| 081 | FLY-OBJ | OTHER MOVING OBJ | Struck by rock or other moving or flying object (not set in motion by vehicle) |
| 082 | VEH HID | VEH OBSCURE VIEW | Vehicle obscured view |
| 083 | VEG HID | VEG OBSCURE VIEW | Vegetation obscured view |

EVENT CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|----------------------|---|
| 084 | BLDG HID | BLD OBSCURE VIEW | View obscured by fence, sign, phone booth, etc. |
| 085 | WIND GUST | WIND GUST | Wind Gust |
| 086 | IMMERSED | IMMERSION | Vehicle immersed in body of water |
| 087 | FIRE/EXP | FIRE/EXPLOSION | Fire or explosion |
| 088 | FENC/BLD | FENCE/BUILDING | Fence or building, etc. |
| 089 | OTHR CRASH | REFER OTHR CRASH | Crash related to another separate crash |
| 090 | TO 1 SIDE | TWO WAY ONE SIDE | Two-way traffic on divided roadway all routed to one side |
| 091 | BUILDING | BUILDING | Building or other structure |
| 092 | PHANTOM | PHANTOM VEH | Other (phantom) non-contact vehicle |
| 093 | CELL PHONE | CELL PHONE PER PAR | Cell phone (on PAR or driver in use) |
| 094 | VIOL GDL | VIOL GRAD DR LIC | Teenage driver in violation of graduated license pgm |
| 095 | GUY WIRE | GUY WIRE | Guy wire |
| 096 | BERM | BERM | Berm (earthen or gravel mound) |
| 097 | GRAVEL | GRAVEL IN RDWY | Gravel in roadway |
| 098 | ABR EDGE | ABRUPT EDGE | Abrupt edge |
| 099 | CELL WTNSD | CELL PHONE WITNESSED | Cell phone use witnessed by other participant |
| 100 | UNK FIXD | UNK FIX OBJ | Fixed object, unknown type. |
| 101 | OTHER OBJ | OTHER OBJ NOT FIXED | Non-fixed object, other or unknown type |
| 102 | TEXTING | TEXTING | Texting |
| 103 | WZ WORKER | WZ WORKER | Work Zone Worker |
| 104 | ON VEHICLE | RIDE ON VEH EXTERIOR | Passenger riding on vehicle exterior |
| 105 | PEDAL PSGR | PSNGR ON PEDALCYCLE | Passenger riding on pedalcycle |
| 106 | MAN WHLCHR | NONMOTOR WHEELCHAIR | Pedestrian in non-motorized wheelchair |
| 107 | MTR WHLCHR | MOTORIZED WHEELCHAIR | Pedestrian in motorized wheelchair |
| 108 | OFFICER | POLICE OFFICER | Law Enforcement / Police Officer |
| 109 | SUB-BIKE | SUBSEQUENT BICYCLIST | "Sub-Bike": pedalcyclist injured subsequent to collision, etc. |
| 110 | N-MTR | NM STR VEH | Non-motorist struck vehicle |
| 111 | S CAR VS V | ST CAR STRUCK VEH | Street Car/Trolley (on rails or overhead wire system) struck vehicle |
| 112 | V VS S CAR | VEH STRUCK ST CAR | Vehicle struck Street Car/Trolley (on rails or overhead wire system) |
| 113 | S CAR ROW | STREET CAR ROW | At or on street car or trolley right-of-way |
| 114 | RR EQUIP | VEH STRUCK RR EQUIP | Vehicle struck railroad equipment (not train) on tracks |
| 115 | DSTRCT GPS | DISTRACT GPS DEVICE | Distracted by navigation system or GPS device |
| 116 | DSTRCT OTH | DISTRACT OTHR DEVICE | Distracted by other electronic device |
| 117 | RR GATE | RR DROP-ARM GATE | Rail crossing drop-arm gate |
| 118 | EXPNSN JNT | EXPANSION JOINT | Expansion joint |
| 119 | JERSEY BAR | JERSEY BARRIER | Jersey barrier |
| 120 | WIRE BAR | WIRE BARRIER | Wire or cable median barrier |
| 121 | FENCE | FENCE | Fence |
| 123 | OBJ IN VEH | LOOSE OBJ IN VEHICLE | Loose object in vehicle struck occupant |
| 124 | SLIPPERY | SLIPPERY SURFACE | Sliding or swerving due to wet, icy, slippery or loose surface (not gravel) |
| 125 | SHLDR | SHLDR GAVE | Shoulder gave way |
| 126 | BOULDER | ROCKS / BOULDER | Rock(s), boulder (not gravel; not rock slide) |

EVENT CODES

| Code | Short Description | Medium Description | Long Description |
|------|-------------------|----------------------|---|
| 127 | LAND SLIDE | ROCK OR LAND SLIDE | Rock slide or land slide |
| 128 | CURVE INV | CURVE PRESENT | Curve present at crash location |
| 129 | HILL INV | HILL PRESENT | Vertical grade / hill present at crash location |
| 130 | CURVE HID | CURVE OBSCURED VIEW | View obscured by curve |
| 131 | HILL HID | HILL OBSCURED VIEW | View obscured by vertical grade / hill |
| 132 | WINDOW HID | WINDOW VIEW OBSCURED | View obscured by vehicle window conditions |
| 133 | SPRAY HID | SPRAY OBSCURED VIEW | View obscured by water spray |

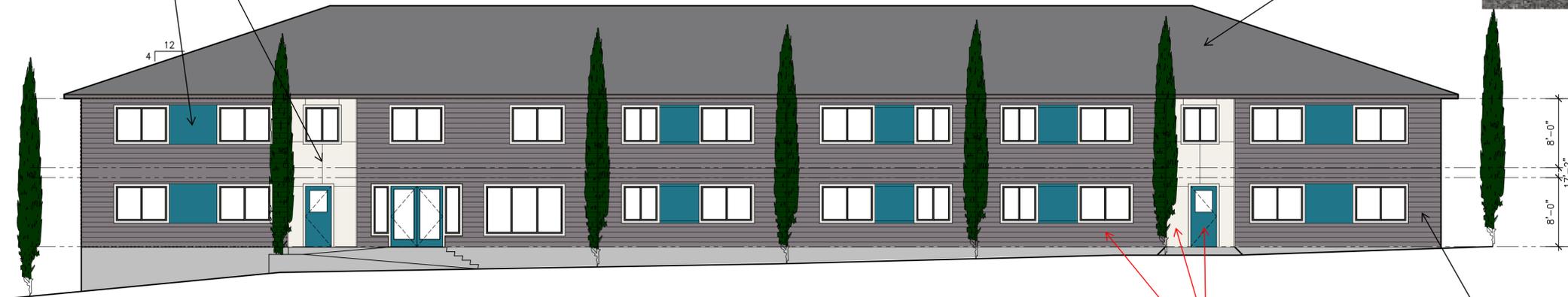
Material Board



Cementitious panel



Asphalt shingles



- Color: Miller Bold Bolection
- Color: Miller 0565 Eskimo boot
- Color: Miller 0528 Greybeard

2 North Elevation
1/8" = 1'-0"



Cementitious lap siding

PRELIMINARY
NOT FOR
CONSTRUCTION

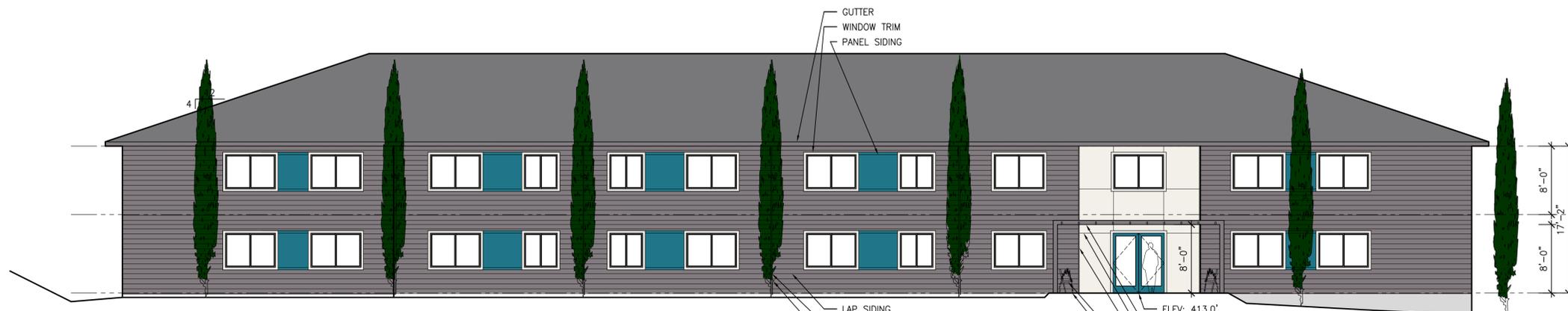
KASA
architects, inc.

4119 NE Cesar E. Chavez Blvd.
Portland, Oregon 97211
503.284.6917
www.kasapdx.com

Pleasant Avenue
Housing

314 Pleasant Avenue
Oregon City, Oregon
KASA Proj # 1606

Preliminary Elevations: Aug. 18, 2017



1 South Elevation
1/8" = 1'-0"



Preliminary Not For Construction

Exterior Elevations

A3.1

copyright KASA Architects, Inc. 2017



**City of Oregon City
Pre-Application Conference Summary**

Project Number: PA 17-05
Project Name: 314 Pleasant Multi-Family - @22 Units
Meeting Date: March 1, 2017
City Staff Present: Pete Walter, AICP, Associate Planner
Sang Pau, PE, Development Engineer
Applicant: Northwest Housing Alternatives
Applicant's Rep: Nikolai Ursin, AIA

Proposed Project:

The applicant has proposed a two-story multi-family building for veterans with 22 units at the intersection of Caufield / Pleasant Streets and Molalla Avenue. The Building will have the following dimensions:

Façade Length facing Caufield Street: 182'
Façade Length facing Pleasant Ave: 60'
Height:

According to the pre-application submittal: the units will be as follows:

| <u>Unit Type</u> | <u>#</u> | <u>Parking</u> | |
|------------------|----------|----------------|------------|
| | | <u>Min</u> | <u>Max</u> |
| Studio | 2 | 2 | 3 |
| 1 Bedroom | 7 | 9 | 15 |
| 2 Bedroom | 9 | 14 | 18 |
| 3 Bedroom | <u>4</u> | <u>7</u> | <u>10</u> |
| Total | 22 | 32 | 46 |

See [17.52.020 - Number of automobile spaces required.C. Reduction of the Number of Automobile Spaces Required.](#) Applicant has proposed 22 spaces, 8 spaces less than required, not including on-street parking. Reductions in parking minimums must be justified pursuant to one or more of the various options discussed in this section. Reductions may not be needed if there is additional on-street parking achieved through sufficient dedication of right-of-way.

General Information:

- Location: 314 Pleasant Avenue
- Clackamas County Tax APN 2-2E-32CC-04700
- Zoning: MUC-1: Mixed Use Corridor
- Applicable Overlay Districts: None
- Applications anticipated: Site Plan and Design Review

Neighborhood Association Meeting:

Prior to application pursuant to OCMC [17.50.055 - Neighborhood association meeting.](#) the applicant shall contact and schedule a meeting with the Barclay Hills Neighborhood Association to present the application and get feedback from the neighborhood association.

<http://www.orcity.org/community/barclay-hills-neighborhood-association>

2. The applicant shall send, by certified mail, return receipt requested letter to the chairperson of the neighborhood association and the citizen involvement committee describing the proposed project. Other communication methods may be used if approved by the neighborhood association.

3. A meeting shall be scheduled within thirty days of the notice. A meeting may be scheduled later than thirty days if by mutual agreement of the applicant and the neighborhood association. If the neighborhood association does not want to, or cannot meet within thirty days, the applicant shall hold their own meeting after six p.m. or on the weekend, with notice to the neighborhood association, citizen involvement committee, and all property owners within three hundred feet. If the applicant holds their own meeting, a copy of the certified letter requesting a neighborhood association meeting shall be required for a complete application. The meeting held by the applicant shall be held within the boundaries of the neighborhood association or in a city facility.

Barclay Hills Neighborhood Association

Contact Information: barclayhillsna@gmail.com

Chair: Betty Mumm, bmummb@comcast.net

Vice Chair: Mark J. Matheson, (503) 953-0250, mark.matheson@drteamsint.com

Treasurer: Janice Morris, mad91058@msn.com

Secretary: Shelley Batty, shelleyba@live.com

CIC Representative: Shelley Batty, shelleyba@live.com

CIC Representative: Mark J. Matheson, mark.matheson@drteamsint.com

Meeting Information: January 10, 2017, March 14, 2017, May 9, 2017, July 11, 2017, September 12, 2017 and November 14, 2017.

St. John the Apostle Cemetery, 445 Warner Road Oregon City, 7:00PM

Application Fees:

The 2017 Planning applications and fees include

- Site Plan and Design Review

| Project Cost | Fee |
|--------------------------|--|
| Less than \$500,000 | \$2,068 plus 0.007% project cost |
| \$500,000 to \$3,000,000 | \$3,445 plus 0.005% project cost |
| Over \$3,000,000 | \$11,718 plus 0.003% project cost (Max \$54,964) |

- Traffic Analysis Letter - \$469
- Mailing Labels for Public Notice: \$15 – or provided by applicant

Review Process:

This application is a Type II Site Plan and Design Review process. The applicant has **180 days** from the date of submittal to have a complete application starting on the date of submittal. The City is permitted a 30-Day Completeness Review period which is part of the 180 days.

Upon a complete application submittal, the applicant is entitled to a decision from the city for a decision of approval, approval with conditions or denial within **120 days** of deeming the application complete, by state law. See [17.50.070 - Completeness review and one hundred twenty-day rule.](#)

Type II decisions are rendered by the Community Development Director, with appeal on the record to the City Commission. Appeals of the City’s final decision may be appealed to LUBA (Land Use Board of Appeals).

Type II decisions are based on the code approval criteria and require limited discretion by the Community Development staff in order to be approved. Staff is not authorized to waive any requirements of the code except for modifications to site specific development standards pursuant to [17.62.015 - Modifications that will better meet design review requirements](#). Such modifications do not require a variance. The burden is on the applicant to show how such modifications better meet the intent of the code standard or standards that is/are being varied / modified.

The intent of the zoning code is at [17.62.010 - Purpose](#).

The intent of the Site Plan and Design Review Criteria is at [17.02.015 - Purpose](#).

The intent of the [17.62.057 - Multi-family standards](#) is under section A.

A. *Purpose. The standards of this section are intended to promote high-quality multi-family residential development and construction; encourage visual variety and architectural compatibility; and promote an integrated character with Oregon City's existing neighborhoods. Specifically, the standards shall:*

1. *Promote architectural variety that adds visual interest to the neighborhood.*
2. *Reduce the apparent bulk and scale of large buildings.*
3. *Provide for a variety of housing types for a range of households and age groups.*
4. *Enhance public safety, residential streetscape and the pedestrian environment by diminishing the prominence of garages and parking areas.*
5. *Improve the compatibility of multi-family residential development with the residential character of surrounding neighborhoods.*
6. *Promote the use of durable materials that which are appropriate for multi-family residential use and which reduce long-term maintenance costs and depreciation.*

Major variances to the code require a Type III process for approval by the Planning Commission at a public hearing. This may be an option for the applicant to pursue.

Applicable Code

Chapter 17.50 - ADMINISTRATION AND PROCEDURES

Type II Limited Land Use Decision process – See <http://www.orcity.org/planning/processes-and-timelines>

Chapter 12.04 - STREETS, SIDEWALKS AND PUBLIC PLACES

See comments from Public Works. Respond to criteria A-E as applicable for any requested modifications under section 12.04.007.

Chapter 12.08 - PUBLIC AND STREET TREES

Select appropriate species for the planting area from the City's [approved street tree list](#).

Chapter 13.12 - STORMWATER MANAGEMENT

See comments from Public Works.

Chapter 17.29 - "MUC"—MIXED-USE CORRIDOR DISTRICT

Please provide responses on how the project meets the underlying zone's dimensional standards and uses.

CHAPTER 17.41 TREE PROTECTION

All tree removal over 6" DBH will require mitigation. Trees preserved may be a part of common open space and may reduce parking requirements. Provide responses to this code section.

CHAPTER 17.52 - OFF-STREET PARKING AND LOADING

[17.52.010 - Applicability.](#)

[17.52.020 - Number of automobile spaces required.](#)

[17.52.030 - Standards for automobile parking.](#)

[17.52.040 - Bicycle parking standards.](#)

[17.52.060 - Parking lot landscaping.](#)

[17.52.070 - Alternative landscaping plan.](#)

Provide parking lot landscaping plan. The landscaping plan must be designed by a licensed landscape architect. Parking lot interior landscaping is required; ten percent of the parking lot area must be landscaped. If strict compliance with section 17.52.060 is not feasible due to site constraints, applicant may propose an alternative landscaping plans which meets the intent of the landscaping code for parking lots per [17.52.060 - Parking lot landscaping.](#) and [17.52.070 - Alternative landscaping plan.](#)

Site considerations for alternative landscaping should include:

- Stormwater Design
- Extent to which the landscaping buffers the parking lot
- Aesthetics
- Buffering the multi-family use from adjacent single family uses
- Long term maintenance
- Common open space requirements under the Multi-Family Design Standards

Show bicycle parking locations on site plans. A minimum of three (3) bicycle parking spaces is required.

Note that shared parking is permitted when a shared parking agreement is in place, and that parking may be reduced for tree preservation.

Chapter 17.62 - SITE PLAN AND DESIGN REVIEW

[17.62.010 - Purpose.](#)

[17.62.015 - Modifications that will better meet design review requirements.](#)

Requests to modify the design standard must specifically indicate in detail how the modification better meets the intent of the standard, not just state why the applicant can't meet the standard.

[17.62.050 - Standards.](#)

[17.62.057 Multi-family standards.](#)

[17.62.065 - Outdoor lighting.](#)

Include photometric site plan in compliance with this section.

[17.62.085 - Refuse and recycling standards for commercial, industrial, and multi-family developments.](#)

Transportation

The applicant will need to have a traffic engineer conduct a transportation study in conformance with the City's [Guidelines for Transportation Impact Analyses](#) available on the Oregon City website.

Based on the information provided by the applicant, it appears the transportation analysis associated with this development proposal can be satisfied by submittal of a Transportation Analysis Letter (TAL). This option is available when specific criteria are met. These include a determination that the development generates 24 or fewer AM and PM peak hour trips and fewer than 250 daily trips. Details for a TAL can be found in Section 3.1 of the *Guidelines*. It is the applicant's responsibility to verify the trip generation characteristics of the proposed development.

The applicant is advised to review [OCMC 12.04 – Streets, Sidewalks and Public Places](#), and the city's adopted Transportation System Plan to determine the appropriate treatment for the property's frontage. See notes from Public Works.

The applicant's traffic engineer is welcome to contact the city's traffic engineering consultant, John Replinger, at Replinger-Associates@comcast.net or at 503-719-3383.

Building Code Requirements

Contact Mike Roberts, Building Official at mroberts@orcify.org or (503) 496-1517.

Clackamas Fire District #1

Contact Mike Boumann, Captain Deputy Fire Marshall mike.boumann@ClackamasFire.com
direct: 503.742.2673

Zoning Code Issues noted by Staff

OCMC 17.62.057.C. Setbacks. Multi-family developments shall be placed no farther than twenty feet from the front property line. A deeper front yard setback may be approved through site plan and design review if the setback area incorporates enhanced pedestrian spaces and amenities, including but not limited to, street furniture, public art or other such deliberately shaped area and/or a feature or amenity that, in the judgment of the community development director, integrates well with adjoining areas. Setbacks may also be increased in order to protect wildlife habitat and water resources pursuant to Section 17.49.100F., and trees and tree groves pursuant to and Section 17.41.120A.

OCMC 17.62.057. E. Percentage of Frontage. On sites with one hundred feet or more of street frontage at least fifty percent of the site frontage width shall be occupied by buildings placed within twenty feet from the property line, unless a greater setback is accepted under the provisions of Section 17.62.057C. For sites with less than one hundred feet of street frontage, at least forty percent of the site frontage width shall be occupied by buildings placed within twenty feet of the property line, unless a greater setback is accepted under the provisions of Section 17.62.056D.

We recommend that applicant pay close attention to the provisions of 17.62.057(C).

OCMC 17.62.057.N.(2) - 2. Common And Private Open Space Requirements For Multifamily Dwelling Units In The Mixed Use Corridor, Neighborhood Commercial Or Mixed Use Downtown Districts.

All residential development in the Mixed Use Corridor, Neighborhood Commercial or Mixed Use Downtown Districts must provide a portion of the project area for private open space or common open space. Fifty square feet of private or common open space is required for each dwelling unit. The open space may be allocated exclusively for private or common use or may be a combination of the two uses.

a. Common Open Space: Common open space may be provided in the form of decks, shared patios, roof gardens, recreation rooms, lobbies or other gathering spaces created strictly for the tenants and not associated with storage or circulation. Landscape buffer areas may not be used as common open space unless active and passive uses are integrated into the space and its use will not adversely affect abutting properties.

b. Private Open Space: Private open space may be provided in the forms of decks, screened patios, roof gardens or an alternate private space as approved by the community development director.

Compliance with or exceeding this standard should be shown in detail and may serve as suitable mitigation for certain building façade modifications.

OCMC 17.62.057.G.2. Maximum facade width. The building exceeds 120 long along Caufield Street. How is the proposal meeting the 20-foot deep modulation requirement, or how will the applicant propose modification to this standard?

OCMC 17.62.057.G.3. Roofline standards. The roof line appears continuous based on the 3D renderings provided. How will the building comply with the modulation standard of 40 feet max.? Or how will the applicant propose modification to this standard?

OCMC 17.62.057.L Window Design. Staff could not determine compliance with this requirement based on the plans provided.

OCMC 17.62.057.J. Raised Ground Floor. (Applicant may request that standard not be applied since the building is designed solely for multi-family use – see process for requesting modifications above). “This is particularly important when dwelling units are within fifteen feet of a sidewalk or common parking area or for buildings in established neighborhoods that have an established pattern with raised dwelling units. Where ground floor residential uses are permitted on the ground floor in commercial districts, developments shall incorporate a thirteen-foot tall ground floor height to allow future conversion to commercial uses where desirable. Such projects can utilize a false floor thirty-six inches above the ground for residential uses to increase residents' privacy.” How will the applicant propose modification to this standard?

Mitigation is required for Tree Removal pursuant to OCMC 17.41.

Applicant did not show parking calculation. Depending on the extent of street improvements, parallel parking is given credit but not exclusive use by the abutting land use. See OCMC 17.52.020 - *Number of automobile spaces required.*

A. The number of parking spaces shall comply with the minimum and maximum standards listed in Table 17.52.020. The parking requirements are based on spaces per one thousand square feet net leasable area unless otherwise stated.

| <i>Use</i> | <i>Min.</i> | <i>Max.</i> |
|--------------------------------|----------------------|----------------------|
| <i>Multi-Family: Studio</i> | <i>1.00 per unit</i> | <i>1.5 per unit</i> |
| <i>Multi-Family: 1 bedroom</i> | <i>1.25 per unit</i> | <i>2.00 per unit</i> |
| <i>Multi-Family: 2 bedroom</i> | <i>1.5 per unit</i> | <i>2.00 per unit</i> |
| <i>Multi-Family: 3 bedroom</i> | <i>1.75 per unit</i> | <i>2.50 per unit</i> |

The intent of the [Multi-Family Design Standards](#) is stated below. Please design accordingly.

A. Purpose. The standards of this section are intended to promote high-quality multi-family residential development and construction; encourage visual variety and architectural compatibility; and promote an integrated character with Oregon City's existing neighborhoods. Specifically, the standards shall:

- 1. Promote architectural variety that adds visual interest to the neighborhood.*
- 2. Reduce the apparent bulk and scale of large buildings.*
- 3. Provide for a variety of housing types for a range of households and age groups.*
- 4. Enhance public safety, residential streetscape and the pedestrian environment by diminishing the prominence of garages and parking areas.*
- 5. Improve the compatibility of multi-family residential development with the residential character of surrounding neighborhoods.*
- 6. Promote the use of durable materials that which are appropriate for multi-family residential use and which reduce long-term maintenance costs and depreciation.*

Entrances. Every building abutting a street shall have a street facing front facade. The facade shall be oriented to the street and include windows, doorways, and a structured transition from public to private areas using built elements such as porch features, arbors, low walls, trellis work and/or similar elements integrated with planting.

The building façades abutting Caufield and Pleasant Street require compliance with this section. How will the applicant propose modification to this standard?

Pre-application conferences are required by Section 17.50.050 of the City Code, as follows:

A. Preapplication Conference. Prior to submitting an application for any form of permit, the applicant shall schedule and attend a preapplication conference with City staff to discuss the proposal. To schedule a preapplication conference, the applicant shall contact the Planning Division, submit the required materials, and pay the appropriate conference fee. At a minimum, an applicant should submit a short narrative describing the proposal and a proposed site plan, drawn to a scale acceptable to the City, which identifies the proposed land uses, traffic circulation, and public rights-of-way and all other required plans. The purpose of the preapplication conference is to provide an opportunity for staff to provide the applicant with information on the likely impacts, limitations, requirements, approval

standards, fees and other information that may affect the proposal. The Planning Division shall provide the applicant(s) with the identity and contact persons for all affected neighborhood associations as well as a written summary of the preapplication conference. Notwithstanding any representations by City staff at a preapplication conference, staff is not authorized to waive any requirements of this code, and any omission or failure by staff to recite to an applicant all relevant applicable land use requirements shall not constitute a waiver by the City of any standard or requirement.

B. A preapplication conference shall be valid for a period of six months from the date it is held. If no application is filed within six months of the conference or meeting, the applicant must schedule and attend another conference before the City will accept a permit application. The community development director may waive the preapplication requirement if, in the Director's opinion, the development does not warrant this step. In no case shall a preapplication conference be valid for more than one year.

NOTICE TO APPLICANT: A property owner may apply for any permit they wish for their property. HOWEVER, THERE ARE NO GUARANTEES THAT ANY APPLICATION WILL BE APPROVED. No decisions are made until all reports and testimony have been submitted. This form will be kept by the Community Development Department. A copy will be given to the applicant.



DEVELOPMENT SERVICES

PRE-APPLICATION MEETING NOTES

Planning Project Number: PA 17-05
Address: 314 Pleasant Ave, Oregon City, OR 97045
Map Number(s): 2-2E-32CC
Tax Lot(s): 04700
Project Name: Pleasant Street Housing
Meeting Date: March 1, 2017
Reviewer(s): Sang Pau

GENERAL COMMENTS

1. The Applicant is responsible for this project's compliance with applicable Public Works standards, codes and policies.
2. The Applicant shall provide an Erosion Prevention and Sedimentation Control Plan to the City for approval.
3. All applicable System Development Charges (SDC) shall be due and payable upon building permit issuance. Applicant will need to complete a SDC request form, found on the City's website, for an estimate of fees.

ENGINEERING - UTILITIES

Streets

1. The tax map indicates that Caufield Street has a 40-foot-wide right-of-way (ROW) along the property's frontage, with 20 feet on each side of the centerline. The tax map indicates that Pleasant Avenue has a 50-foot-wide ROW, along the property's frontage, with 25 feet on each side of the centerline. Both Caufield Street and Pleasant Avenue have no improvements aside from ADA Ramps at the northeast corner of the frontage.
2. The proposed development includes frontage on Caufield Street and Pleasant Avenue; which are functionally classified as Local Streets. For Mixed-use developments off Local Streets, the code requirements include: 62-foot-wide (ROW), pavement width of 40-feet, public access strips 0.5 feet wide, sidewalks 10.5 feet wide including 5 foot by 5 foot tree wells (including curb), two 12-foot wide travel lanes, and 8 feet street parking on each side of the street. Additional requirements include ADA ramps, street trees, and street lights. ADA ramps will be required at the intersection of Pleasant Avenue and Caufield Street.
3. To meet ROW requirements above, the applicant will be required to dedicate 11 feet of ROW along Caufield Street, to establish 31 feet of right-of-way on the north side, and 6 feet along Pleasant Avenue, to establish 31 feet of right-of-way on the west side.

4. The northeast corner of the property fronts Molalla Avenue, which is defined as a major arterial. This segment of Molalla Avenue is to have an 80-foot-wide (ROW), 40' on each side of the centerline (6' turn lane, 11' travel lane, 5' bike lane, 7' parking and 11' sidewalk). To meet the ROW requirements, the applicant will be required to dedicate approximately 5 feet of ROW parallel to Molalla Avenue, to establish 40 feet of ROW west of the centerline.
5. A 10-foot-wide Public Utility Easement (PUE) will be required to be provided along both the Caufield Street and Pleasant Avenue frontages. Overhead utilities are required to be relocated underground if feasible (coordination with overhead utility provider is required).
6. Reduction to the standard improvements and ROW dedication may be requested through the modification process outlined in OCMC 12.04.007. All modifications shall be processed through a Type II Land Use application and may require additional evidence from a transportation engineer or others to verify compliance.
7. The limits of a multi-family residential drive access way is 15 to 40 feet in width.
8. For street lighting, coordination with the following PGE Outdoor Lighting Services Department Design Project Managers.

Jeff Wiese (Primary)
(503) 742-8363
Jeff.Wiese@pgn.com

Jeff Steigleder (Back-Up)
(503) 672-5462
Jeffery.Steigleder@pgn.com

Stormwater

1. The development shall adhere to the requirements of the Stormwater and Grading Design Standards. The current Standards can be found online here:

http://www.orcity.org/sites/default/files/final_manual_0.pdf

2. The General Threshold(s) for Applicability of the Stormwater and Grading Design Standards:
 - a. *Development activities that result in **5,000 square feet of new or replaced impervious surface**, cumulative over a 5-year period, are subject to the requirements of these standards.*
3. As part of the development, the Applicant must submit a completed Site Assessment and Planning Checklist (and other attachments as described in **Section 9.1.1**) as part of the land use application process. At a minimum the application should include the following items from Section 9.1.2 to form the basis for developing the Stormwater Management Plan.
 - a. Infiltration test results
 - b. Downstream analysis / preliminary drainage report

4. The nearest existing stormwater facilities are inlets located in Pleasant Avenue, off the northeast corner and southeast corner of the subject property. The catch basins direct flows to the northeast through a 10-inch pipe. If the stormwater cannot be completely infiltrated on-site, any stormwater main utilized to capture runoff from the proposed development will be required be a minimum of 12-inch.
5. Inlets within Pleasant Avenue and Caufield Street will have to be relocated or replaced to match new gutter locations due to frontage improvements.
6. An inlet must be placed within 20 feet on the uphill side of handicap ramps and at all sag points (low points) along gutter.
7. Based on the criteria above, the applicant should anticipate new catch basins, and upgrading the pipe along Pleasant Avenue frontage from 10-inch to 12-inch.

Water

1. There is an existing 8-inch water main that runs within the west and northwest side of the property. This water main runs within a 20 feet wide easement that is offset from the west property line and a 15 feet wide easement that is offset from the north property line which runs to the eastern edge of the right-of-way line of Myrtle St.
2. There is an existing 3-inch cast iron water main within Caufield Street and an existing 6-inch cast iron water main within Pleasant Avenue. The 3-inch main will need to be upsized to 8-inch to meet current standards.
3. There is an existing water service line and meter within Pleasant Avenue, which appears to serve the existing house. This existing line and meter will most likely need to be upsized to meet the requirements of the proposed development.
4. There is an existing fire hydrant located at northeast corner of the subject property at the intersection of Pleasant Avenue and Molalla Avenue.
5. The applicant should anticipate installing one new fire hydrant on the public main, and on-site fire suppression per the requirements and direction of Clackamas Fire District No. 1.

Sanitary Sewer

1. There is an existing 8-inch sanitary sewer main located within Caufield Street and Pleasant Avenue. There are 2 existing service laterals, only one may be utilized if proven to be viable (for large multi-family developments a 6" lateral is the minimum). Otherwise, the development shall install a new service lateral connecting to the existing 8-inch sanitary sewer main located within Caufield Street or Pleasant Avenue. Additional sewer laterals aside from the one to be utilized must be abandoned.

Other

1. The proposed development does not reside within the Natural Resource Overlay District (NROD) nor the Geologic Hazard area.
2. A heritage tree at the frontage of Pleasant Avenue must be protected when considering frontage improvements along Pleasant Avenue. An arborist evaluation of any potential impacts of proposed frontage improvements along Pleasant Avenue will be required. Modification to the typical sidewalk section and or path maybe accepted to accommodate the preservation of the heritage tree.
3. For access proposed from Myrtle Street, the applicant will need to widen pavement on Myrtle Street to provide a minimum paved width of 20 feet between the site and Pearl Street. Preliminary findings show an embankment on the south side of Pearl Street which impairs sight distance for eastbound traffic from the intersection at Myrtle Street. If access from Myrtle Street is to be utilized, the sight distance must be improved (the embankment may require regrading). We anticipate the requirement of a sight distance study to confirm the efficacy of any proposed measures designed to improve the sight distance to meet the minimum requirements.

Barclay Hills Neighborhood Association (BHNA)
Meeting Minutes
September 12, 2017, 2017

Call to Order at 7:00 pm by Chair Betty Mumm

Introductions

We had a presentation by Northwest Housing Alternatives regarding there 24 unit project on Pleasant Street. May start building in March or April of next year.

Approval minutes John Eason moved and Mark Matterson seconded motion carried

New Business

1. Shelly Batty resigned from because they are moving to Lakeview, Oregon.
2. The steering committee will be talking about the nomination committee at the Oct. steering committee meeting.
3. It was approved to meet at the Founders Clinic on Molalla Ave in November. We also talked about donating the funds from the BHNA to the clinic.
4. We will ask Mike Day OC Police Homeless Liaison Officer to speak at our November meeting.

Standing Committee Report were giving

1. Oregon City Police-Call Activity and Traffic
2. CIC (No meeting to report on)
3. Chief's Advisory(No meeting to report on)
4. Parks/Tree No Report
5. Other

Meeting Adjourned at 7:39 pm

November 14, 2017

BHNA General Committee Meeting 7:00 pm

Location: Founders Clinic 700 Molalla Ave.

If you have any questions call 503-575-8106

Betty Mumm

BHNA Chair

BHNA 9/12/17

Name phone email

① Betty Mumm 503-575-8100
BmummB@comcast.net

② Janice & Russell Morris

③ John Esser

④ Stella Chan } KASA architects.
Kevin Saxton } 503 284 6917
ksaxton@kasapdx.com

⑤ (Carvide Ingebratsen 503-656-7218)
Cell 503-890-4402

⑥ Karin Money

7 Brian WWARD

7 Mickael McGuire 916 521 4829 mickaelmcguire@gmail.com



TECHNICAL MEMORANDUM

TO: Kevin Saxton, KASA Architects

FROM: Neil Pietrok, P.E.

DATE: October 23, 2017 Revised

RE: Storm Drainage Report for 314 Pleasant Avenue, Oregon City multi-family development –**Revised to include downstream analysis**

This Technical Memorandum addresses the City of Oregon City and NOAA requirements for storm drainage (water quality and water quantity) to meet the requirements of the Oregon City Stormwater and Grading Design Standards Manual (February 2015) and the NOAA stormwater management plan for NOAA Oregon.

Background

The 314 Pleasant Avenue site was formerly a single family residence situated on approximately 1-acre in Oregon City, Oregon. The site slopes down from southwest to northeast and is bordered by Pleasant Avenue and Caufield Street on two sides. The other two sides are residential properties and the end of Myrtle Street. The current site has some trees and groundcover and a gravel pad where the former house and outbuildings were located.

The site is to be developed into a single multi-family building and a 20-car parking lot. In addition the northeast corner of the site will be developed into a storm drainage feature discussed in this report. The remaining areas of the site will not be disturbed except for landscaping.

Standards of Design

For projects within the jurisdiction of the City of Oregon City that “result in 5,000 square feet of new or replaced impervious surface” (1.2.1, A.) the Stormwater and Grading Standards Manual needs to be followed. Specifically the Stormwater Management Requirements of Chapter/Section 1.4 are required including a Stormwater Management Plan.

In addition, since this project is receiving federal monies through HUD, the NOAA stormwater requirements must also be met or exceeded.



The following report follows the City's Manual Management Plan format with notations where NOAA requirements are addressed.

Stormwater development requirements generally require that the stormwater flows on the site after development must not exceed those flows that existed prior to the development. The City's manual requires that the flows prior to development be calculated as the flows that existed 1851. In addition, Low Impact Development (LID) Standard goals are included in both the City's and NOAA's standards.

Site Assessment

A site assessment document taken from the City's Manual (Appendix B) is included in this document as Attachment A. In addition, NOAA Stormwater Information Form OREGON ONLY is included in Attachment B.

In general, the current site does not contain landslide areas or any current drainage features such as streams or ponds. The topography slopes gently from southwest to northeast. A Geotechnical Investigation is contained in Attachment C that details soils and groundwater information. The attached plans show the downstream conveyance of City controlled catch basins and piping. There are heritage trees on the site that will be preserved.

Infiltration assessment is based on the findings of the Geotechnical Investigation. The soils found in the boring logs were poor soils for infiltration. Additional infiltration testing was not completed due to the findings in the boring logs.

The infiltration assessment, site topography, existing property utility easements, and LID goals resulted in site planning and facility selection of a detention pond to contain on-site stormwater and release the stormwater at pre-development flows.

Site Planning and Design Objectives

1. *Preserve Existing Resources:* Heritage trees and other large trees that can be preserved will be protected during construction.
2. *Minimize Site Disturbance:* Impacts to the site are minimized to the building, parking, and detention pond areas. Drip line areas of trees to be preserved will be delineated.
3. *Minimize Soil Compaction:* Construction activities will be confined to the building and parking areas. Construction of the detention pond will be limited to excavation, grading, and landscaping.
4. *Minimize Imperviousness:* During the design process, alternatives to impervious pavement and roofs were examined. Due to the limited funding sources and the desire to reduce future maintenance needs, the decision was made to utilize existing site topography to offset the new impervious surfaces rather than go with a more expensive option (i.e. pavers or porous pavement versus asphalt pavement. Past experience with porous pavement option is more expensive to install and porous pavers have long term maintenance issues.)



Stormwater Management Strategy

Following the City's hierarchy of Infiltration, Onsite, Offsite, Fees, we designed the site for a onsite stormwater management facility (detention pond). As previously mentioned, the site soils are not conducive for infiltration. Borings show up to 14-feet of clay soils cover the site. An infiltration facility would have caused more site disturbance than desired. The detention pond minimizes site disturbance (meeting both the City's Site Planning Objectives and NOAA's LID objectives) and can be incorporated with the existing site uses.

The conditions for a detention pond as required by Section 2.2.4.2 in the City's Manual have been met. In addition to the Geotechnical Investigation attached herein, a Environmental Site Assessment is included in Attachment D.

Stormwater Management Facility Selection and Design (Chapter 4, Oregon City Stormwater and Grading Design Standards)

4.1 Facility Selection: As previously mentioned, a detention pond was selected as the LID facility that met the City's and NOAA's standards for design. The pond also serves as a landscaping feature and a feature of a future playground/natural area.

4.2 Design Criteria: The City's water quality requirement is to treat a water quality design storm of 1.0 inch over 24, hours. The design for the detention pond for this project will contain up to the 10-year peak flow rate before overflow into a controlled facility. The facility will also contain the 100-year flow on the property within the pond and surrounding area. This is critical because the slope of the property and the location of the pond could overflow to the adjacent property if not contained.

4.3 Design Methods: The BMP Sizing Tool provided by the City of Oregon City was used to size the pond. The results of the BMP Sizing Tool are included in Attachment E. As a check on the results of the BMP Sizing Tool, pre-development and post-development Santa Barbara Urban Hydrograph was prepared and used to calculate pond sizes. The Hydrograph results were used as a check only and are not included in this report.

4.7 Detention Pond Design Requirements:

4.7.1 Geotechnical Report: A Geotechnical Investigation is included in Attachment C.

4.7.2 Pond Depth: Active Storage Depth meets the 4 foot requirement for the 10-year storm.

4.7.3 Bottom Width: The pond designed for this project to match the surrounding contours is an hourglass shape. The bottom with exceeds 10' but not for the entire bottom due to shape.

4.7.4 Interior Side Slopes: Interior side slopes do not exceed 3h:1v.



4.7.5 Exterior Side Slopes: Exterior side slopes are the existing ground on the site. Most all undisturbed areas are flatter than 4h:1v.

4.7.6, 4.7.7, 4.7.8 Conveyance Outfalls, Outlet Structures, and Emergency Overflow: All items have been incorporated into the detention pond design per the BMP sizing tool. The 100-year storm will pass through the outfall and an emergency overflow will bypass the outfall and direct runoff to the conveyance system.

4.9.2 Detention Pond Interior Maintenance Access: The detention pond will be adjacent to Pleasant Avenue. Maintenance will be able to be done from Pleasant Avenue without disturbing the surrounding area.

REVISION

Sections 5.2.3 and 5.2.4 require Upstream and Downstream analysis.

5.2.3 Upstream Drainage Basins

The project is in the Newell Drainage Basin of the City. There are no upstream basins or sub-basins for this project.

5.2.4 Downstream Drainage Conveyance

The downstream analysis shows the property is in the Newell Basin of the City's Drainage basin maps (from OCWebMaps). The portion of the Newell Basin that is downstream of the property is bounded on the west by the westernmost edge of the Newell Basin boundary; on the south by Caulfield Street, Dewey Street, and Pearl Street; on the East by Euria Street; and, on the north by Roosevelt Street.

The stormwater runoff from the site will connect into the 10" OC line on Pleasant Avenue; then into a 12" OC line on Molalla Avenue which turns into an 18" OC line past Pearl Street; the 18" OC line continues on Roosevelt Street until just west of Warrant Street where the line changes down to a 6" line; at Euria Street the line changes back into an 18" OC line to the outfall to the east. The downstream analysis maps are included in Attachment F. Attachment G. Contains the Hydrographs for the basin flows and Attachment H is an excel spreadsheet of the pipe capacities. The 6" OC line on Roosevelt is undersized and does not meet the City's minimum size standard for storm water lines of 12" diameter.

The conveyance pipe lines were analyzed for capacity versus the expected flow from a 25-year storm. A Santa Barbara Urban Hydrograph (SBUH) was used to calculate the basin and sub-basin flows (Attachment H). The pipe analysis shows that downstream pipes all exceed the expected flows except for the 6" pipes mentioned above.

While these pipes cannot handle the flows through the system, the project at 314 Pleasant Avenue has been designed to retain the 25-year flows and release those flows at the pre-project level. Therefore, the project is not exacerbating the already undersized system downstream.



ATTACHMENTS

- A. Site Assessment and Planning Checklist
- B. NOAA Stormwater Information Form OREGON ONLY
- C. Geotechnical Investigation
- D. Phase 1 Environmental Site Assessment
- E. BMP Sizing Tool Results
- F. Downstream Analysis Maps
- G. Santa Barbara Urban Hydrographs
- H. Pipe Analysis

| SITE ASSESSMENT AND PLANNING CHECKLIST | | |
|---|--|--|
| ✓ | Information needed | Attach supporting materials as needed |
| 2.2.1 Site Information | | |
| | Applicant contact information | Applicant name: _____ Business name: _____ Contact address, phone number, and e-mail: _____ _____ _____ |
| | Project location | Site address: <u>314 Pleasant Avenue, Oregon City Oregon</u> Site description: <u>1 acre residential lot</u> _____ _____ Major drainage basin: <u>Singer Creek</u> Is the project site located with the WQRA as defined in OCMC 17.49? _____ (Y/N) <i>Include a vicinity map of the site (including location of property in relation to adjacent properties, roads, and pedestrian/bike facilities).</i> |
| | Project type | Identify types of development planned for the site such as commercial, industrial, single-family residential, multi-family residential, or other (describe): <p style="text-align: center;">Multi-family residential.</p> |
| | Size of site | Size of site: <u>1</u> (acres) Number of existing/proposed tax lots: <u>1</u> Amount of new and replaced impervious area: <u>15,000</u> (SF) |
| 2.2.2 Site Assessment | | |
| <i>Note: Site assessment information may be available from the OCMaps online tool available through the City's website.</i> | | |
| | Site Assessment Map | <i>Attach engineered scale Site Assessment Map, showing items below.</i> |
| | Topography Evaluate site and map slopes: <i>Flat: 0-10%</i> <i>Moderate: 10-25%</i> <i>Steep: 25% and greater</i> | <i>Surveyed or aerial-based mapping with 2-foot intervals for slopes 0-25% slope and 10-foot intervals for steeper. Indicate Geologic Hazard Areas as defined by OCMC 17.04.510 and Geologic Hazards Overlay Zone as defined by OCMC 17.04.515.</i> |
| | Soils and Groundwater Research and map site soil hydrologic group, depth to groundwater | NRCS Hydrologic Soil Type (show on map if more than one type present): <i>Attach seasonal groundwater depth evaluation if available or required (site has floodplain and/or wetland). Groundwater depth information is available from the City.</i> |
| | Infiltration Assessment Determine soil capacity for onsite infiltration | If an infiltration test is performed, attach the documentation. Report the test type (Basic/Professional) performed and results. See Appendix D for the approved infiltration testing methods. Test type: _____ (inches/hour) |

| SITE ASSESSMENT AND PLANNING CHECKLIST | |
|--|---|
| <p>Hydrology – Conditions and Natural Features</p> <p>Map site floodplains, wetlands, streams, and location of outfalls</p> | <p>Clearly label on map all intermittent and perennial creeks/streams/rivers and wetlands, FEMA floodplains, and existing drainage systems (pipes, ditches, outfalls).</p> <p>Check here if present on site: _____</p> <p>Sensitive area(s) <u> N/A </u></p> <p>Floodplain <u> N/A </u></p> |
| <p>Downstream Conveyance</p> | <p>Indicate the proposed point of discharge on the site plan.</p> <p><i>Prepare and attach a Downstream Analysis as required by Chapter 5.</i></p> <p>Check here to verify that adequate downstream capacity is available: <u> X </u></p> |
| <p>Existing Vegetation</p> <p>Map trees and vegetation</p> | <p>Using aerial photos or survey, map all trees and vegetation. Note all existing trees 6-inch caliper and greater (DBH) on map. Delineate and identify other areas and types of existing vegetation.</p> <p>The local planning authority may require a formal tree survey.</p> |
| <p>Required Vegetated Buffers and Setbacks</p> <p>Assess and map buffers</p> | <p>Identify required vegetated buffer areas and other setback limits as defined by OCMC Title 17.</p> |
| <p>Land Use and Zoning</p> | <p>Existing Land Use Zoning designation(s): _____</p> |
| <p>Access and Parking</p> | <p>Delineate proposed access points for all transportation modes on map. Indicate amount and area of required parking onsite if applicable, <i>attach documentation as needed.</i></p> |
| <p>Utilities to Site and Surrounding Area</p> | <p>Map existing utilities including stormwater facilities, storm conveyance, sewer, water, electricity, phone/cable, gas, and any public storm system/facility downstream.</p> |
| <p>2.2.3 Site Planning Design Objectives (<i>attach engineered scale Preliminary Site Plan</i>)</p> | |
| <p>1. Preserve existing resources</p> | <p>Required: Show sensitive areas and buffers on site plan. Denote buffer areas that require enhancement. Show any proposed areas of encroachment and associated buffer mitigation areas.</p> |
| <p>2. Minimize site disturbance</p> | <p>Required: Delineate protection areas on site plan for areas to remain undisturbed during construction.</p> |
| <p>3. Minimize soil compaction</p> | <p>Required: Delineate and note temporary fencing on site plan for proposed infiltration facilities, vegetated stormwater management facilities, and re-vegetation areas.</p> |
| <p>4. Minimize imperviousness</p> | <p>Required: Delineate proposed impervious areas and proposed impervious area reduction methods on the site plan.</p> <p>A. Total proposed new/replaced impervious area: <u> 15,000 </u> (SF)</p> <p>B. Area of proposed Green Roofs: <u> 0 </u> (SF)</p> <p>C. Area of proposed pervious pavements: <u> 0 </u> (SF)</p> <p>D. Describe type of pavers or pavement proposed: _____</p> <p>_____</p> <p>E. Impervious area requiring management [A-(B+C)]: <u> 15,000 </u> (SF)</p> |

| SITE ASSESSMENT AND PLANNING CHECKLIST | |
|--|--|
| 2.2.4 Proposed Stormwater Management Strategy | |
| Proposed Stormwater Management Strategy | <p>_____ Infiltration facilities</p> <p>_____ Surface Infiltration facilities to the MEP</p> <p>_____ Full onsite retention/infiltration up to the 10-year storm event</p> <p>_____ Infiltration facilities are limited by the following conditions (<i>include documentation to demonstrate the limiting condition and choose an alternate strategy below</i>):</p> <p>_____ Stormwater management facility to be located on fill</p> <p>_____ Steep slopes</p> <p>_____ High groundwater</p> <p>_____ Contaminated soils</p> <p>_____ Conflict with required Source Controls (Chapter 6)</p> <p><u>X</u> Onsite Stormwater management facilities (indicate below)</p> <p>_____ Offsite stormwater management facilities/regional facilities</p> <p>_____ Fee in Lieu, as determined by the City</p> |
| Preliminary Facility Selection/Sizing | <p>Check all that apply, <i>attach output from BMP Sizing Tool</i>, and show proposed Stormwater Management Facilities on Preliminary Site Plan.</p> <p>LID facilities:</p> <p>_____ Infiltration Stormwater Planter</p> <p>_____ Filtration Stormwater Planter</p> <p>_____ Infiltration Rain Garden</p> <p>_____ Filtration Rain Garden</p> <p>_____ Vegetated Swale</p> <p><u>X</u> Detention Pond</p> <p>_____ Infiltration Trench</p> <p>_____ Manufactured Treatment Technology</p> <p>_____ Other: _____</p> |
| Verify Minimum Facility Size | <p>A. Required surface area of onsite surface infiltration facilities:</p> <p>As determined by BMP sizing tool or engineered method: _____ (SF)</p> <p>B. Calculate MEP surface area of surface infiltration facilities for sites with limiting conditions:</p> <p>Total new/replaced impervious area (SF) x 0.10 = _____ (SF)</p> <p>C. Calculate required surface area of onsite LID facilities:</p> <p>Smaller of [A] or [B]: _____ (SF)</p> <p>D. Proposed surface infiltration facility size(s):</p> <p>From site plan: _____ (SF) <i>must be larger than [C]</i></p> |

| SITE ASSESSMENT AND PLANNING CHECKLIST | |
|--|--|
| 2.2.5 Other Project Requirements | |
| Grading Permit | Review OCMC 15.48 to determine whether a grading permit will be required. Grading permit required? ____ (Y/N) Type of Grading Plan proposed (see Chapter 3): _____ |
| Erosion Prevention and Sediment Control | Identify the required permits: <input checked="" type="checkbox"/> ESC Permit from the City (<i>sites that include 1,000+ SF new or replaced impervious area</i>) <input type="checkbox"/> 1200-C Permit from DEQ (<i>sites that disturb 1 acre or more land surface</i>) |
| Source Control for High Use Sites | Identify whether the proposed development will include any of the following: <input type="checkbox"/> Fuel Dispensing Facilities and Surrounding Traffic Areas <input type="checkbox"/> Above-Ground Storage of Liquid Materials <input type="checkbox"/> Solid Waste Storage Areas, Containers, and Trash Compactors <input type="checkbox"/> Exterior Storage of Bulk Materials <input type="checkbox"/> Material Transfer Areas/Loading Docks <input type="checkbox"/> Equipment and/or Vehicle Washing Facilities <input type="checkbox"/> Development on Land With Suspected or Known Contamination <input type="checkbox"/> Covered Vehicle Parking Areas <input type="checkbox"/> Industrial and Commercial High Traffic Areas <input type="checkbox"/> Other land uses subject to the ODEQ 1200-Z Industrial Stormwater Permit |
| Other Permits | Identify other natural resources related permits from local, state, or federal agencies that may be required as part of the proposed development activity. It is the responsibility of the applicant to identify and obtain required permits prior to project approval. List other anticipated permits: |

NOAA Stormwater Information Form

OREGON ONLY

If you are submitting a project that includes a stormwater plan for review please fill out the following cover sheet **to be included with** stormwater management plan, and any other supporting materials.

Also include a drawing of the stormwater treatment area including drainage areas, direction of flow, BMP locations and types, contributing areas, other drainage features, receiving water/location, etc.

| Project Information | |
|---|--|
| | Name of Project: |
| | Type of project (i.e., new residential, residential rehabilitation, commercial) |
| | Nearest receiving water occupied by ESA-listed species or designated critical habitat |
| | Lat/Long (DDD.dddd) of Project Location: |
| | Street Address of Project: |
| | Have you contacted anyone at NMFS regarding this project? Yes No |
| | If Yes, who: |
| Stormwater Designer and/or Engineer Contact Information | |
| | Name: |
| | Phone: |
| | Email: |
| Summary of Design Elements | |
| 1. | 2-year, 24-hour storm from NOAA Precipitation Atlas: http://www.nws.noaa.gov/ohd/hdsc/noaaatlas2.htm Inches |
| 2. | 50% (Zones 1,2,3,6,8) or 67% (Zone 4) or 75% (Zone 5) of 2-yr, 24-hr storm fully treated: Yes No For water quality design storm zones, see: http://www.oregon.gov/ODOT/HWY/GEOENVIRONMENTAL/pages/storm_management_program_wqsd.aspx 24-hour design storm: Inches |
| 3. | Total contributing impervious area including all contiguous surface (e.g. roads, driveways, parking lots, sidewalks, roofs, and similar surfaces) Acres |
| | Proposed new Acres |
| | Existing Acres |
| | Acres of total impervious area x design storm = ft ³ to be treated |
| 4. | Peak discharge of design storm: cfs |
| 5. | Total stormwater to be treated: ft³ cfs |
| 6. | Stormwater Design Manual Used and Year/Version: (example: City of Portland, Clean Water Services, King County, Western Washington) Describe which elements of your stormwater plan came from this manual: |

| Maintenance and Inspection Plan | |
|---------------------------------|--|
| 13. | <p>Have you included a stormwater maintenance plan with a description of the onsite stormwater system, inspection schedule and process, maintenance activities, legal and financial responsibility, and inspection and maintenance logs? Yes No*</p> <p>*NOAA review cannot be complete without a maintenance and inspection plan</p> <p>Page in stormwater plan where plan can be found:</p> |
| 14. | <p>Contact information for the party/parties that will be legally responsible for performing the inspections and maintenance or the stormwater facilities:</p> <p>Name: _____</p> <p>Phone number: _____</p> <p>Email: _____</p> <p>Name: _____</p> <p>Phone number: _____</p> <p>Email: _____</p> <p>Name: _____</p> <p>Phone number: _____</p> <p>Email: _____</p> <p>Page in stormwater plan where more details can be found:</p> |





| | | | | | | | | | | | |
|----|-----|--------|--------|--------|--------|--------|--------|--------|--------|-------|------|
| 28 | 280 | 0.0070 | 0.0280 | 0.5920 | 0.0375 | 0.0070 | 0.4022 | 0.0259 | 0.0145 | 1.01 | 0.95 |
| 29 | 290 | 0.0082 | 0.0328 | 0.6248 | 0.0465 | 0.0090 | 0.4328 | 0.0305 | 0.0176 | 1.22 | 1.03 |
| 30 | 300 | 0.0082 | 0.0328 | 0.6576 | 0.0562 | 0.0098 | 0.4634 | 0.0307 | 0.0181 | 1.26 | 1.13 |
| 31 | 310 | 0.0082 | 0.0328 | 0.6904 | 0.0668 | 0.0105 | 0.4943 | 0.0309 | 0.0186 | 1.29 | 1.20 |
| 32 | 320 | 0.0082 | 0.0328 | 0.7232 | 0.0781 | 0.0113 | 0.5253 | 0.0310 | 0.0191 | 1.33 | 1.26 |
| 33 | 330 | 0.0082 | 0.0328 | 0.7560 | 0.0900 | 0.0120 | 0.5564 | 0.0311 | 0.0196 | 1.36 | 1.30 |
| 34 | 340 | 0.0082 | 0.0328 | 0.7888 | 0.1026 | 0.0126 | 0.5876 | 0.0312 | 0.0200 | 1.39 | 1.34 |
| 35 | 350 | 0.0095 | 0.0380 | 0.8268 | 0.1180 | 0.0154 | 0.6240 | 0.0363 | 0.0237 | 1.64 | 1.43 |
| 36 | 360 | 0.0095 | 0.0380 | 0.8648 | 0.1342 | 0.0162 | 0.6604 | 0.0364 | 0.0242 | 1.68 | 1.54 |
| 37 | 370 | 0.0095 | 0.0380 | 0.9028 | 0.1511 | 0.0169 | 0.6970 | 0.0366 | 0.0247 | 1.72 | 1.62 |
| 38 | 380 | 0.0095 | 0.0380 | 0.9408 | 0.1687 | 0.0176 | 0.7336 | 0.0367 | 0.0252 | 1.75 | 1.68 |
| 39 | 390 | 0.0095 | 0.0380 | 0.9788 | 0.1871 | 0.0183 | 0.7704 | 0.0367 | 0.0257 | 1.78 | 1.72 |
| 40 | 400 | 0.0095 | 0.0380 | 1.0168 | 0.2060 | 0.0190 | 0.8072 | 0.0368 | 0.0261 | 1.81 | 1.76 |
| 41 | 410 | 0.0134 | 0.0536 | 1.0704 | 0.2338 | 0.0278 | 0.8593 | 0.0521 | 0.0374 | 2.60 | 1.98 |
| 42 | 420 | 0.0134 | 0.0536 | 1.1240 | 0.2627 | 0.0289 | 0.9115 | 0.0522 | 0.0382 | 2.65 | 2.30 |
| 43 | 430 | 0.0134 | 0.0536 | 1.1776 | 0.2927 | 0.0300 | 0.9638 | 0.0523 | 0.0389 | 2.70 | 2.49 |
| 44 | 440 | 0.0180 | 0.0720 | 1.2496 | 0.3346 | 0.0419 | 1.0342 | 0.0704 | 0.0532 | 3.69 | 2.84 |
| 45 | 450 | 0.0180 | 0.0720 | 1.3216 | 0.3781 | 0.0435 | 1.1048 | 0.0706 | 0.0543 | 3.76 | 3.28 |
| 46 | 460 | 0.0340 | 0.1360 | 1.4576 | 0.4643 | 0.0862 | 1.2384 | 0.1336 | 0.1051 | 7.29 | 4.40 |
| 47 | 470 | 0.0540 | 0.2160 | 1.6736 | 0.6106 | 0.1463 | 1.4514 | 0.2130 | 0.1728 | 11.98 | 7.02 |
| 48 | 480 | 0.0270 | 0.1080 | 1.7816 | 0.6874 | 0.0768 | 1.5581 | 0.1067 | 0.0887 | 6.15 | 8.04 |
| 49 | 490 | 0.0180 | 0.0720 | 1.8536 | 0.7398 | 0.0524 | 1.6294 | 0.0712 | 0.0599 | 4.15 | 6.60 |
| 50 | 500 | 0.0134 | 0.0536 | 1.9072 | 0.7794 | 0.0396 | 1.6824 | 0.0531 | 0.0449 | 3.12 | 5.12 |
| 51 | 510 | 0.0134 | 0.0536 | 1.9608 | 0.8194 | 0.0400 | 1.7355 | 0.0531 | 0.0452 | 3.14 | 4.12 |
| 52 | 520 | 0.0134 | 0.0536 | 2.0144 | 0.8599 | 0.0405 | 1.7886 | 0.0531 | 0.0455 | 3.16 | 3.63 |
| 53 | 530 | 0.0088 | 0.0352 | 2.0496 | 0.8867 | 0.0268 | 1.8235 | 0.0349 | 0.0300 | 2.08 | 3.13 |
| 54 | 540 | 0.0088 | 0.0352 | 2.0848 | 0.9137 | 0.0270 | 1.8584 | 0.0349 | 0.0301 | 2.09 | 2.61 |
| 55 | 550 | 0.0088 | 0.0352 | 2.1200 | 0.9409 | 0.0272 | 1.8933 | 0.0349 | 0.0302 | 2.10 | 2.35 |
| 56 | 560 | 0.0088 | 0.0352 | 2.1552 | 0.9682 | 0.0273 | 1.9283 | 0.0349 | 0.0303 | 2.10 | 2.22 |
| 57 | 570 | 0.0088 | 0.0352 | 2.1904 | 0.9957 | 0.0275 | 1.9632 | 0.0349 | 0.0304 | 2.11 | 2.17 |
| 58 | 580 | 0.0088 | 0.0352 | 2.2256 | 1.0233 | 0.0276 | 1.9981 | 0.0349 | 0.0305 | 2.12 | 2.14 |
| 59 | 590 | 0.0088 | 0.0352 | 2.2608 | 1.0511 | 0.0278 | 2.0331 | 0.0349 | 0.0306 | 2.12 | 2.13 |
| 60 | 600 | 0.0088 | 0.0352 | 2.2960 | 1.0790 | 0.0279 | 2.0680 | 0.0350 | 0.0307 | 2.13 | 2.13 |
| 61 | 610 | 0.0088 | 0.0352 | 2.3312 | 1.1071 | 0.0281 | 2.1030 | 0.0350 | 0.0308 | 2.14 | 2.13 |
| 62 | 620 | 0.0088 | 0.0352 | 2.3664 | 1.1353 | 0.0282 | 2.1380 | 0.0350 | 0.0309 | 2.14 | 2.13 |
| 63 | 630 | 0.0088 | 0.0352 | 2.4016 | 1.1636 | 0.0283 | 2.1729 | 0.0350 | 0.0310 | 2.15 | 2.14 |
| 64 | 640 | 0.0088 | 0.0352 | 2.4368 | 1.1921 | 0.0285 | 2.2079 | 0.0350 | 0.0311 | 2.15 | 2.15 |
| 65 | 650 | 0.0072 | 0.0288 | 2.4656 | 1.2154 | 0.0234 | 2.2365 | 0.0286 | 0.0255 | 1.77 | 2.05 |
| 66 | 660 | 0.0072 | 0.0288 | 2.4944 | 1.2389 | 0.0235 | 2.2652 | 0.0286 | 0.0255 | 1.77 | 1.91 |
| 67 | 670 | 0.0072 | 0.0288 | 2.5232 | 1.2624 | 0.0235 | 2.2938 | 0.0286 | 0.0256 | 1.77 | 1.84 |
| 68 | 680 | 0.0072 | 0.0288 | 2.5520 | 1.2861 | 0.0236 | 2.3224 | 0.0286 | 0.0256 | 1.78 | 1.81 |
| 69 | 690 | 0.0072 | 0.0288 | 2.5808 | 1.3098 | 0.0237 | 2.3511 | 0.0286 | 0.0257 | 1.78 | 1.79 |
| 70 | 700 | 0.0072 | 0.0288 | 2.6096 | 1.3335 | 0.0238 | 2.3797 | 0.0286 | 0.0257 | 1.78 | 1.79 |
| 71 | 710 | 0.0072 | 0.0288 | 2.6384 | 1.3574 | 0.0238 | 2.4084 | 0.0286 | 0.0258 | 1.79 | 1.79 |
| 72 | 720 | 0.0072 | 0.0288 | 2.6672 | 1.3813 | 0.0239 | 2.4370 | 0.0286 | 0.0258 | 1.79 | 1.79 |
| 73 | 730 | 0.0072 | 0.0288 | 2.6960 | 1.4053 | 0.0240 | 2.4657 | 0.0287 | 0.0258 | 1.79 | 1.79 |
| 74 | 740 | 0.0072 | 0.0288 | 2.7248 | 1.4294 | 0.0241 | 2.4943 | 0.0287 | 0.0259 | 1.79 | 1.79 |
| 75 | 750 | 0.0072 | 0.0288 | 2.7536 | 1.4535 | 0.0241 | 2.5230 | 0.0287 | 0.0259 | 1.80 | 1.79 |
| 76 | 760 | 0.0072 | 0.0288 | 2.7824 | 1.4777 | 0.0242 | 2.5516 | 0.0287 | 0.0260 | 1.80 | 1.80 |
| 77 | 770 | 0.0057 | 0.0228 | 2.8052 | 1.4969 | 0.0192 | 2.5743 | 0.0227 | 0.0206 | 1.43 | 1.71 |
| 78 | 780 | 0.0057 | 0.0228 | 2.8280 | 1.5161 | 0.0192 | 2.5970 | 0.0227 | 0.0206 | 1.43 | 1.57 |
| 79 | 790 | 0.0057 | 0.0228 | 2.8508 | 1.5354 | 0.0193 | 2.6197 | 0.0227 | 0.0206 | 1.43 | 1.50 |
| 80 | 800 | 0.0057 | 0.0228 | 2.8736 | 1.5547 | 0.0193 | 2.6424 | 0.0227 | 0.0207 | 1.43 | 1.47 |
| 81 | 810 | 0.0057 | 0.0228 | 2.8964 | 1.5741 | 0.0194 | 2.6651 | 0.0227 | 0.0207 | 1.43 | 1.45 |
| 82 | 820 | 0.0057 | 0.0228 | 2.9192 | 1.5935 | 0.0194 | 2.6878 | 0.0227 | 0.0207 | 1.44 | 1.44 |
| 83 | 830 | 0.0057 | 0.0228 | 2.9420 | 1.6129 | 0.0194 | 2.7105 | 0.0227 | 0.0207 | 1.44 | 1.44 |
| 84 | 840 | 0.0057 | 0.0228 | 2.9648 | 1.6324 | 0.0195 | 2.7332 | 0.0227 | 0.0208 | 1.44 | 1.44 |
| 85 | 850 | 0.0057 | 0.0228 | 2.9876 | 1.6519 | 0.0195 | 2.7559 | 0.0227 | 0.0208 | 1.44 | 1.44 |
| 86 | 860 | 0.0057 | 0.0228 | 3.0104 | 1.6714 | 0.0195 | 2.7786 | 0.0227 | 0.0208 | 1.44 | 1.44 |
| 87 | 870 | 0.0057 | 0.0228 | 3.0332 | 1.6910 | 0.0196 | 2.8013 | 0.0227 | 0.0208 | 1.44 | 1.44 |
| 88 | 880 | 0.0057 | 0.0228 | 3.0560 | 1.7106 | 0.0196 | 2.8240 | 0.0227 | 0.0208 | 1.44 | 1.44 |
| 89 | 890 | 0.0050 | 0.0200 | 3.0760 | 1.7278 | 0.0172 | 2.8440 | 0.0199 | 0.0183 | 1.27 | 1.40 |
| 90 | 900 | 0.0050 | 0.0200 | 3.0960 | 1.7450 | 0.0172 | 2.8639 | 0.0199 | 0.0183 | 1.27 | 1.33 |
| 91 | 910 | 0.0050 | 0.0200 | 3.1160 | 1.7623 | 0.0173 | 2.8838 | 0.0199 | 0.0183 | 1.27 | 1.30 |
| 92 | 920 | 0.0050 | 0.0200 | 3.1360 | 1.7796 | 0.0173 | 2.9037 | 0.0199 | 0.0183 | 1.27 | 1.29 |
| 93 | 930 | 0.0050 | 0.0200 | 3.1560 | 1.7969 | 0.0173 | 2.9236 | 0.0199 | 0.0184 | 1.27 | 1.28 |
| 94 | 940 | 0.0050 | 0.0200 | 3.1760 | 1.8143 | 0.0173 | 2.9436 | 0.0199 | 0.0184 | 1.27 | 1.28 |
| 95 | 950 | 0.0050 | 0.0200 | 3.1960 | 1.8316 | 0.0174 | 2.9635 | 0.0199 | 0.0184 | 1.27 | 1.28 |
| 96 | 960 | 0.0050 | 0.0200 | 3.2160 | 1.8490 | 0.0174 | 2.9834 | 0.0199 | 0.0184 | 1.28 | 1.28 |
| 97 | 970 | 0.0050 | 0.0200 | 3.2360 | 1.8664 | 0.0174 | 3.0034 | 0.0199 | 0.0184 | 1.28 | 1.28 |
| 98 | 980 | 0.0050 | 0.0200 | 3.2560 | 1.8839 | 0.0174 | 3.0233 | 0.0199 | 0.0184 | 1.28 | 1.28 |
| 99 | 990 | 0.0050 | 0.0200 | 3.2760 | 1.9013 | 0.0175 | 3.0432 | 0.0199 | 0.0184 | 1.28 | 1.28 |

| | | | | | | | | | | | |
|-----|------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 100 | 1000 | 0.0050 | 0.0200 | 3.2960 | 1.9188 | 0.0175 | 3.0631 | 0.0199 | 0.0185 | 1.28 | 1.28 |
| 101 | 1010 | 0.0040 | 0.0160 | 3.3120 | 1.9328 | 0.0140 | 3.0791 | 0.0159 | 0.0148 | 1.02 | 1.22 |
| 102 | 1020 | 0.0040 | 0.0160 | 3.3280 | 1.9468 | 0.0140 | 3.0950 | 0.0159 | 0.0148 | 1.02 | 1.12 |
| 103 | 1030 | 0.0040 | 0.0160 | 3.3440 | 1.9609 | 0.0140 | 3.1110 | 0.0159 | 0.0148 | 1.03 | 1.07 |
| 104 | 1040 | 0.0040 | 0.0160 | 3.3600 | 1.9749 | 0.0140 | 3.1269 | 0.0159 | 0.0148 | 1.03 | 1.05 |
| 105 | 1050 | 0.0040 | 0.0160 | 3.3760 | 1.9890 | 0.0141 | 3.1429 | 0.0159 | 0.0148 | 1.03 | 1.04 |
| 106 | 1060 | 0.0040 | 0.0160 | 3.3920 | 2.0030 | 0.0141 | 3.1588 | 0.0159 | 0.0148 | 1.03 | 1.03 |
| 107 | 1070 | 0.0040 | 0.0160 | 3.4080 | 2.0171 | 0.0141 | 3.1748 | 0.0159 | 0.0148 | 1.03 | 1.03 |
| 108 | 1080 | 0.0040 | 0.0160 | 3.4240 | 2.0312 | 0.0141 | 3.1907 | 0.0159 | 0.0148 | 1.03 | 1.03 |
| 109 | 1090 | 0.0040 | 0.0160 | 3.4400 | 2.0453 | 0.0141 | 3.2067 | 0.0159 | 0.0148 | 1.03 | 1.03 |
| 110 | 1100 | 0.0040 | 0.0160 | 3.4560 | 2.0594 | 0.0141 | 3.2226 | 0.0159 | 0.0148 | 1.03 | 1.03 |
| 111 | 1110 | 0.0040 | 0.0160 | 3.4720 | 2.0736 | 0.0141 | 3.2386 | 0.0159 | 0.0149 | 1.03 | 1.03 |
| 112 | 1120 | 0.0040 | 0.0160 | 3.4880 | 2.0877 | 0.0141 | 3.2545 | 0.0159 | 0.0149 | 1.03 | 1.03 |
| 113 | 1130 | 0.0040 | 0.0160 | 3.5040 | 2.1019 | 0.0142 | 3.2705 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 114 | 1140 | 0.0040 | 0.0160 | 3.5200 | 2.1161 | 0.0142 | 3.2864 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 115 | 1150 | 0.0040 | 0.0160 | 3.5360 | 2.1302 | 0.0142 | 3.3024 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 116 | 1160 | 0.0040 | 0.0160 | 3.5520 | 2.1444 | 0.0142 | 3.3183 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 117 | 1170 | 0.0040 | 0.0160 | 3.5680 | 2.1586 | 0.0142 | 3.3343 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 118 | 1180 | 0.0040 | 0.0160 | 3.5840 | 2.1729 | 0.0142 | 3.3502 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 119 | 1190 | 0.0040 | 0.0160 | 3.6000 | 2.1871 | 0.0142 | 3.3662 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 120 | 1200 | 0.0040 | 0.0160 | 3.6160 | 2.2013 | 0.0142 | 3.3821 | 0.0160 | 0.0149 | 1.03 | 1.03 |
| 121 | 1210 | 0.0040 | 0.0160 | 3.6320 | 2.2156 | 0.0143 | 3.3981 | 0.0160 | 0.0149 | 1.04 | 1.03 |
| 122 | 1220 | 0.0040 | 0.0160 | 3.6480 | 2.2298 | 0.0143 | 3.4140 | 0.0160 | 0.0149 | 1.04 | 1.03 |
| 123 | 1230 | 0.0040 | 0.0160 | 3.6640 | 2.2441 | 0.0143 | 3.4300 | 0.0160 | 0.0149 | 1.04 | 1.04 |
| 124 | 1240 | 0.0040 | 0.0160 | 3.6800 | 2.2584 | 0.0143 | 3.4459 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 125 | 1250 | 0.0040 | 0.0160 | 3.6960 | 2.2727 | 0.0143 | 3.4619 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 126 | 1260 | 0.0040 | 0.0160 | 3.7120 | 2.2870 | 0.0143 | 3.4778 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 127 | 1270 | 0.0040 | 0.0160 | 3.7280 | 2.3013 | 0.0143 | 3.4938 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 128 | 1280 | 0.0040 | 0.0160 | 3.7440 | 2.3157 | 0.0143 | 3.5098 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 129 | 1290 | 0.0040 | 0.0160 | 3.7600 | 2.3300 | 0.0143 | 3.5257 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 130 | 1300 | 0.0040 | 0.0160 | 3.7760 | 2.3444 | 0.0144 | 3.5417 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 131 | 1310 | 0.0040 | 0.0160 | 3.7920 | 2.3587 | 0.0144 | 3.5576 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 132 | 1320 | 0.0040 | 0.0160 | 3.8080 | 2.3731 | 0.0144 | 3.5736 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 133 | 1330 | 0.0040 | 0.0160 | 3.8240 | 2.3875 | 0.0144 | 3.5895 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 134 | 1340 | 0.0040 | 0.0160 | 3.8400 | 2.4019 | 0.0144 | 3.6055 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 135 | 1350 | 0.0040 | 0.0160 | 3.8560 | 2.4163 | 0.0144 | 3.6215 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 136 | 1360 | 0.0040 | 0.0160 | 3.8720 | 2.4307 | 0.0144 | 3.6374 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 137 | 1370 | 0.0040 | 0.0160 | 3.8880 | 2.4451 | 0.0144 | 3.6534 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 138 | 1380 | 0.0040 | 0.0160 | 3.9040 | 2.4595 | 0.0144 | 3.6693 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 139 | 1390 | 0.0040 | 0.0160 | 3.9200 | 2.4740 | 0.0144 | 3.6853 | 0.0160 | 0.0150 | 1.04 | 1.04 |
| 140 | 1400 | 0.0040 | 0.0160 | 3.9360 | 2.4884 | 0.0145 | 3.7013 | 0.0160 | 0.0151 | 1.04 | 1.04 |
| 141 | 1410 | 0.0040 | 0.0160 | 3.9520 | 2.5029 | 0.0145 | 3.7172 | 0.0160 | 0.0151 | 1.04 | 1.04 |
| 142 | 1420 | 0.0040 | 0.0160 | 3.9680 | 2.5173 | 0.0145 | 3.7332 | 0.0160 | 0.0151 | 1.04 | 1.04 |
| 143 | 1430 | 0.0040 | 0.0160 | 3.9840 | 2.5318 | 0.0145 | 3.7491 | 0.0160 | 0.0151 | 1.04 | 1.04 |
| 144 | 1440 | 0.0040 | 0.0160 | 4.0000 | 2.5463 | 0.0145 | 3.7651 | 0.0160 | 0.0151 | 1.05 | 1.04 |

TotalRunoffVolume (cu. ft.)=

125160

HYDROLOGIC ANALYSIS USING SCS CURVE NUMBER (CN) AND SANTA BARBARA URBAN HYDROGRAPH (SBUH) METHOD

GIVEN: Project = 314 Pleasant Avenue Development
 Basin # = sub-basin of Newell Basin
 Area = 8.08 acres
 Event = 25 year, 24-hour duration storm event
 Pt = 4.00 inches rainfall
 Tc = 15.0 min.
 dt = 10 min.
 PERVIOUS Parcel Area = 4.85 acres CN = 86.00 S = 1.63 0.2S = 0.33
 IMPVIOUS Parcel Area = 3.23 acres CN = 98.00 S = 0.20 0.2S = 0.04

COMPUTE RUNOFF HYDROGRAPH

Column (3) = SCS Type II Rainfall Distribution
 Column (4) = Column (3) x Pt
 Column (5) = Accumulated Sum of Col (4)
 Column (6) = [If P <= 0.2S] = 0; Note, use pervious area "S" value
 [If P > 0.2S] = (Col(5) - 0.2S)^2 / (Col(5) + 0.8S)
 Column (7) = Col(6) of present time step - Col(6) of previous time step
 Column (8) = Same method as for Col(6), except use in pervious "S"
 Column (9) = Col(8) of present time step - Col(8) of previous time step
 Column (10) = ((pervious area / total area) x Col(7)) + ((in pervious area / total area) x Col(9))
 Column (11) = (60.5 x Col(10) x total area) / 10, where dt = 10 minutes
 Routing Constant w = dt / (2Tc + dt) = 0.25
 Column (12) = Col(12) of previous time step + (w x [Col(11) of previous time step + Col(11) of present time step - (2 x Col(12) of previous time step)])

| (1) Time Increment | (2) Time min. | (3) Rainfall distribution % of Pt | (4) Incremental Rainfall in. | (5) Accumulated Rainfall in. | Pervious Area | | Impervious Area | | (10) Total Runoff in. | (11) Instant Hydro- graph cfs | (12) Design Hydro- graph cfs |
|--------------------------|---------------------|--|---------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------|---|--|
| | | | | | (6) Accumulated Runoff in. | (7) Incremental Runoff in. | (8) Accumulated Runoff in. | (9) Incremental Runoff in. | | | |
| 1 | 10 | 0.0040 | 0.0160 | 0.0160 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 2 | 20 | 0.0040 | 0.0160 | 0.0320 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 3 | 30 | 0.0040 | 0.0160 | 0.0480 | 0.0000 | 0.0000 | 0.0002 | 0.0002 | 0.0001 | 0.00 | 0.00 |
| 4 | 40 | 0.0040 | 0.0160 | 0.0640 | 0.0000 | 0.0000 | 0.0024 | 0.0021 | 0.0008 | 0.04 | 0.01 |
| 5 | 50 | 0.0040 | 0.0160 | 0.0800 | 0.0000 | 0.0000 | 0.0063 | 0.0039 | 0.0016 | 0.08 | 0.04 |
| 6 | 60 | 0.0040 | 0.0160 | 0.0960 | 0.0000 | 0.0000 | 0.0117 | 0.0054 | 0.0022 | 0.11 | 0.06 |
| 7 | 70 | 0.0040 | 0.0160 | 0.1120 | 0.0000 | 0.0000 | 0.0184 | 0.0067 | 0.0027 | 0.13 | 0.09 |
| 8 | 80 | 0.0040 | 0.0160 | 0.1280 | 0.0000 | 0.0000 | 0.0261 | 0.0077 | 0.0031 | 0.15 | 0.12 |
| 9 | 90 | 0.0040 | 0.0160 | 0.1440 | 0.0000 | 0.0000 | 0.0347 | 0.0086 | 0.0034 | 0.17 | 0.14 |
| 10 | 100 | 0.0040 | 0.0160 | 0.1600 | 0.0000 | 0.0000 | 0.0439 | 0.0093 | 0.0037 | 0.18 | 0.16 |
| 11 | 110 | 0.0050 | 0.0200 | 0.1800 | 0.0000 | 0.0000 | 0.0564 | 0.0125 | 0.0050 | 0.24 | 0.18 |
| 12 | 120 | 0.0050 | 0.0200 | 0.2000 | 0.0000 | 0.0000 | 0.0698 | 0.0133 | 0.0053 | 0.26 | 0.22 |
| 13 | 130 | 0.0050 | 0.0200 | 0.2200 | 0.0000 | 0.0000 | 0.0838 | 0.0140 | 0.0056 | 0.27 | 0.24 |
| 14 | 140 | 0.0050 | 0.0200 | 0.2400 | 0.0000 | 0.0000 | 0.0984 | 0.0146 | 0.0058 | 0.29 | 0.26 |
| 15 | 150 | 0.0050 | 0.0200 | 0.2600 | 0.0000 | 0.0000 | 0.1135 | 0.0151 | 0.0060 | 0.30 | 0.28 |
| 16 | 160 | 0.0050 | 0.0200 | 0.2800 | 0.0000 | 0.0000 | 0.1291 | 0.0156 | 0.0062 | 0.30 | 0.29 |
| 17 | 170 | 0.0060 | 0.0240 | 0.3040 | 0.0000 | 0.0000 | 0.1482 | 0.0192 | 0.0077 | 0.37 | 0.31 |
| 18 | 180 | 0.0060 | 0.0240 | 0.3280 | 0.0000 | 0.0000 | 0.1679 | 0.0196 | 0.0079 | 0.38 | 0.35 |
| 19 | 190 | 0.0060 | 0.0240 | 0.3520 | 0.0004 | 0.0004 | 0.1879 | 0.0201 | 0.0083 | 0.40 | 0.37 |
| 20 | 200 | 0.0060 | 0.0240 | 0.3760 | 0.0015 | 0.0011 | 0.2083 | 0.0204 | 0.0088 | 0.43 | 0.39 |
| 21 | 210 | 0.0060 | 0.0240 | 0.4000 | 0.0033 | 0.0017 | 0.2290 | 0.0207 | 0.0093 | 0.46 | 0.42 |
| 22 | 220 | 0.0060 | 0.0240 | 0.4240 | 0.0056 | 0.0024 | 0.2500 | 0.0210 | 0.0098 | 0.48 | 0.44 |
| 23 | 230 | 0.0070 | 0.0280 | 0.4520 | 0.0091 | 0.0035 | 0.2748 | 0.0248 | 0.0120 | 0.59 | 0.49 |
| 24 | 240 | 0.0070 | 0.0280 | 0.4800 | 0.0134 | 0.0043 | 0.2998 | 0.0251 | 0.0126 | 0.61 | 0.54 |
| 25 | 250 | 0.0070 | 0.0280 | 0.5080 | 0.0184 | 0.0050 | 0.3251 | 0.0253 | 0.0131 | 0.64 | 0.59 |
| 26 | 260 | 0.0070 | 0.0280 | 0.5360 | 0.0241 | 0.0057 | 0.3507 | 0.0255 | 0.0136 | 0.67 | 0.62 |
| 27 | 270 | 0.0070 | 0.0280 | 0.5640 | 0.0305 | 0.0064 | 0.3764 | 0.0257 | 0.0141 | 0.69 | 0.65 |

| | | | | | | | | | | | |
|----|-----|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 28 | 280 | 0.0070 | 0.0280 | 0.5920 | 0.0375 | 0.0070 | 0.4022 | 0.0259 | 0.0146 | 0.71 | 0.67 |
| 29 | 290 | 0.0082 | 0.0328 | 0.6248 | 0.0465 | 0.0090 | 0.4328 | 0.0305 | 0.0176 | 0.86 | 0.73 |
| 30 | 300 | 0.0082 | 0.0328 | 0.6576 | 0.0562 | 0.0098 | 0.4634 | 0.0307 | 0.0181 | 0.89 | 0.80 |
| 31 | 310 | 0.0082 | 0.0328 | 0.6904 | 0.0668 | 0.0105 | 0.4943 | 0.0309 | 0.0187 | 0.91 | 0.85 |
| 32 | 320 | 0.0082 | 0.0328 | 0.7232 | 0.0781 | 0.0113 | 0.5253 | 0.0310 | 0.0192 | 0.94 | 0.89 |
| 33 | 330 | 0.0082 | 0.0328 | 0.7560 | 0.0900 | 0.0120 | 0.5564 | 0.0311 | 0.0196 | 0.96 | 0.92 |
| 34 | 340 | 0.0082 | 0.0328 | 0.7888 | 0.1026 | 0.0126 | 0.5876 | 0.0312 | 0.0201 | 0.98 | 0.94 |
| 35 | 350 | 0.0095 | 0.0380 | 0.8268 | 0.1180 | 0.0154 | 0.6240 | 0.0363 | 0.0238 | 1.16 | 1.01 |
| 36 | 360 | 0.0095 | 0.0380 | 0.8648 | 0.1342 | 0.0162 | 0.6604 | 0.0364 | 0.0243 | 1.19 | 1.09 |
| 37 | 370 | 0.0095 | 0.0380 | 0.9028 | 0.1511 | 0.0169 | 0.6970 | 0.0366 | 0.0248 | 1.21 | 1.14 |
| 38 | 380 | 0.0095 | 0.0380 | 0.9408 | 0.1687 | 0.0176 | 0.7336 | 0.0367 | 0.0252 | 1.23 | 1.18 |
| 39 | 390 | 0.0095 | 0.0380 | 0.9788 | 0.1871 | 0.0183 | 0.7704 | 0.0367 | 0.0257 | 1.26 | 1.21 |
| 40 | 400 | 0.0095 | 0.0380 | 1.0168 | 0.2060 | 0.0190 | 0.8072 | 0.0368 | 0.0261 | 1.28 | 1.24 |
| 41 | 410 | 0.0134 | 0.0536 | 1.0704 | 0.2338 | 0.0278 | 0.8593 | 0.0521 | 0.0375 | 1.83 | 1.40 |
| 42 | 420 | 0.0134 | 0.0536 | 1.1240 | 0.2627 | 0.0289 | 0.9115 | 0.0522 | 0.0382 | 1.87 | 1.62 |
| 43 | 430 | 0.0134 | 0.0536 | 1.1776 | 0.2927 | 0.0300 | 0.9638 | 0.0523 | 0.0389 | 1.90 | 1.75 |
| 44 | 440 | 0.0180 | 0.0720 | 1.2496 | 0.3346 | 0.0419 | 1.0342 | 0.0704 | 0.0533 | 2.60 | 2.00 |
| 45 | 450 | 0.0180 | 0.0720 | 1.3216 | 0.3781 | 0.0435 | 1.1048 | 0.0706 | 0.0543 | 2.66 | 2.32 |
| 46 | 460 | 0.0340 | 0.1360 | 1.4576 | 0.4643 | 0.0862 | 1.2384 | 0.1336 | 0.1052 | 5.14 | 3.11 |
| 47 | 470 | 0.0540 | 0.2160 | 1.6736 | 0.6106 | 0.1463 | 1.4514 | 0.2130 | 0.1730 | 8.45 | 4.95 |
| 48 | 480 | 0.0270 | 0.1080 | 1.7816 | 0.6874 | 0.0768 | 1.5581 | 0.1067 | 0.0888 | 4.34 | 5.68 |
| 49 | 490 | 0.0180 | 0.0720 | 1.8536 | 0.7398 | 0.0524 | 1.6294 | 0.0712 | 0.0599 | 2.93 | 4.65 |
| 50 | 500 | 0.0134 | 0.0536 | 1.9072 | 0.7794 | 0.0396 | 1.6824 | 0.0531 | 0.0450 | 2.20 | 3.61 |
| 51 | 510 | 0.0134 | 0.0536 | 1.9608 | 0.8194 | 0.0400 | 1.7355 | 0.0531 | 0.0453 | 2.21 | 2.91 |
| 52 | 520 | 0.0134 | 0.0536 | 2.0144 | 0.8599 | 0.0405 | 1.7886 | 0.0531 | 0.0455 | 2.23 | 2.56 |
| 53 | 530 | 0.0088 | 0.0352 | 2.0496 | 0.8867 | 0.0268 | 1.8235 | 0.0349 | 0.0300 | 1.47 | 2.21 |
| 54 | 540 | 0.0088 | 0.0352 | 2.0848 | 0.9137 | 0.0270 | 1.8584 | 0.0349 | 0.0302 | 1.47 | 1.84 |
| 55 | 550 | 0.0088 | 0.0352 | 2.1200 | 0.9409 | 0.0272 | 1.8933 | 0.0349 | 0.0303 | 1.48 | 1.66 |
| 56 | 560 | 0.0088 | 0.0352 | 2.1552 | 0.9682 | 0.0273 | 1.9283 | 0.0349 | 0.0304 | 1.48 | 1.57 |
| 57 | 570 | 0.0088 | 0.0352 | 2.1904 | 0.9957 | 0.0275 | 1.9632 | 0.0349 | 0.0305 | 1.49 | 1.53 |
| 58 | 580 | 0.0088 | 0.0352 | 2.2256 | 1.0233 | 0.0276 | 1.9981 | 0.0349 | 0.0306 | 1.49 | 1.51 |
| 59 | 590 | 0.0088 | 0.0352 | 2.2608 | 1.0511 | 0.0278 | 2.0331 | 0.0349 | 0.0306 | 1.50 | 1.50 |
| 60 | 600 | 0.0088 | 0.0352 | 2.2960 | 1.0790 | 0.0279 | 2.0680 | 0.0350 | 0.0307 | 1.50 | 1.50 |
| 61 | 610 | 0.0088 | 0.0352 | 2.3312 | 1.1071 | 0.0281 | 2.1030 | 0.0350 | 0.0308 | 1.51 | 1.50 |
| 62 | 620 | 0.0088 | 0.0352 | 2.3664 | 1.1353 | 0.0282 | 2.1380 | 0.0350 | 0.0309 | 1.51 | 1.51 |
| 63 | 630 | 0.0088 | 0.0352 | 2.4016 | 1.1636 | 0.0283 | 2.1729 | 0.0350 | 0.0310 | 1.51 | 1.51 |
| 64 | 640 | 0.0088 | 0.0352 | 2.4368 | 1.1921 | 0.0285 | 2.2079 | 0.0350 | 0.0311 | 1.52 | 1.51 |
| 65 | 650 | 0.0072 | 0.0288 | 2.4656 | 1.2154 | 0.0234 | 2.2365 | 0.0286 | 0.0255 | 1.25 | 1.45 |
| 66 | 660 | 0.0072 | 0.0288 | 2.4944 | 1.2389 | 0.0235 | 2.2652 | 0.0286 | 0.0255 | 1.25 | 1.35 |
| 67 | 670 | 0.0072 | 0.0288 | 2.5232 | 1.2624 | 0.0235 | 2.2938 | 0.0286 | 0.0256 | 1.25 | 1.30 |
| 68 | 680 | 0.0072 | 0.0288 | 2.5520 | 1.2861 | 0.0236 | 2.3224 | 0.0286 | 0.0256 | 1.25 | 1.27 |
| 69 | 690 | 0.0072 | 0.0288 | 2.5808 | 1.3098 | 0.0237 | 2.3511 | 0.0286 | 0.0257 | 1.26 | 1.26 |
| 70 | 700 | 0.0072 | 0.0288 | 2.6096 | 1.3335 | 0.0238 | 2.3797 | 0.0286 | 0.0257 | 1.26 | 1.26 |
| 71 | 710 | 0.0072 | 0.0288 | 2.6384 | 1.3574 | 0.0238 | 2.4084 | 0.0286 | 0.0258 | 1.26 | 1.26 |
| 72 | 720 | 0.0072 | 0.0288 | 2.6672 | 1.3813 | 0.0239 | 2.4370 | 0.0286 | 0.0258 | 1.26 | 1.26 |
| 73 | 730 | 0.0072 | 0.0288 | 2.6960 | 1.4053 | 0.0240 | 2.4657 | 0.0287 | 0.0259 | 1.26 | 1.26 |
| 74 | 740 | 0.0072 | 0.0288 | 2.7248 | 1.4294 | 0.0241 | 2.4943 | 0.0287 | 0.0259 | 1.27 | 1.26 |
| 75 | 750 | 0.0072 | 0.0288 | 2.7536 | 1.4535 | 0.0241 | 2.5230 | 0.0287 | 0.0259 | 1.27 | 1.27 |
| 76 | 760 | 0.0072 | 0.0288 | 2.7824 | 1.4777 | 0.0242 | 2.5516 | 0.0287 | 0.0260 | 1.27 | 1.27 |
| 77 | 770 | 0.0057 | 0.0228 | 2.8052 | 1.4969 | 0.0192 | 2.5743 | 0.0227 | 0.0206 | 1.01 | 1.20 |
| 78 | 780 | 0.0057 | 0.0228 | 2.8280 | 1.5161 | 0.0192 | 2.5970 | 0.0227 | 0.0206 | 1.01 | 1.11 |
| 79 | 790 | 0.0057 | 0.0228 | 2.8508 | 1.5354 | 0.0193 | 2.6197 | 0.0227 | 0.0206 | 1.01 | 1.06 |
| 80 | 800 | 0.0057 | 0.0228 | 2.8736 | 1.5547 | 0.0193 | 2.6424 | 0.0227 | 0.0207 | 1.01 | 1.03 |
| 81 | 810 | 0.0057 | 0.0228 | 2.8964 | 1.5741 | 0.0194 | 2.6651 | 0.0227 | 0.0207 | 1.01 | 1.02 |
| 82 | 820 | 0.0057 | 0.0228 | 2.9192 | 1.5935 | 0.0194 | 2.6878 | 0.0227 | 0.0207 | 1.01 | 1.02 |
| 83 | 830 | 0.0057 | 0.0228 | 2.9420 | 1.6129 | 0.0194 | 2.7105 | 0.0227 | 0.0207 | 1.01 | 1.02 |
| 84 | 840 | 0.0057 | 0.0228 | 2.9648 | 1.6324 | 0.0195 | 2.7332 | 0.0227 | 0.0208 | 1.01 | 1.01 |
| 85 | 850 | 0.0057 | 0.0228 | 2.9876 | 1.6519 | 0.0195 | 2.7559 | 0.0227 | 0.0208 | 1.02 | 1.01 |
| 86 | 860 | 0.0057 | 0.0228 | 3.0104 | 1.6714 | 0.0195 | 2.7786 | 0.0227 | 0.0208 | 1.02 | 1.02 |
| 87 | 870 | 0.0057 | 0.0228 | 3.0332 | 1.6910 | 0.0196 | 2.8013 | 0.0227 | 0.0208 | 1.02 | 1.02 |
| 88 | 880 | 0.0057 | 0.0228 | 3.0560 | 1.7106 | 0.0196 | 2.8240 | 0.0227 | 0.0208 | 1.02 | 1.02 |
| 89 | 890 | 0.0050 | 0.0200 | 3.0760 | 1.7278 | 0.0172 | 2.8440 | 0.0199 | 0.0183 | 0.89 | 0.99 |
| 90 | 900 | 0.0050 | 0.0200 | 3.0960 | 1.7450 | 0.0172 | 2.8639 | 0.0199 | 0.0183 | 0.90 | 0.94 |
| 91 | 910 | 0.0050 | 0.0200 | 3.1160 | 1.7623 | 0.0173 | 2.8838 | 0.0199 | 0.0183 | 0.90 | 0.92 |
| 92 | 920 | 0.0050 | 0.0200 | 3.1360 | 1.7796 | 0.0173 | 2.9037 | 0.0199 | 0.0183 | 0.90 | 0.91 |
| 93 | 930 | 0.0050 | 0.0200 | 3.1560 | 1.7969 | 0.0173 | 2.9236 | 0.0199 | 0.0184 | 0.90 | 0.90 |
| 94 | 940 | 0.0050 | 0.0200 | 3.1760 | 1.8143 | 0.0173 | 2.9436 | 0.0199 | 0.0184 | 0.90 | 0.90 |
| 95 | 950 | 0.0050 | 0.0200 | 3.1960 | 1.8316 | 0.0174 | 2.9635 | 0.0199 | 0.0184 | 0.90 | 0.90 |
| 96 | 960 | 0.0050 | 0.0200 | 3.2160 | 1.8490 | 0.0174 | 2.9834 | 0.0199 | 0.0184 | 0.90 | 0.90 |
| 97 | 970 | 0.0050 | 0.0200 | 3.2360 | 1.8664 | 0.0174 | 3.0034 | 0.0199 | 0.0184 | 0.90 | 0.90 |
| 98 | 980 | 0.0050 | 0.0200 | 3.2560 | 1.8839 | 0.0174 | 3.0233 | 0.0199 | 0.0184 | 0.90 | 0.90 |
| 99 | 990 | 0.0050 | 0.0200 | 3.2760 | 1.9013 | 0.0175 | 3.0432 | 0.0199 | 0.0184 | 0.90 | 0.90 |

| | | | | | | | | | | | |
|-----|------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 100 | 1000 | 0.0050 | 0.0200 | 3.2960 | 1.9188 | 0.0175 | 3.0631 | 0.0199 | 0.0185 | 0.90 | 0.90 |
| 101 | 1010 | 0.0040 | 0.0160 | 3.3120 | 1.9328 | 0.0140 | 3.0791 | 0.0159 | 0.0148 | 0.72 | 0.86 |
| 102 | 1020 | 0.0040 | 0.0160 | 3.3280 | 1.9468 | 0.0140 | 3.0950 | 0.0159 | 0.0148 | 0.72 | 0.79 |
| 103 | 1030 | 0.0040 | 0.0160 | 3.3440 | 1.9609 | 0.0140 | 3.1110 | 0.0159 | 0.0148 | 0.72 | 0.76 |
| 104 | 1040 | 0.0040 | 0.0160 | 3.3600 | 1.9749 | 0.0140 | 3.1269 | 0.0159 | 0.0148 | 0.72 | 0.74 |
| 105 | 1050 | 0.0040 | 0.0160 | 3.3760 | 1.9890 | 0.0141 | 3.1429 | 0.0159 | 0.0148 | 0.72 | 0.73 |
| 106 | 1060 | 0.0040 | 0.0160 | 3.3920 | 2.0030 | 0.0141 | 3.1588 | 0.0159 | 0.0148 | 0.72 | 0.73 |
| 107 | 1070 | 0.0040 | 0.0160 | 3.4080 | 2.0171 | 0.0141 | 3.1748 | 0.0159 | 0.0148 | 0.72 | 0.73 |
| 108 | 1080 | 0.0040 | 0.0160 | 3.4240 | 2.0312 | 0.0141 | 3.1907 | 0.0159 | 0.0148 | 0.73 | 0.73 |
| 109 | 1090 | 0.0040 | 0.0160 | 3.4400 | 2.0453 | 0.0141 | 3.2067 | 0.0159 | 0.0148 | 0.73 | 0.73 |
| 110 | 1100 | 0.0040 | 0.0160 | 3.4560 | 2.0594 | 0.0141 | 3.2226 | 0.0159 | 0.0149 | 0.73 | 0.73 |
| 111 | 1110 | 0.0040 | 0.0160 | 3.4720 | 2.0736 | 0.0141 | 3.2386 | 0.0159 | 0.0149 | 0.73 | 0.73 |
| 112 | 1120 | 0.0040 | 0.0160 | 3.4880 | 2.0877 | 0.0141 | 3.2545 | 0.0159 | 0.0149 | 0.73 | 0.73 |
| 113 | 1130 | 0.0040 | 0.0160 | 3.5040 | 2.1019 | 0.0142 | 3.2705 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 114 | 1140 | 0.0040 | 0.0160 | 3.5200 | 2.1161 | 0.0142 | 3.2864 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 115 | 1150 | 0.0040 | 0.0160 | 3.5360 | 2.1302 | 0.0142 | 3.3024 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 116 | 1160 | 0.0040 | 0.0160 | 3.5520 | 2.1444 | 0.0142 | 3.3183 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 117 | 1170 | 0.0040 | 0.0160 | 3.5680 | 2.1586 | 0.0142 | 3.3343 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 118 | 1180 | 0.0040 | 0.0160 | 3.5840 | 2.1729 | 0.0142 | 3.3502 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 119 | 1190 | 0.0040 | 0.0160 | 3.6000 | 2.1871 | 0.0142 | 3.3662 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 120 | 1200 | 0.0040 | 0.0160 | 3.6160 | 2.2013 | 0.0142 | 3.3821 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 121 | 1210 | 0.0040 | 0.0160 | 3.6320 | 2.2156 | 0.0143 | 3.3981 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 122 | 1220 | 0.0040 | 0.0160 | 3.6480 | 2.2298 | 0.0143 | 3.4140 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 123 | 1230 | 0.0040 | 0.0160 | 3.6640 | 2.2441 | 0.0143 | 3.4300 | 0.0160 | 0.0149 | 0.73 | 0.73 |
| 124 | 1240 | 0.0040 | 0.0160 | 3.6800 | 2.2584 | 0.0143 | 3.4459 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 125 | 1250 | 0.0040 | 0.0160 | 3.6960 | 2.2727 | 0.0143 | 3.4619 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 126 | 1260 | 0.0040 | 0.0160 | 3.7120 | 2.2870 | 0.0143 | 3.4778 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 127 | 1270 | 0.0040 | 0.0160 | 3.7280 | 2.3013 | 0.0143 | 3.4938 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 128 | 1280 | 0.0040 | 0.0160 | 3.7440 | 2.3157 | 0.0143 | 3.5098 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 129 | 1290 | 0.0040 | 0.0160 | 3.7600 | 2.3300 | 0.0143 | 3.5257 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 130 | 1300 | 0.0040 | 0.0160 | 3.7760 | 2.3444 | 0.0144 | 3.5417 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 131 | 1310 | 0.0040 | 0.0160 | 3.7920 | 2.3587 | 0.0144 | 3.5576 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 132 | 1320 | 0.0040 | 0.0160 | 3.8080 | 2.3731 | 0.0144 | 3.5736 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 133 | 1330 | 0.0040 | 0.0160 | 3.8240 | 2.3875 | 0.0144 | 3.5895 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 134 | 1340 | 0.0040 | 0.0160 | 3.8400 | 2.4019 | 0.0144 | 3.6055 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 135 | 1350 | 0.0040 | 0.0160 | 3.8560 | 2.4163 | 0.0144 | 3.6215 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 136 | 1360 | 0.0040 | 0.0160 | 3.8720 | 2.4307 | 0.0144 | 3.6374 | 0.0160 | 0.0150 | 0.73 | 0.73 |
| 137 | 1370 | 0.0040 | 0.0160 | 3.8880 | 2.4451 | 0.0144 | 3.6534 | 0.0160 | 0.0150 | 0.74 | 0.73 |
| 138 | 1380 | 0.0040 | 0.0160 | 3.9040 | 2.4595 | 0.0144 | 3.6693 | 0.0160 | 0.0150 | 0.74 | 0.73 |
| 139 | 1390 | 0.0040 | 0.0160 | 3.9200 | 2.4740 | 0.0144 | 3.6853 | 0.0160 | 0.0150 | 0.74 | 0.74 |
| 140 | 1400 | 0.0040 | 0.0160 | 3.9360 | 2.4884 | 0.0145 | 3.7013 | 0.0160 | 0.0151 | 0.74 | 0.74 |
| 141 | 1410 | 0.0040 | 0.0160 | 3.9520 | 2.5029 | 0.0145 | 3.7172 | 0.0160 | 0.0151 | 0.74 | 0.74 |
| 142 | 1420 | 0.0040 | 0.0160 | 3.9680 | 2.5173 | 0.0145 | 3.7332 | 0.0160 | 0.0151 | 0.74 | 0.74 |
| 143 | 1430 | 0.0040 | 0.0160 | 3.9840 | 2.5318 | 0.0145 | 3.7491 | 0.0160 | 0.0151 | 0.74 | 0.74 |
| 144 | 1440 | 0.0040 | 0.0160 | 4.0000 | 2.5463 | 0.0145 | 3.7651 | 0.0160 | 0.0151 | 0.74 | 0.74 |

TotalRunoffVolume (cu. ft.)=

88311

| | | | | | | | | | | | |
|----|-----|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 28 | 280 | 0.0070 | 0.0280 | 0.5920 | 0.0375 | 0.0070 | 0.4022 | 0.0259 | 0.0157 | 0.11 | 0.10 |
| 29 | 290 | 0.0082 | 0.0328 | 0.6248 | 0.0465 | 0.0090 | 0.4328 | 0.0305 | 0.0189 | 0.13 | 0.11 |
| 30 | 300 | 0.0082 | 0.0328 | 0.6576 | 0.0562 | 0.0098 | 0.4634 | 0.0307 | 0.0194 | 0.13 | 0.12 |
| 31 | 310 | 0.0082 | 0.0328 | 0.6904 | 0.0668 | 0.0105 | 0.4943 | 0.0309 | 0.0199 | 0.13 | 0.13 |
| 32 | 320 | 0.0082 | 0.0328 | 0.7232 | 0.0781 | 0.0113 | 0.5253 | 0.0310 | 0.0203 | 0.14 | 0.13 |
| 33 | 330 | 0.0082 | 0.0328 | 0.7560 | 0.0900 | 0.0120 | 0.5564 | 0.0311 | 0.0208 | 0.14 | 0.13 |
| 34 | 340 | 0.0082 | 0.0328 | 0.7888 | 0.1026 | 0.0126 | 0.5876 | 0.0312 | 0.0212 | 0.14 | 0.14 |
| 35 | 350 | 0.0095 | 0.0380 | 0.8268 | 0.1180 | 0.0154 | 0.6240 | 0.0363 | 0.0250 | 0.17 | 0.15 |
| 36 | 360 | 0.0095 | 0.0380 | 0.8648 | 0.1342 | 0.0162 | 0.6604 | 0.0364 | 0.0255 | 0.17 | 0.16 |
| 37 | 370 | 0.0095 | 0.0380 | 0.9028 | 0.1511 | 0.0169 | 0.6970 | 0.0366 | 0.0259 | 0.17 | 0.17 |
| 38 | 380 | 0.0095 | 0.0380 | 0.9408 | 0.1687 | 0.0176 | 0.7336 | 0.0367 | 0.0264 | 0.18 | 0.17 |
| 39 | 390 | 0.0095 | 0.0380 | 0.9788 | 0.1871 | 0.0183 | 0.7704 | 0.0367 | 0.0268 | 0.18 | 0.17 |
| 40 | 400 | 0.0095 | 0.0380 | 1.0168 | 0.2060 | 0.0190 | 0.8072 | 0.0368 | 0.0272 | 0.18 | 0.18 |
| 41 | 410 | 0.0134 | 0.0536 | 1.0704 | 0.2338 | 0.0278 | 0.8593 | 0.0521 | 0.0389 | 0.26 | 0.20 |
| 42 | 420 | 0.0134 | 0.0536 | 1.1240 | 0.2627 | 0.0289 | 0.9115 | 0.0522 | 0.0396 | 0.27 | 0.23 |
| 43 | 430 | 0.0134 | 0.0536 | 1.1776 | 0.2927 | 0.0300 | 0.9638 | 0.0523 | 0.0402 | 0.27 | 0.25 |
| 44 | 440 | 0.0180 | 0.0720 | 1.2496 | 0.3346 | 0.0419 | 1.0342 | 0.0704 | 0.0550 | 0.37 | 0.28 |
| 45 | 450 | 0.0180 | 0.0720 | 1.3216 | 0.3781 | 0.0435 | 1.1048 | 0.0706 | 0.0559 | 0.38 | 0.33 |
| 46 | 460 | 0.0340 | 0.1360 | 1.4576 | 0.4643 | 0.0862 | 1.2384 | 0.1336 | 0.1080 | 0.73 | 0.44 |
| 47 | 470 | 0.0540 | 0.2160 | 1.6736 | 0.6106 | 0.1463 | 1.4514 | 0.2130 | 0.1769 | 1.19 | 0.70 |
| 48 | 480 | 0.0270 | 0.1080 | 1.7816 | 0.6874 | 0.0768 | 1.5581 | 0.1067 | 0.0906 | 0.61 | 0.80 |
| 49 | 490 | 0.0180 | 0.0720 | 1.8536 | 0.7398 | 0.0524 | 1.6294 | 0.0712 | 0.0611 | 0.41 | 0.65 |
| 50 | 500 | 0.0134 | 0.0536 | 1.9072 | 0.7794 | 0.0396 | 1.6824 | 0.0531 | 0.0458 | 0.31 | 0.51 |
| 51 | 510 | 0.0134 | 0.0536 | 1.9608 | 0.8194 | 0.0400 | 1.7355 | 0.0531 | 0.0460 | 0.31 | 0.41 |
| 52 | 520 | 0.0134 | 0.0536 | 2.0144 | 0.8599 | 0.0405 | 1.7886 | 0.0531 | 0.0463 | 0.31 | 0.36 |
| 53 | 530 | 0.0088 | 0.0352 | 2.0496 | 0.8867 | 0.0268 | 1.8235 | 0.0349 | 0.0305 | 0.20 | 0.31 |
| 54 | 540 | 0.0088 | 0.0352 | 2.0848 | 0.9137 | 0.0270 | 1.8584 | 0.0349 | 0.0306 | 0.21 | 0.26 |
| 55 | 550 | 0.0088 | 0.0352 | 2.1200 | 0.9409 | 0.0272 | 1.8933 | 0.0349 | 0.0307 | 0.21 | 0.23 |
| 56 | 560 | 0.0088 | 0.0352 | 2.1552 | 0.9682 | 0.0273 | 1.9283 | 0.0349 | 0.0308 | 0.21 | 0.22 |
| 57 | 570 | 0.0088 | 0.0352 | 2.1904 | 0.9957 | 0.0275 | 1.9632 | 0.0349 | 0.0309 | 0.21 | 0.21 |
| 58 | 580 | 0.0088 | 0.0352 | 2.2256 | 1.0233 | 0.0276 | 1.9981 | 0.0349 | 0.0310 | 0.21 | 0.21 |
| 59 | 590 | 0.0088 | 0.0352 | 2.2608 | 1.0511 | 0.0278 | 2.0331 | 0.0349 | 0.0311 | 0.21 | 0.21 |
| 60 | 600 | 0.0088 | 0.0352 | 2.2960 | 1.0790 | 0.0279 | 2.0680 | 0.0350 | 0.0312 | 0.21 | 0.21 |
| 61 | 610 | 0.0088 | 0.0352 | 2.3312 | 1.1071 | 0.0281 | 2.1030 | 0.0350 | 0.0312 | 0.21 | 0.21 |
| 62 | 620 | 0.0088 | 0.0352 | 2.3664 | 1.1353 | 0.0282 | 2.1380 | 0.0350 | 0.0313 | 0.21 | 0.21 |
| 63 | 630 | 0.0088 | 0.0352 | 2.4016 | 1.1636 | 0.0283 | 2.1729 | 0.0350 | 0.0314 | 0.21 | 0.21 |
| 64 | 640 | 0.0088 | 0.0352 | 2.4368 | 1.1921 | 0.0285 | 2.2079 | 0.0350 | 0.0315 | 0.21 | 0.21 |
| 65 | 650 | 0.0072 | 0.0288 | 2.4656 | 1.2154 | 0.0234 | 2.2365 | 0.0286 | 0.0258 | 0.17 | 0.20 |
| 66 | 660 | 0.0072 | 0.0288 | 2.4944 | 1.2389 | 0.0235 | 2.2652 | 0.0286 | 0.0258 | 0.17 | 0.19 |
| 67 | 670 | 0.0072 | 0.0288 | 2.5232 | 1.2624 | 0.0235 | 2.2938 | 0.0286 | 0.0259 | 0.17 | 0.18 |
| 68 | 680 | 0.0072 | 0.0288 | 2.5520 | 1.2861 | 0.0236 | 2.3224 | 0.0286 | 0.0259 | 0.17 | 0.18 |
| 69 | 690 | 0.0072 | 0.0288 | 2.5808 | 1.3098 | 0.0237 | 2.3511 | 0.0286 | 0.0260 | 0.17 | 0.18 |
| 70 | 700 | 0.0072 | 0.0288 | 2.6096 | 1.3335 | 0.0238 | 2.3797 | 0.0286 | 0.0260 | 0.17 | 0.18 |
| 71 | 710 | 0.0072 | 0.0288 | 2.6384 | 1.3574 | 0.0238 | 2.4084 | 0.0286 | 0.0261 | 0.17 | 0.17 |
| 72 | 720 | 0.0072 | 0.0288 | 2.6672 | 1.3813 | 0.0239 | 2.4370 | 0.0286 | 0.0261 | 0.18 | 0.18 |
| 73 | 730 | 0.0072 | 0.0288 | 2.6960 | 1.4053 | 0.0240 | 2.4657 | 0.0287 | 0.0261 | 0.18 | 0.18 |
| 74 | 740 | 0.0072 | 0.0288 | 2.7248 | 1.4294 | 0.0241 | 2.4943 | 0.0287 | 0.0262 | 0.18 | 0.18 |
| 75 | 750 | 0.0072 | 0.0288 | 2.7536 | 1.4535 | 0.0241 | 2.5230 | 0.0287 | 0.0262 | 0.18 | 0.18 |
| 76 | 760 | 0.0072 | 0.0288 | 2.7824 | 1.4777 | 0.0242 | 2.5516 | 0.0287 | 0.0262 | 0.18 | 0.18 |
| 77 | 770 | 0.0057 | 0.0228 | 2.8052 | 1.4969 | 0.0192 | 2.5743 | 0.0227 | 0.0208 | 0.14 | 0.17 |
| 78 | 780 | 0.0057 | 0.0228 | 2.8280 | 1.5161 | 0.0192 | 2.5970 | 0.0227 | 0.0208 | 0.14 | 0.15 |
| 79 | 790 | 0.0057 | 0.0228 | 2.8508 | 1.5354 | 0.0193 | 2.6197 | 0.0227 | 0.0208 | 0.14 | 0.15 |
| 80 | 800 | 0.0057 | 0.0228 | 2.8736 | 1.5547 | 0.0193 | 2.6424 | 0.0227 | 0.0209 | 0.14 | 0.14 |
| 81 | 810 | 0.0057 | 0.0228 | 2.8964 | 1.5741 | 0.0194 | 2.6651 | 0.0227 | 0.0209 | 0.14 | 0.14 |
| 82 | 820 | 0.0057 | 0.0228 | 2.9192 | 1.5935 | 0.0194 | 2.6878 | 0.0227 | 0.0209 | 0.14 | 0.14 |
| 83 | 830 | 0.0057 | 0.0228 | 2.9420 | 1.6129 | 0.0194 | 2.7105 | 0.0227 | 0.0209 | 0.14 | 0.14 |
| 84 | 840 | 0.0057 | 0.0228 | 2.9648 | 1.6324 | 0.0195 | 2.7332 | 0.0227 | 0.0210 | 0.14 | 0.14 |
| 85 | 850 | 0.0057 | 0.0228 | 2.9876 | 1.6519 | 0.0195 | 2.7559 | 0.0227 | 0.0210 | 0.14 | 0.14 |
| 86 | 860 | 0.0057 | 0.0228 | 3.0104 | 1.6714 | 0.0195 | 2.7786 | 0.0227 | 0.0210 | 0.14 | 0.14 |
| 87 | 870 | 0.0057 | 0.0228 | 3.0332 | 1.6910 | 0.0196 | 2.8013 | 0.0227 | 0.0210 | 0.14 | 0.14 |
| 88 | 880 | 0.0057 | 0.0228 | 3.0560 | 1.7106 | 0.0196 | 2.8240 | 0.0227 | 0.0210 | 0.14 | 0.14 |
| 89 | 890 | 0.0050 | 0.0200 | 3.0760 | 1.7278 | 0.0172 | 2.8440 | 0.0199 | 0.0185 | 0.12 | 0.14 |
| 90 | 900 | 0.0050 | 0.0200 | 3.0960 | 1.7450 | 0.0172 | 2.8639 | 0.0199 | 0.0185 | 0.12 | 0.13 |
| 91 | 910 | 0.0050 | 0.0200 | 3.1160 | 1.7623 | 0.0173 | 2.8838 | 0.0199 | 0.0185 | 0.12 | 0.13 |
| 92 | 920 | 0.0050 | 0.0200 | 3.1360 | 1.7796 | 0.0173 | 2.9037 | 0.0199 | 0.0185 | 0.12 | 0.13 |
| 93 | 930 | 0.0050 | 0.0200 | 3.1560 | 1.7969 | 0.0173 | 2.9236 | 0.0199 | 0.0185 | 0.12 | 0.13 |
| 94 | 940 | 0.0050 | 0.0200 | 3.1760 | 1.8143 | 0.0173 | 2.9436 | 0.0199 | 0.0185 | 0.12 | 0.12 |
| 95 | 950 | 0.0050 | 0.0200 | 3.1960 | 1.8316 | 0.0174 | 2.9635 | 0.0199 | 0.0185 | 0.12 | 0.12 |
| 96 | 960 | 0.0050 | 0.0200 | 3.2160 | 1.8490 | 0.0174 | 2.9834 | 0.0199 | 0.0186 | 0.12 | 0.12 |
| 97 | 970 | 0.0050 | 0.0200 | 3.2360 | 1.8664 | 0.0174 | 3.0034 | 0.0199 | 0.0186 | 0.12 | 0.12 |
| 98 | 980 | 0.0050 | 0.0200 | 3.2560 | 1.8839 | 0.0174 | 3.0233 | 0.0199 | 0.0186 | 0.12 | 0.12 |
| 99 | 990 | 0.0050 | 0.0200 | 3.2760 | 1.9013 | 0.0175 | 3.0432 | 0.0199 | 0.0186 | 0.12 | 0.12 |

| | | | | | | | | | | | |
|-----|------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 100 | 1000 | 0.0050 | 0.0200 | 3.2960 | 1.9188 | 0.0175 | 3.0631 | 0.0199 | 0.0186 | 0.12 | 0.12 |
| 101 | 1010 | 0.0040 | 0.0160 | 3.3120 | 1.9328 | 0.0140 | 3.0791 | 0.0159 | 0.0149 | 0.10 | 0.12 |
| 102 | 1020 | 0.0040 | 0.0160 | 3.3280 | 1.9468 | 0.0140 | 3.0950 | 0.0159 | 0.0149 | 0.10 | 0.11 |
| 103 | 1030 | 0.0040 | 0.0160 | 3.3440 | 1.9609 | 0.0140 | 3.1110 | 0.0159 | 0.0149 | 0.10 | 0.10 |
| 104 | 1040 | 0.0040 | 0.0160 | 3.3600 | 1.9749 | 0.0140 | 3.1269 | 0.0159 | 0.0149 | 0.10 | 0.10 |
| 105 | 1050 | 0.0040 | 0.0160 | 3.3760 | 1.9890 | 0.0141 | 3.1429 | 0.0159 | 0.0149 | 0.10 | 0.10 |
| 106 | 1060 | 0.0040 | 0.0160 | 3.3920 | 2.0030 | 0.0141 | 3.1588 | 0.0159 | 0.0149 | 0.10 | 0.10 |
| 107 | 1070 | 0.0040 | 0.0160 | 3.4080 | 2.0171 | 0.0141 | 3.1748 | 0.0159 | 0.0149 | 0.10 | 0.10 |
| 108 | 1080 | 0.0040 | 0.0160 | 3.4240 | 2.0312 | 0.0141 | 3.1907 | 0.0159 | 0.0149 | 0.10 | 0.10 |
| 109 | 1090 | 0.0040 | 0.0160 | 3.4400 | 2.0453 | 0.0141 | 3.2067 | 0.0159 | 0.0150 | 0.10 | 0.10 |
| 110 | 1100 | 0.0040 | 0.0160 | 3.4560 | 2.0594 | 0.0141 | 3.2226 | 0.0159 | 0.0150 | 0.10 | 0.10 |
| 111 | 1110 | 0.0040 | 0.0160 | 3.4720 | 2.0736 | 0.0141 | 3.2386 | 0.0159 | 0.0150 | 0.10 | 0.10 |
| 112 | 1120 | 0.0040 | 0.0160 | 3.4880 | 2.0877 | 0.0141 | 3.2545 | 0.0159 | 0.0150 | 0.10 | 0.10 |
| 113 | 1130 | 0.0040 | 0.0160 | 3.5040 | 2.1019 | 0.0142 | 3.2705 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 114 | 1140 | 0.0040 | 0.0160 | 3.5200 | 2.1161 | 0.0142 | 3.2864 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 115 | 1150 | 0.0040 | 0.0160 | 3.5360 | 2.1302 | 0.0142 | 3.3024 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 116 | 1160 | 0.0040 | 0.0160 | 3.5520 | 2.1444 | 0.0142 | 3.3183 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 117 | 1170 | 0.0040 | 0.0160 | 3.5680 | 2.1586 | 0.0142 | 3.3343 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 118 | 1180 | 0.0040 | 0.0160 | 3.5840 | 2.1729 | 0.0142 | 3.3502 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 119 | 1190 | 0.0040 | 0.0160 | 3.6000 | 2.1871 | 0.0142 | 3.3662 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 120 | 1200 | 0.0040 | 0.0160 | 3.6160 | 2.2013 | 0.0142 | 3.3821 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 121 | 1210 | 0.0040 | 0.0160 | 3.6320 | 2.2156 | 0.0143 | 3.3981 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 122 | 1220 | 0.0040 | 0.0160 | 3.6480 | 2.2298 | 0.0143 | 3.4140 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 123 | 1230 | 0.0040 | 0.0160 | 3.6640 | 2.2441 | 0.0143 | 3.4300 | 0.0160 | 0.0150 | 0.10 | 0.10 |
| 124 | 1240 | 0.0040 | 0.0160 | 3.6800 | 2.2584 | 0.0143 | 3.4459 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 125 | 1250 | 0.0040 | 0.0160 | 3.6960 | 2.2727 | 0.0143 | 3.4619 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 126 | 1260 | 0.0040 | 0.0160 | 3.7120 | 2.2870 | 0.0143 | 3.4778 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 127 | 1270 | 0.0040 | 0.0160 | 3.7280 | 2.3013 | 0.0143 | 3.4938 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 128 | 1280 | 0.0040 | 0.0160 | 3.7440 | 2.3157 | 0.0143 | 3.5098 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 129 | 1290 | 0.0040 | 0.0160 | 3.7600 | 2.3300 | 0.0143 | 3.5257 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 130 | 1300 | 0.0040 | 0.0160 | 3.7760 | 2.3444 | 0.0144 | 3.5417 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 131 | 1310 | 0.0040 | 0.0160 | 3.7920 | 2.3587 | 0.0144 | 3.5576 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 132 | 1320 | 0.0040 | 0.0160 | 3.8080 | 2.3731 | 0.0144 | 3.5736 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 133 | 1330 | 0.0040 | 0.0160 | 3.8240 | 2.3875 | 0.0144 | 3.5895 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 134 | 1340 | 0.0040 | 0.0160 | 3.8400 | 2.4019 | 0.0144 | 3.6055 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 135 | 1350 | 0.0040 | 0.0160 | 3.8560 | 2.4163 | 0.0144 | 3.6215 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 136 | 1360 | 0.0040 | 0.0160 | 3.8720 | 2.4307 | 0.0144 | 3.6374 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 137 | 1370 | 0.0040 | 0.0160 | 3.8880 | 2.4451 | 0.0144 | 3.6534 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 138 | 1380 | 0.0040 | 0.0160 | 3.9040 | 2.4595 | 0.0144 | 3.6693 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 139 | 1390 | 0.0040 | 0.0160 | 3.9200 | 2.4740 | 0.0144 | 3.6853 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 140 | 1400 | 0.0040 | 0.0160 | 3.9360 | 2.4884 | 0.0145 | 3.7013 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 141 | 1410 | 0.0040 | 0.0160 | 3.9520 | 2.5029 | 0.0145 | 3.7172 | 0.0160 | 0.0151 | 0.10 | 0.10 |
| 142 | 1420 | 0.0040 | 0.0160 | 3.9680 | 2.5173 | 0.0145 | 3.7332 | 0.0160 | 0.0152 | 0.10 | 0.10 |
| 143 | 1430 | 0.0040 | 0.0160 | 3.9840 | 2.5318 | 0.0145 | 3.7491 | 0.0160 | 0.0152 | 0.10 | 0.10 |
| 144 | 1440 | 0.0040 | 0.0160 | 4.0000 | 2.5463 | 0.0145 | 3.7651 | 0.0160 | 0.0152 | 0.10 | 0.10 |

TotalRunoffVolume (cu. ft.)=

12425

HYDROLOGIC ANALYSIS USING SCS CURVE NUMBER (CN) AND SANTA BARBARA URBAN HYDROGRAPH (SBUH) METHOD

GIVEN: Project = 314 Pleasant Avenue Development
 Basin # = sub-basin of Newell Basin
 Area = 3.09 acres
 Event = 25 year, 24-hour duration storm event
 Pt = 4.00 inches rainfall
 Tc = 15.0 min.
 dt = 10 min.
 PERVIOUS Parcel Area = 1.85 acres CN = 86.00 S = 1.63 0.2S = 0.33
 IMPVIOUS Parcel Area = 1.24 acres CN = 98.00 S = 0.20 0.2S = 0.04

COMPUTE RUNOFF HYDROGRAPH

Column (3) = SCS Type II Rainfall Distribution
 Column (4) = Column (3) x Pt
 Column (5) = Accumulated Sum of Col (4)
 Column (6) = [If P <= 0.2S] = 0; Note, use pervious area "S" value
 [If P > 0.2S] = (Col(5) - 0.2S)^2 / (Col(5) + 0.8S)
 Column (7) = Col(6) of present time step - Col(6) of previous time step
 Column (8) = Same method as for Col(6), except use in pervious "S"
 Column (9) = Col(8) of present time step - Col(8) of previous time step
 Column (10) = ((pervious area / total area) x Col(7)) + ((in pervious area / total area) x Col(9))
 Column (11) = (60.5 x Col(10) x total area) / 10, where dt = 10 minutes
 Routing Constant w = dt / (2Tc + dt) = 0.25
 Column (12) = Col(12) of previous time step + (w x [Col(11) of previous time step + Col(11) of present time step - (2 x Col(12) of previous time step)])

| (1) Time Increment | (2) Time min. | (3) Rainfall distribution % of Pt | (4) Incremental Rainfall in. | (5) Accumulated Rainfall in. | Pervious Area (6) Accumulated Runoff in. | (7) Incremental Runoff in. | In pervious Area (8) Accumulated Runoff in. | (9) Incremental Runoff in. | (10) Total Runoff in. | (11) Instant Hydro- graph cfs | (12) Design Hydro- graph cfs |
|--------------------------|---------------------|--|---------------------------------------|---------------------------------------|--|-------------------------------------|---|-------------------------------------|--------------------------------|---|--|
| 1 | 10 | 0.0040 | 0.0160 | 0.0160 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 2 | 20 | 0.0040 | 0.0160 | 0.0320 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 3 | 30 | 0.0040 | 0.0160 | 0.0480 | 0.0000 | 0.0000 | 0.0002 | 0.0002 | 0.0001 | 0.00 | 0.00 |
| 4 | 40 | 0.0040 | 0.0160 | 0.0640 | 0.0000 | 0.0000 | 0.0024 | 0.0021 | 0.0009 | 0.02 | 0.00 |
| 5 | 50 | 0.0040 | 0.0160 | 0.0800 | 0.0000 | 0.0000 | 0.0063 | 0.0039 | 0.0016 | 0.03 | 0.01 |
| 6 | 60 | 0.0040 | 0.0160 | 0.0960 | 0.0000 | 0.0000 | 0.0117 | 0.0054 | 0.0022 | 0.04 | 0.02 |
| 7 | 70 | 0.0040 | 0.0160 | 0.1120 | 0.0000 | 0.0000 | 0.0184 | 0.0067 | 0.0027 | 0.05 | 0.03 |
| 8 | 80 | 0.0040 | 0.0160 | 0.1280 | 0.0000 | 0.0000 | 0.0261 | 0.0077 | 0.0031 | 0.06 | 0.04 |
| 9 | 90 | 0.0040 | 0.0160 | 0.1440 | 0.0000 | 0.0000 | 0.0347 | 0.0086 | 0.0034 | 0.06 | 0.05 |
| 10 | 100 | 0.0040 | 0.0160 | 0.1600 | 0.0000 | 0.0000 | 0.0439 | 0.0093 | 0.0037 | 0.07 | 0.06 |
| 11 | 110 | 0.0050 | 0.0200 | 0.1800 | 0.0000 | 0.0000 | 0.0564 | 0.0125 | 0.0050 | 0.09 | 0.07 |
| 12 | 120 | 0.0050 | 0.0200 | 0.2000 | 0.0000 | 0.0000 | 0.0698 | 0.0133 | 0.0053 | 0.10 | 0.08 |
| 13 | 130 | 0.0050 | 0.0200 | 0.2200 | 0.0000 | 0.0000 | 0.0838 | 0.0140 | 0.0056 | 0.11 | 0.09 |
| 14 | 140 | 0.0050 | 0.0200 | 0.2400 | 0.0000 | 0.0000 | 0.0984 | 0.0146 | 0.0059 | 0.11 | 0.10 |
| 15 | 150 | 0.0050 | 0.0200 | 0.2600 | 0.0000 | 0.0000 | 0.1135 | 0.0151 | 0.0061 | 0.11 | 0.11 |
| 16 | 160 | 0.0050 | 0.0200 | 0.2800 | 0.0000 | 0.0000 | 0.1291 | 0.0156 | 0.0062 | 0.12 | 0.11 |
| 17 | 170 | 0.0060 | 0.0240 | 0.3040 | 0.0000 | 0.0000 | 0.1482 | 0.0192 | 0.0077 | 0.14 | 0.12 |
| 18 | 180 | 0.0060 | 0.0240 | 0.3280 | 0.0000 | 0.0000 | 0.1679 | 0.0196 | 0.0079 | 0.15 | 0.13 |
| 19 | 190 | 0.0060 | 0.0240 | 0.3520 | 0.0004 | 0.0004 | 0.1879 | 0.0201 | 0.0083 | 0.16 | 0.14 |
| 20 | 200 | 0.0060 | 0.0240 | 0.3760 | 0.0015 | 0.0011 | 0.2083 | 0.0204 | 0.0088 | 0.17 | 0.15 |
| 21 | 210 | 0.0060 | 0.0240 | 0.4000 | 0.0033 | 0.0017 | 0.2290 | 0.0207 | 0.0094 | 0.17 | 0.16 |
| 22 | 220 | 0.0060 | 0.0240 | 0.4240 | 0.0056 | 0.0024 | 0.2500 | 0.0210 | 0.0098 | 0.18 | 0.17 |
| 23 | 230 | 0.0070 | 0.0280 | 0.4520 | 0.0091 | 0.0035 | 0.2748 | 0.0248 | 0.0120 | 0.23 | 0.19 |
| 24 | 240 | 0.0070 | 0.0280 | 0.4800 | 0.0134 | 0.0043 | 0.2998 | 0.0251 | 0.0126 | 0.24 | 0.21 |
| 25 | 250 | 0.0070 | 0.0280 | 0.5080 | 0.0184 | 0.0050 | 0.3251 | 0.0253 | 0.0131 | 0.25 | 0.22 |
| 26 | 260 | 0.0070 | 0.0280 | 0.5360 | 0.0241 | 0.0057 | 0.3507 | 0.0255 | 0.0137 | 0.26 | 0.24 |
| 27 | 270 | 0.0070 | 0.0280 | 0.5640 | 0.0305 | 0.0064 | 0.3764 | 0.0257 | 0.0141 | 0.26 | 0.25 |

| | | | | | | | | | | | |
|----|-----|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 28 | 280 | 0.0070 | 0.0280 | 0.5920 | 0.0375 | 0.0070 | 0.4022 | 0.0259 | 0.0146 | 0.27 | 0.26 |
| 29 | 290 | 0.0082 | 0.0328 | 0.6248 | 0.0465 | 0.0090 | 0.4328 | 0.0305 | 0.0176 | 0.33 | 0.28 |
| 30 | 300 | 0.0082 | 0.0328 | 0.6576 | 0.0562 | 0.0098 | 0.4634 | 0.0307 | 0.0182 | 0.34 | 0.31 |
| 31 | 310 | 0.0082 | 0.0328 | 0.6904 | 0.0668 | 0.0105 | 0.4943 | 0.0309 | 0.0187 | 0.35 | 0.33 |
| 32 | 320 | 0.0082 | 0.0328 | 0.7232 | 0.0781 | 0.0113 | 0.5253 | 0.0310 | 0.0192 | 0.36 | 0.34 |
| 33 | 330 | 0.0082 | 0.0328 | 0.7560 | 0.0900 | 0.0120 | 0.5564 | 0.0311 | 0.0196 | 0.37 | 0.35 |
| 34 | 340 | 0.0082 | 0.0328 | 0.7888 | 0.1026 | 0.0126 | 0.5876 | 0.0312 | 0.0201 | 0.38 | 0.36 |
| 35 | 350 | 0.0095 | 0.0380 | 0.8268 | 0.1180 | 0.0154 | 0.6240 | 0.0363 | 0.0238 | 0.44 | 0.39 |
| 36 | 360 | 0.0095 | 0.0380 | 0.8648 | 0.1342 | 0.0162 | 0.6604 | 0.0364 | 0.0243 | 0.45 | 0.42 |
| 37 | 370 | 0.0095 | 0.0380 | 0.9028 | 0.1511 | 0.0169 | 0.6970 | 0.0366 | 0.0248 | 0.46 | 0.44 |
| 38 | 380 | 0.0095 | 0.0380 | 0.9408 | 0.1687 | 0.0176 | 0.7336 | 0.0367 | 0.0253 | 0.47 | 0.45 |
| 39 | 390 | 0.0095 | 0.0380 | 0.9788 | 0.1871 | 0.0183 | 0.7704 | 0.0367 | 0.0257 | 0.48 | 0.46 |
| 40 | 400 | 0.0095 | 0.0380 | 1.0168 | 0.2060 | 0.0190 | 0.8072 | 0.0368 | 0.0261 | 0.49 | 0.47 |
| 41 | 410 | 0.0134 | 0.0536 | 1.0704 | 0.2338 | 0.0278 | 0.8593 | 0.0521 | 0.0375 | 0.70 | 0.53 |
| 42 | 420 | 0.0134 | 0.0536 | 1.1240 | 0.2627 | 0.0289 | 0.9115 | 0.0522 | 0.0383 | 0.72 | 0.62 |
| 43 | 430 | 0.0134 | 0.0536 | 1.1776 | 0.2927 | 0.0300 | 0.9638 | 0.0523 | 0.0389 | 0.73 | 0.67 |
| 44 | 440 | 0.0180 | 0.0720 | 1.2496 | 0.3346 | 0.0419 | 1.0342 | 0.0704 | 0.0533 | 1.00 | 0.77 |
| 45 | 450 | 0.0180 | 0.0720 | 1.3216 | 0.3781 | 0.0435 | 1.1048 | 0.0706 | 0.0544 | 1.02 | 0.89 |
| 46 | 460 | 0.0340 | 0.1360 | 1.4576 | 0.4643 | 0.0862 | 1.2384 | 0.1336 | 0.1053 | 1.97 | 1.19 |
| 47 | 470 | 0.0540 | 0.2160 | 1.6736 | 0.6106 | 0.1463 | 1.4514 | 0.2130 | 0.1731 | 3.24 | 1.90 |
| 48 | 480 | 0.0270 | 0.1080 | 1.7816 | 0.6874 | 0.0768 | 1.5581 | 0.1067 | 0.0888 | 1.66 | 2.17 |
| 49 | 490 | 0.0180 | 0.0720 | 1.8536 | 0.7398 | 0.0524 | 1.6294 | 0.0712 | 0.0600 | 1.12 | 1.78 |
| 50 | 500 | 0.0134 | 0.0536 | 1.9072 | 0.7794 | 0.0396 | 1.6824 | 0.0531 | 0.0450 | 0.84 | 1.38 |
| 51 | 510 | 0.0134 | 0.0536 | 1.9608 | 0.8194 | 0.0400 | 1.7355 | 0.0531 | 0.0453 | 0.85 | 1.11 |
| 52 | 520 | 0.0134 | 0.0536 | 2.0144 | 0.8599 | 0.0405 | 1.7886 | 0.0531 | 0.0455 | 0.85 | 0.98 |
| 53 | 530 | 0.0088 | 0.0352 | 2.0496 | 0.8867 | 0.0268 | 1.8235 | 0.0349 | 0.0301 | 0.56 | 0.84 |
| 54 | 540 | 0.0088 | 0.0352 | 2.0848 | 0.9137 | 0.0270 | 1.8584 | 0.0349 | 0.0302 | 0.56 | 0.70 |
| 55 | 550 | 0.0088 | 0.0352 | 2.1200 | 0.9409 | 0.0272 | 1.8933 | 0.0349 | 0.0303 | 0.57 | 0.63 |
| 56 | 560 | 0.0088 | 0.0352 | 2.1552 | 0.9682 | 0.0273 | 1.9283 | 0.0349 | 0.0304 | 0.57 | 0.60 |
| 57 | 570 | 0.0088 | 0.0352 | 2.1904 | 0.9957 | 0.0275 | 1.9632 | 0.0349 | 0.0305 | 0.57 | 0.58 |
| 58 | 580 | 0.0088 | 0.0352 | 2.2256 | 1.0233 | 0.0276 | 1.9981 | 0.0349 | 0.0306 | 0.57 | 0.58 |
| 59 | 590 | 0.0088 | 0.0352 | 2.2608 | 1.0511 | 0.0278 | 2.0331 | 0.0349 | 0.0307 | 0.57 | 0.57 |
| 60 | 600 | 0.0088 | 0.0352 | 2.2960 | 1.0790 | 0.0279 | 2.0680 | 0.0350 | 0.0307 | 0.57 | 0.57 |
| 61 | 610 | 0.0088 | 0.0352 | 2.3312 | 1.1071 | 0.0281 | 2.1030 | 0.0350 | 0.0308 | 0.58 | 0.57 |
| 62 | 620 | 0.0088 | 0.0352 | 2.3664 | 1.1353 | 0.0282 | 2.1380 | 0.0350 | 0.0309 | 0.58 | 0.58 |
| 63 | 630 | 0.0088 | 0.0352 | 2.4016 | 1.1636 | 0.0283 | 2.1729 | 0.0350 | 0.0310 | 0.58 | 0.58 |
| 64 | 640 | 0.0088 | 0.0352 | 2.4368 | 1.1921 | 0.0285 | 2.2079 | 0.0350 | 0.0311 | 0.58 | 0.58 |
| 65 | 650 | 0.0072 | 0.0288 | 2.4656 | 1.2154 | 0.0234 | 2.2365 | 0.0286 | 0.0255 | 0.48 | 0.55 |
| 66 | 660 | 0.0072 | 0.0288 | 2.4944 | 1.2389 | 0.0235 | 2.2652 | 0.0286 | 0.0255 | 0.48 | 0.52 |
| 67 | 670 | 0.0072 | 0.0288 | 2.5232 | 1.2624 | 0.0235 | 2.2938 | 0.0286 | 0.0256 | 0.48 | 0.50 |
| 68 | 680 | 0.0072 | 0.0288 | 2.5520 | 1.2861 | 0.0236 | 2.3224 | 0.0286 | 0.0256 | 0.48 | 0.49 |
| 69 | 690 | 0.0072 | 0.0288 | 2.5808 | 1.3098 | 0.0237 | 2.3511 | 0.0286 | 0.0257 | 0.48 | 0.48 |
| 70 | 700 | 0.0072 | 0.0288 | 2.6096 | 1.3335 | 0.0238 | 2.3797 | 0.0286 | 0.0257 | 0.48 | 0.48 |
| 71 | 710 | 0.0072 | 0.0288 | 2.6384 | 1.3574 | 0.0238 | 2.4084 | 0.0286 | 0.0258 | 0.48 | 0.48 |
| 72 | 720 | 0.0072 | 0.0288 | 2.6672 | 1.3813 | 0.0239 | 2.4370 | 0.0286 | 0.0258 | 0.48 | 0.48 |
| 73 | 730 | 0.0072 | 0.0288 | 2.6960 | 1.4053 | 0.0240 | 2.4657 | 0.0287 | 0.0259 | 0.48 | 0.48 |
| 74 | 740 | 0.0072 | 0.0288 | 2.7248 | 1.4294 | 0.0241 | 2.4943 | 0.0287 | 0.0259 | 0.48 | 0.48 |
| 75 | 750 | 0.0072 | 0.0288 | 2.7536 | 1.4535 | 0.0241 | 2.5230 | 0.0287 | 0.0259 | 0.49 | 0.48 |
| 76 | 760 | 0.0072 | 0.0288 | 2.7824 | 1.4777 | 0.0242 | 2.5516 | 0.0287 | 0.0260 | 0.49 | 0.48 |
| 77 | 770 | 0.0057 | 0.0228 | 2.8052 | 1.4969 | 0.0192 | 2.5743 | 0.0227 | 0.0206 | 0.39 | 0.46 |
| 78 | 780 | 0.0057 | 0.0228 | 2.8280 | 1.5161 | 0.0192 | 2.5970 | 0.0227 | 0.0206 | 0.39 | 0.42 |
| 79 | 790 | 0.0057 | 0.0228 | 2.8508 | 1.5354 | 0.0193 | 2.6197 | 0.0227 | 0.0206 | 0.39 | 0.40 |
| 80 | 800 | 0.0057 | 0.0228 | 2.8736 | 1.5547 | 0.0193 | 2.6424 | 0.0227 | 0.0207 | 0.39 | 0.40 |
| 81 | 810 | 0.0057 | 0.0228 | 2.8964 | 1.5741 | 0.0194 | 2.6651 | 0.0227 | 0.0207 | 0.39 | 0.39 |
| 82 | 820 | 0.0057 | 0.0228 | 2.9192 | 1.5935 | 0.0194 | 2.6878 | 0.0227 | 0.0207 | 0.39 | 0.39 |
| 83 | 830 | 0.0057 | 0.0228 | 2.9420 | 1.6129 | 0.0194 | 2.7105 | 0.0227 | 0.0207 | 0.39 | 0.39 |
| 84 | 840 | 0.0057 | 0.0228 | 2.9648 | 1.6324 | 0.0195 | 2.7332 | 0.0227 | 0.0208 | 0.39 | 0.39 |
| 85 | 850 | 0.0057 | 0.0228 | 2.9876 | 1.6519 | 0.0195 | 2.7559 | 0.0227 | 0.0208 | 0.39 | 0.39 |
| 86 | 860 | 0.0057 | 0.0228 | 3.0104 | 1.6714 | 0.0195 | 2.7786 | 0.0227 | 0.0208 | 0.39 | 0.39 |
| 87 | 870 | 0.0057 | 0.0228 | 3.0332 | 1.6910 | 0.0196 | 2.8013 | 0.0227 | 0.0208 | 0.39 | 0.39 |
| 88 | 880 | 0.0057 | 0.0228 | 3.0560 | 1.7106 | 0.0196 | 2.8240 | 0.0227 | 0.0208 | 0.39 | 0.39 |
| 89 | 890 | 0.0050 | 0.0200 | 3.0760 | 1.7278 | 0.0172 | 2.8440 | 0.0199 | 0.0183 | 0.34 | 0.38 |
| 90 | 900 | 0.0050 | 0.0200 | 3.0960 | 1.7450 | 0.0172 | 2.8639 | 0.0199 | 0.0183 | 0.34 | 0.36 |
| 91 | 910 | 0.0050 | 0.0200 | 3.1160 | 1.7623 | 0.0173 | 2.8838 | 0.0199 | 0.0183 | 0.34 | 0.35 |
| 92 | 920 | 0.0050 | 0.0200 | 3.1360 | 1.7796 | 0.0173 | 2.9037 | 0.0199 | 0.0184 | 0.34 | 0.35 |
| 93 | 930 | 0.0050 | 0.0200 | 3.1560 | 1.7969 | 0.0173 | 2.9236 | 0.0199 | 0.0184 | 0.34 | 0.35 |
| 94 | 940 | 0.0050 | 0.0200 | 3.1760 | 1.8143 | 0.0173 | 2.9436 | 0.0199 | 0.0184 | 0.34 | 0.34 |
| 95 | 950 | 0.0050 | 0.0200 | 3.1960 | 1.8316 | 0.0174 | 2.9635 | 0.0199 | 0.0184 | 0.34 | 0.34 |
| 96 | 960 | 0.0050 | 0.0200 | 3.2160 | 1.8490 | 0.0174 | 2.9834 | 0.0199 | 0.0184 | 0.34 | 0.34 |
| 97 | 970 | 0.0050 | 0.0200 | 3.2360 | 1.8664 | 0.0174 | 3.0034 | 0.0199 | 0.0184 | 0.34 | 0.34 |
| 98 | 980 | 0.0050 | 0.0200 | 3.2560 | 1.8839 | 0.0174 | 3.0233 | 0.0199 | 0.0184 | 0.34 | 0.34 |
| 99 | 990 | 0.0050 | 0.0200 | 3.2760 | 1.9013 | 0.0175 | 3.0432 | 0.0199 | 0.0185 | 0.34 | 0.34 |

| | | | | | | | | | | | |
|-----|------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 100 | 1000 | 0.0050 | 0.0200 | 3.2960 | 1.9188 | 0.0175 | 3.0631 | 0.0199 | 0.0185 | 0.35 | 0.34 |
| 101 | 1010 | 0.0040 | 0.0160 | 3.3120 | 1.9328 | 0.0140 | 3.0791 | 0.0159 | 0.0148 | 0.28 | 0.33 |
| 102 | 1020 | 0.0040 | 0.0160 | 3.3280 | 1.9468 | 0.0140 | 3.0950 | 0.0159 | 0.0148 | 0.28 | 0.30 |
| 103 | 1030 | 0.0040 | 0.0160 | 3.3440 | 1.9609 | 0.0140 | 3.1110 | 0.0159 | 0.0148 | 0.28 | 0.29 |
| 104 | 1040 | 0.0040 | 0.0160 | 3.3600 | 1.9749 | 0.0140 | 3.1269 | 0.0159 | 0.0148 | 0.28 | 0.28 |
| 105 | 1050 | 0.0040 | 0.0160 | 3.3760 | 1.9890 | 0.0141 | 3.1429 | 0.0159 | 0.0148 | 0.28 | 0.28 |
| 106 | 1060 | 0.0040 | 0.0160 | 3.3920 | 2.0030 | 0.0141 | 3.1588 | 0.0159 | 0.0148 | 0.28 | 0.28 |
| 107 | 1070 | 0.0040 | 0.0160 | 3.4080 | 2.0171 | 0.0141 | 3.1748 | 0.0159 | 0.0148 | 0.28 | 0.28 |
| 108 | 1080 | 0.0040 | 0.0160 | 3.4240 | 2.0312 | 0.0141 | 3.1907 | 0.0159 | 0.0148 | 0.28 | 0.28 |
| 109 | 1090 | 0.0040 | 0.0160 | 3.4400 | 2.0453 | 0.0141 | 3.2067 | 0.0159 | 0.0148 | 0.28 | 0.28 |
| 110 | 1100 | 0.0040 | 0.0160 | 3.4560 | 2.0594 | 0.0141 | 3.2226 | 0.0159 | 0.0149 | 0.28 | 0.28 |
| 111 | 1110 | 0.0040 | 0.0160 | 3.4720 | 2.0736 | 0.0141 | 3.2386 | 0.0159 | 0.0149 | 0.28 | 0.28 |
| 112 | 1120 | 0.0040 | 0.0160 | 3.4880 | 2.0877 | 0.0141 | 3.2545 | 0.0159 | 0.0149 | 0.28 | 0.28 |
| 113 | 1130 | 0.0040 | 0.0160 | 3.5040 | 2.1019 | 0.0142 | 3.2705 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 114 | 1140 | 0.0040 | 0.0160 | 3.5200 | 2.1161 | 0.0142 | 3.2864 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 115 | 1150 | 0.0040 | 0.0160 | 3.5360 | 2.1302 | 0.0142 | 3.3024 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 116 | 1160 | 0.0040 | 0.0160 | 3.5520 | 2.1444 | 0.0142 | 3.3183 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 117 | 1170 | 0.0040 | 0.0160 | 3.5680 | 2.1586 | 0.0142 | 3.3343 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 118 | 1180 | 0.0040 | 0.0160 | 3.5840 | 2.1729 | 0.0142 | 3.3502 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 119 | 1190 | 0.0040 | 0.0160 | 3.6000 | 2.1871 | 0.0142 | 3.3662 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 120 | 1200 | 0.0040 | 0.0160 | 3.6160 | 2.2013 | 0.0142 | 3.3821 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 121 | 1210 | 0.0040 | 0.0160 | 3.6320 | 2.2156 | 0.0143 | 3.3981 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 122 | 1220 | 0.0040 | 0.0160 | 3.6480 | 2.2298 | 0.0143 | 3.4140 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 123 | 1230 | 0.0040 | 0.0160 | 3.6640 | 2.2441 | 0.0143 | 3.4300 | 0.0160 | 0.0149 | 0.28 | 0.28 |
| 124 | 1240 | 0.0040 | 0.0160 | 3.6800 | 2.2584 | 0.0143 | 3.4459 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 125 | 1250 | 0.0040 | 0.0160 | 3.6960 | 2.2727 | 0.0143 | 3.4619 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 126 | 1260 | 0.0040 | 0.0160 | 3.7120 | 2.2870 | 0.0143 | 3.4778 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 127 | 1270 | 0.0040 | 0.0160 | 3.7280 | 2.3013 | 0.0143 | 3.4938 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 128 | 1280 | 0.0040 | 0.0160 | 3.7440 | 2.3157 | 0.0143 | 3.5098 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 129 | 1290 | 0.0040 | 0.0160 | 3.7600 | 2.3300 | 0.0143 | 3.5257 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 130 | 1300 | 0.0040 | 0.0160 | 3.7760 | 2.3444 | 0.0144 | 3.5417 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 131 | 1310 | 0.0040 | 0.0160 | 3.7920 | 2.3587 | 0.0144 | 3.5576 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 132 | 1320 | 0.0040 | 0.0160 | 3.8080 | 2.3731 | 0.0144 | 3.5736 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 133 | 1330 | 0.0040 | 0.0160 | 3.8240 | 2.3875 | 0.0144 | 3.5895 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 134 | 1340 | 0.0040 | 0.0160 | 3.8400 | 2.4019 | 0.0144 | 3.6055 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 135 | 1350 | 0.0040 | 0.0160 | 3.8560 | 2.4163 | 0.0144 | 3.6215 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 136 | 1360 | 0.0040 | 0.0160 | 3.8720 | 2.4307 | 0.0144 | 3.6374 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 137 | 1370 | 0.0040 | 0.0160 | 3.8880 | 2.4451 | 0.0144 | 3.6534 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 138 | 1380 | 0.0040 | 0.0160 | 3.9040 | 2.4595 | 0.0144 | 3.6693 | 0.0160 | 0.0150 | 0.28 | 0.28 |
| 139 | 1390 | 0.0040 | 0.0160 | 3.9200 | 2.4740 | 0.0144 | 3.6853 | 0.0160 | 0.0151 | 0.28 | 0.28 |
| 140 | 1400 | 0.0040 | 0.0160 | 3.9360 | 2.4884 | 0.0145 | 3.7013 | 0.0160 | 0.0151 | 0.28 | 0.28 |
| 141 | 1410 | 0.0040 | 0.0160 | 3.9520 | 2.5029 | 0.0145 | 3.7172 | 0.0160 | 0.0151 | 0.28 | 0.28 |
| 142 | 1420 | 0.0040 | 0.0160 | 3.9680 | 2.5173 | 0.0145 | 3.7332 | 0.0160 | 0.0151 | 0.28 | 0.28 |
| 143 | 1430 | 0.0040 | 0.0160 | 3.9840 | 2.5318 | 0.0145 | 3.7491 | 0.0160 | 0.0151 | 0.28 | 0.28 |
| 144 | 1440 | 0.0040 | 0.0160 | 4.0000 | 2.5463 | 0.0145 | 3.7651 | 0.0160 | 0.0151 | 0.28 | 0.28 |

TotalRunoffVolume (cu. ft.)=

33794

HYDROLOGIC ANALYSIS USING SCS CURVE NUMBER (CN) AND SANTA BARBARA URBAN HYDROGRAPH (SBUH) METHOD

GIVEN: Project = 314 Pleasant Avenue Development
 Basin # = sub-basin of Newell Basin
 Area = 5.12 acres
 Event = 25 year, 24-hour duration storm event
 Pt = 4.00 inches rainfall
 Tc = 15.0 min.
 dt = 10 min.
 PERVIOUS Parcel Area = 3.07 acres CN = 86.00 S = 1.63 0.2S = 0.33
 IMPVIOUS Parcel Area = 2.05 acres CN = 98.00 S = 0.20 0.2S = 0.04

COMPUTE RUNOFF HYDROGRAPH

Column (3) = SCS Type A Rainfall Distribution
 Column (4) = Column (3) x Pt
 Column (5) = Accumulated Sum of Col (4)
 Column (6) = [If P <= 0.2S] = 0; Note, use pervious area "S" value
 [If P > 0.2S] = (Col(5) - 0.2S)^2 / (Col(5) + 0.8S)
 Column (7) = Col(6) of present time step - Col(6) of previous time step
 Column (8) = Same method as for Col(6), except use in pervious "S"
 Column (9) = Col(8) of present time step - Col(8) of previous time step
 Column (10) = ((pervious area / total area) x Col(7)) + ((in pervious area / total area) x Col(9))
 Column (11) = (60.5 x Col(10) x total area) / 10, where dt = 10 minutes
 Routing Constant w = dt / (2Tc + dt) = 0.25
 Column (12) = Col(12) of previous time step + (w x [Col(11) of previous time step + Col(11) of present time step - (2 x Col(12) of previous time step)])

| (1) Time Increment | (2) Time min. | (3) Rainfall distribution % of Pt | (4) Incremental Rainfall in. | (5) Accumulated Rainfall in. | Pervious Area | | Impervious Area | | (10) Total Runoff in. | (11) Instant Hydro- graph cfs | (12) Design Hydro- graph cfs |
|--------------------------|---------------------|--|---------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------|---|--|
| | | | | | (6) Accumulated Runoff in. | (7) Incremental Runoff in. | (8) Accumulated Runoff in. | (9) Incremental Runoff in. | | | |
| 1 | 10 | 0.0040 | 0.0160 | 0.0160 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 2 | 20 | 0.0040 | 0.0160 | 0.0320 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00 | 0.00 |
| 3 | 30 | 0.0040 | 0.0160 | 0.0480 | 0.0000 | 0.0000 | 0.0002 | 0.0002 | 0.0001 | 0.00 | 0.00 |
| 4 | 40 | 0.0040 | 0.0160 | 0.0640 | 0.0000 | 0.0000 | 0.0024 | 0.0021 | 0.0008 | 0.03 | 0.01 |
| 5 | 50 | 0.0040 | 0.0160 | 0.0800 | 0.0000 | 0.0000 | 0.0063 | 0.0039 | 0.0016 | 0.05 | 0.02 |
| 6 | 60 | 0.0040 | 0.0160 | 0.0960 | 0.0000 | 0.0000 | 0.0117 | 0.0054 | 0.0022 | 0.07 | 0.04 |
| 7 | 70 | 0.0040 | 0.0160 | 0.1120 | 0.0000 | 0.0000 | 0.0184 | 0.0067 | 0.0027 | 0.08 | 0.06 |
| 8 | 80 | 0.0040 | 0.0160 | 0.1280 | 0.0000 | 0.0000 | 0.0261 | 0.0077 | 0.0031 | 0.10 | 0.07 |
| 9 | 90 | 0.0040 | 0.0160 | 0.1440 | 0.0000 | 0.0000 | 0.0347 | 0.0086 | 0.0034 | 0.11 | 0.09 |
| 10 | 100 | 0.0040 | 0.0160 | 0.1600 | 0.0000 | 0.0000 | 0.0439 | 0.0093 | 0.0037 | 0.12 | 0.10 |
| 11 | 110 | 0.0050 | 0.0200 | 0.1800 | 0.0000 | 0.0000 | 0.0564 | 0.0125 | 0.0050 | 0.15 | 0.12 |
| 12 | 120 | 0.0050 | 0.0200 | 0.2000 | 0.0000 | 0.0000 | 0.0698 | 0.0133 | 0.0053 | 0.17 | 0.14 |
| 13 | 130 | 0.0050 | 0.0200 | 0.2200 | 0.0000 | 0.0000 | 0.0838 | 0.0140 | 0.0056 | 0.17 | 0.15 |
| 14 | 140 | 0.0050 | 0.0200 | 0.2400 | 0.0000 | 0.0000 | 0.0984 | 0.0146 | 0.0058 | 0.18 | 0.17 |
| 15 | 150 | 0.0050 | 0.0200 | 0.2600 | 0.0000 | 0.0000 | 0.1135 | 0.0151 | 0.0061 | 0.19 | 0.18 |
| 16 | 160 | 0.0050 | 0.0200 | 0.2800 | 0.0000 | 0.0000 | 0.1291 | 0.0156 | 0.0062 | 0.19 | 0.18 |
| 17 | 170 | 0.0060 | 0.0240 | 0.3040 | 0.0000 | 0.0000 | 0.1482 | 0.0192 | 0.0077 | 0.24 | 0.20 |
| 18 | 180 | 0.0060 | 0.0240 | 0.3280 | 0.0000 | 0.0000 | 0.1679 | 0.0196 | 0.0079 | 0.24 | 0.22 |
| 19 | 190 | 0.0060 | 0.0240 | 0.3520 | 0.0004 | 0.0004 | 0.1879 | 0.0201 | 0.0083 | 0.26 | 0.23 |
| 20 | 200 | 0.0060 | 0.0240 | 0.3760 | 0.0015 | 0.0011 | 0.2083 | 0.0204 | 0.0088 | 0.27 | 0.25 |
| 21 | 210 | 0.0060 | 0.0240 | 0.4000 | 0.0033 | 0.0017 | 0.2290 | 0.0207 | 0.0093 | 0.29 | 0.27 |
| 22 | 220 | 0.0060 | 0.0240 | 0.4240 | 0.0056 | 0.0024 | 0.2500 | 0.0210 | 0.0098 | 0.30 | 0.28 |
| 23 | 230 | 0.0070 | 0.0280 | 0.4520 | 0.0091 | 0.0035 | 0.2748 | 0.0248 | 0.0120 | 0.37 | 0.31 |
| 24 | 240 | 0.0070 | 0.0280 | 0.4800 | 0.0134 | 0.0043 | 0.2998 | 0.0251 | 0.0126 | 0.39 | 0.35 |
| 25 | 250 | 0.0070 | 0.0280 | 0.5080 | 0.0184 | 0.0050 | 0.3251 | 0.0253 | 0.0131 | 0.41 | 0.37 |
| 26 | 260 | 0.0070 | 0.0280 | 0.5360 | 0.0241 | 0.0057 | 0.3507 | 0.0255 | 0.0136 | 0.42 | 0.39 |
| 27 | 270 | 0.0070 | 0.0280 | 0.5640 | 0.0305 | 0.0064 | 0.3764 | 0.0257 | 0.0141 | 0.44 | 0.41 |

| | | | | | | | | | | | |
|----|-----|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 28 | 280 | 0.0070 | 0.0280 | 0.5920 | 0.0375 | 0.0070 | 0.4022 | 0.0259 | 0.0146 | 0.45 | 0.43 |
| 29 | 290 | 0.0082 | 0.0328 | 0.6248 | 0.0465 | 0.0090 | 0.4328 | 0.0305 | 0.0176 | 0.55 | 0.46 |
| 30 | 300 | 0.0082 | 0.0328 | 0.6576 | 0.0562 | 0.0098 | 0.4634 | 0.0307 | 0.0182 | 0.56 | 0.51 |
| 31 | 310 | 0.0082 | 0.0328 | 0.6904 | 0.0668 | 0.0105 | 0.4943 | 0.0309 | 0.0187 | 0.58 | 0.54 |
| 32 | 320 | 0.0082 | 0.0328 | 0.7232 | 0.0781 | 0.0113 | 0.5253 | 0.0310 | 0.0192 | 0.59 | 0.56 |
| 33 | 330 | 0.0082 | 0.0328 | 0.7560 | 0.0900 | 0.0120 | 0.5564 | 0.0311 | 0.0196 | 0.61 | 0.58 |
| 34 | 340 | 0.0082 | 0.0328 | 0.7888 | 0.1026 | 0.0126 | 0.5876 | 0.0312 | 0.0201 | 0.62 | 0.60 |
| 35 | 350 | 0.0095 | 0.0380 | 0.8268 | 0.1180 | 0.0154 | 0.6240 | 0.0363 | 0.0238 | 0.74 | 0.64 |
| 36 | 360 | 0.0095 | 0.0380 | 0.8648 | 0.1342 | 0.0162 | 0.6604 | 0.0364 | 0.0243 | 0.75 | 0.69 |
| 37 | 370 | 0.0095 | 0.0380 | 0.9028 | 0.1511 | 0.0169 | 0.6970 | 0.0366 | 0.0248 | 0.77 | 0.73 |
| 38 | 380 | 0.0095 | 0.0380 | 0.9408 | 0.1687 | 0.0176 | 0.7336 | 0.0367 | 0.0253 | 0.78 | 0.75 |
| 39 | 390 | 0.0095 | 0.0380 | 0.9788 | 0.1871 | 0.0183 | 0.7704 | 0.0367 | 0.0257 | 0.80 | 0.77 |
| 40 | 400 | 0.0095 | 0.0380 | 1.0168 | 0.2060 | 0.0190 | 0.8072 | 0.0368 | 0.0261 | 0.81 | 0.79 |
| 41 | 410 | 0.0134 | 0.0536 | 1.0704 | 0.2338 | 0.0278 | 0.8593 | 0.0521 | 0.0375 | 1.16 | 0.89 |
| 42 | 420 | 0.0134 | 0.0536 | 1.1240 | 0.2627 | 0.0289 | 0.9115 | 0.0522 | 0.0382 | 1.18 | 1.03 |
| 43 | 430 | 0.0134 | 0.0536 | 1.1776 | 0.2927 | 0.0300 | 0.9638 | 0.0523 | 0.0389 | 1.21 | 1.11 |
| 44 | 440 | 0.0180 | 0.0720 | 1.2496 | 0.3346 | 0.0419 | 1.0342 | 0.0704 | 0.0533 | 1.65 | 1.27 |
| 45 | 450 | 0.0180 | 0.0720 | 1.3216 | 0.3781 | 0.0435 | 1.1048 | 0.0706 | 0.0543 | 1.68 | 1.47 |
| 46 | 460 | 0.0340 | 0.1360 | 1.4576 | 0.4643 | 0.0862 | 1.2384 | 0.1336 | 0.1052 | 3.26 | 1.97 |
| 47 | 470 | 0.0540 | 0.2160 | 1.6736 | 0.6106 | 0.1463 | 1.4514 | 0.2130 | 0.1730 | 5.36 | 3.14 |
| 48 | 480 | 0.0270 | 0.1080 | 1.7816 | 0.6874 | 0.0768 | 1.5581 | 0.1067 | 0.0888 | 2.75 | 3.60 |
| 49 | 490 | 0.0180 | 0.0720 | 1.8536 | 0.7398 | 0.0524 | 1.6294 | 0.0712 | 0.0599 | 1.86 | 2.95 |
| 50 | 500 | 0.0134 | 0.0536 | 1.9072 | 0.7794 | 0.0396 | 1.6824 | 0.0531 | 0.0450 | 1.39 | 2.29 |
| 51 | 510 | 0.0134 | 0.0536 | 1.9608 | 0.8194 | 0.0400 | 1.7355 | 0.0531 | 0.0453 | 1.40 | 1.84 |
| 52 | 520 | 0.0134 | 0.0536 | 2.0144 | 0.8599 | 0.0405 | 1.7886 | 0.0531 | 0.0455 | 1.41 | 1.62 |
| 53 | 530 | 0.0088 | 0.0352 | 2.0496 | 0.8867 | 0.0268 | 1.8235 | 0.0349 | 0.0300 | 0.93 | 1.40 |
| 54 | 540 | 0.0088 | 0.0352 | 2.0848 | 0.9137 | 0.0270 | 1.8584 | 0.0349 | 0.0302 | 0.93 | 1.16 |
| 55 | 550 | 0.0088 | 0.0352 | 2.1200 | 0.9409 | 0.0272 | 1.8933 | 0.0349 | 0.0303 | 0.94 | 1.05 |
| 56 | 560 | 0.0088 | 0.0352 | 2.1552 | 0.9682 | 0.0273 | 1.9283 | 0.0349 | 0.0304 | 0.94 | 0.99 |
| 57 | 570 | 0.0088 | 0.0352 | 2.1904 | 0.9957 | 0.0275 | 1.9632 | 0.0349 | 0.0305 | 0.94 | 0.97 |
| 58 | 580 | 0.0088 | 0.0352 | 2.2256 | 1.0233 | 0.0276 | 1.9981 | 0.0349 | 0.0306 | 0.95 | 0.96 |
| 59 | 590 | 0.0088 | 0.0352 | 2.2608 | 1.0511 | 0.0278 | 2.0331 | 0.0349 | 0.0306 | 0.95 | 0.95 |
| 60 | 600 | 0.0088 | 0.0352 | 2.2960 | 1.0790 | 0.0279 | 2.0680 | 0.0350 | 0.0307 | 0.95 | 0.95 |
| 61 | 610 | 0.0088 | 0.0352 | 2.3312 | 1.1071 | 0.0281 | 2.1030 | 0.0350 | 0.0308 | 0.95 | 0.95 |
| 62 | 620 | 0.0088 | 0.0352 | 2.3664 | 1.1353 | 0.0282 | 2.1380 | 0.0350 | 0.0309 | 0.96 | 0.95 |
| 63 | 630 | 0.0088 | 0.0352 | 2.4016 | 1.1636 | 0.0283 | 2.1729 | 0.0350 | 0.0310 | 0.96 | 0.96 |
| 64 | 640 | 0.0088 | 0.0352 | 2.4368 | 1.1921 | 0.0285 | 2.2079 | 0.0350 | 0.0311 | 0.96 | 0.96 |
| 65 | 650 | 0.0072 | 0.0288 | 2.4656 | 1.2154 | 0.0234 | 2.2365 | 0.0286 | 0.0255 | 0.79 | 0.92 |
| 66 | 660 | 0.0072 | 0.0288 | 2.4944 | 1.2389 | 0.0235 | 2.2652 | 0.0286 | 0.0255 | 0.79 | 0.85 |
| 67 | 670 | 0.0072 | 0.0288 | 2.5232 | 1.2624 | 0.0235 | 2.2938 | 0.0286 | 0.0256 | 0.79 | 0.82 |
| 68 | 680 | 0.0072 | 0.0288 | 2.5520 | 1.2861 | 0.0236 | 2.3224 | 0.0286 | 0.0256 | 0.79 | 0.81 |
| 69 | 690 | 0.0072 | 0.0288 | 2.5808 | 1.3098 | 0.0237 | 2.3511 | 0.0286 | 0.0257 | 0.80 | 0.80 |
| 70 | 700 | 0.0072 | 0.0288 | 2.6096 | 1.3335 | 0.0238 | 2.3797 | 0.0286 | 0.0257 | 0.80 | 0.80 |
| 71 | 710 | 0.0072 | 0.0288 | 2.6384 | 1.3574 | 0.0238 | 2.4084 | 0.0286 | 0.0258 | 0.80 | 0.80 |
| 72 | 720 | 0.0072 | 0.0288 | 2.6672 | 1.3813 | 0.0239 | 2.4370 | 0.0286 | 0.0258 | 0.80 | 0.80 |
| 73 | 730 | 0.0072 | 0.0288 | 2.6960 | 1.4053 | 0.0240 | 2.4657 | 0.0287 | 0.0259 | 0.80 | 0.80 |
| 74 | 740 | 0.0072 | 0.0288 | 2.7248 | 1.4294 | 0.0241 | 2.4943 | 0.0287 | 0.0259 | 0.80 | 0.80 |
| 75 | 750 | 0.0072 | 0.0288 | 2.7536 | 1.4535 | 0.0241 | 2.5230 | 0.0287 | 0.0259 | 0.80 | 0.80 |
| 76 | 760 | 0.0072 | 0.0288 | 2.7824 | 1.4777 | 0.0242 | 2.5516 | 0.0287 | 0.0260 | 0.80 | 0.80 |
| 77 | 770 | 0.0057 | 0.0228 | 2.8052 | 1.4969 | 0.0192 | 2.5743 | 0.0227 | 0.0206 | 0.64 | 0.76 |
| 78 | 780 | 0.0057 | 0.0228 | 2.8280 | 1.5161 | 0.0192 | 2.5970 | 0.0227 | 0.0206 | 0.64 | 0.70 |
| 79 | 790 | 0.0057 | 0.0228 | 2.8508 | 1.5354 | 0.0193 | 2.6197 | 0.0227 | 0.0206 | 0.64 | 0.67 |
| 80 | 800 | 0.0057 | 0.0228 | 2.8736 | 1.5547 | 0.0193 | 2.6424 | 0.0227 | 0.0207 | 0.64 | 0.65 |
| 81 | 810 | 0.0057 | 0.0228 | 2.8964 | 1.5741 | 0.0194 | 2.6651 | 0.0227 | 0.0207 | 0.64 | 0.65 |
| 82 | 820 | 0.0057 | 0.0228 | 2.9192 | 1.5935 | 0.0194 | 2.6878 | 0.0227 | 0.0207 | 0.64 | 0.64 |
| 83 | 830 | 0.0057 | 0.0228 | 2.9420 | 1.6129 | 0.0194 | 2.7105 | 0.0227 | 0.0207 | 0.64 | 0.64 |
| 84 | 840 | 0.0057 | 0.0228 | 2.9648 | 1.6324 | 0.0195 | 2.7332 | 0.0227 | 0.0208 | 0.64 | 0.64 |
| 85 | 850 | 0.0057 | 0.0228 | 2.9876 | 1.6519 | 0.0195 | 2.7559 | 0.0227 | 0.0208 | 0.64 | 0.64 |
| 86 | 860 | 0.0057 | 0.0228 | 3.0104 | 1.6714 | 0.0195 | 2.7786 | 0.0227 | 0.0208 | 0.64 | 0.64 |
| 87 | 870 | 0.0057 | 0.0228 | 3.0332 | 1.6910 | 0.0196 | 2.8013 | 0.0227 | 0.0208 | 0.65 | 0.64 |
| 88 | 880 | 0.0057 | 0.0228 | 3.0560 | 1.7106 | 0.0196 | 2.8240 | 0.0227 | 0.0208 | 0.65 | 0.64 |
| 89 | 890 | 0.0050 | 0.0200 | 3.0760 | 1.7278 | 0.0172 | 2.8440 | 0.0199 | 0.0183 | 0.57 | 0.63 |
| 90 | 900 | 0.0050 | 0.0200 | 3.0960 | 1.7450 | 0.0172 | 2.8639 | 0.0199 | 0.0183 | 0.57 | 0.60 |
| 91 | 910 | 0.0050 | 0.0200 | 3.1160 | 1.7623 | 0.0173 | 2.8838 | 0.0199 | 0.0183 | 0.57 | 0.58 |
| 92 | 920 | 0.0050 | 0.0200 | 3.1360 | 1.7796 | 0.0173 | 2.9037 | 0.0199 | 0.0183 | 0.57 | 0.58 |
| 93 | 930 | 0.0050 | 0.0200 | 3.1560 | 1.7969 | 0.0173 | 2.9236 | 0.0199 | 0.0184 | 0.57 | 0.57 |
| 94 | 940 | 0.0050 | 0.0200 | 3.1760 | 1.8143 | 0.0173 | 2.9436 | 0.0199 | 0.0184 | 0.57 | 0.57 |
| 95 | 950 | 0.0050 | 0.0200 | 3.1960 | 1.8316 | 0.0174 | 2.9635 | 0.0199 | 0.0184 | 0.57 | 0.57 |
| 96 | 960 | 0.0050 | 0.0200 | 3.2160 | 1.8490 | 0.0174 | 2.9834 | 0.0199 | 0.0184 | 0.57 | 0.57 |
| 97 | 970 | 0.0050 | 0.0200 | 3.2360 | 1.8664 | 0.0174 | 3.0034 | 0.0199 | 0.0184 | 0.57 | 0.57 |
| 98 | 980 | 0.0050 | 0.0200 | 3.2560 | 1.8839 | 0.0174 | 3.0233 | 0.0199 | 0.0184 | 0.57 | 0.57 |
| 99 | 990 | 0.0050 | 0.0200 | 3.2760 | 1.9013 | 0.0175 | 3.0432 | 0.0199 | 0.0184 | 0.57 | 0.57 |

| | | | | | | | | | | | |
|-----|------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 100 | 1000 | 0.0050 | 0.0200 | 3.2960 | 1.9188 | 0.0175 | 3.0631 | 0.0199 | 0.0185 | 0.57 | 0.57 |
| 101 | 1010 | 0.0040 | 0.0160 | 3.3120 | 1.9328 | 0.0140 | 3.0791 | 0.0159 | 0.0148 | 0.46 | 0.54 |
| 102 | 1020 | 0.0040 | 0.0160 | 3.3280 | 1.9468 | 0.0140 | 3.0950 | 0.0159 | 0.0148 | 0.46 | 0.50 |
| 103 | 1030 | 0.0040 | 0.0160 | 3.3440 | 1.9609 | 0.0140 | 3.1110 | 0.0159 | 0.0148 | 0.46 | 0.48 |
| 104 | 1040 | 0.0040 | 0.0160 | 3.3600 | 1.9749 | 0.0140 | 3.1269 | 0.0159 | 0.0148 | 0.46 | 0.47 |
| 105 | 1050 | 0.0040 | 0.0160 | 3.3760 | 1.9890 | 0.0141 | 3.1429 | 0.0159 | 0.0148 | 0.46 | 0.46 |
| 106 | 1060 | 0.0040 | 0.0160 | 3.3920 | 2.0030 | 0.0141 | 3.1588 | 0.0159 | 0.0148 | 0.46 | 0.46 |
| 107 | 1070 | 0.0040 | 0.0160 | 3.4080 | 2.0171 | 0.0141 | 3.1748 | 0.0159 | 0.0148 | 0.46 | 0.46 |
| 108 | 1080 | 0.0040 | 0.0160 | 3.4240 | 2.0312 | 0.0141 | 3.1907 | 0.0159 | 0.0148 | 0.46 | 0.46 |
| 109 | 1090 | 0.0040 | 0.0160 | 3.4400 | 2.0453 | 0.0141 | 3.2067 | 0.0159 | 0.0148 | 0.46 | 0.46 |
| 110 | 1100 | 0.0040 | 0.0160 | 3.4560 | 2.0594 | 0.0141 | 3.2226 | 0.0159 | 0.0149 | 0.46 | 0.46 |
| 111 | 1110 | 0.0040 | 0.0160 | 3.4720 | 2.0736 | 0.0141 | 3.2386 | 0.0159 | 0.0149 | 0.46 | 0.46 |
| 112 | 1120 | 0.0040 | 0.0160 | 3.4880 | 2.0877 | 0.0141 | 3.2545 | 0.0159 | 0.0149 | 0.46 | 0.46 |
| 113 | 1130 | 0.0040 | 0.0160 | 3.5040 | 2.1019 | 0.0142 | 3.2705 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 114 | 1140 | 0.0040 | 0.0160 | 3.5200 | 2.1161 | 0.0142 | 3.2864 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 115 | 1150 | 0.0040 | 0.0160 | 3.5360 | 2.1302 | 0.0142 | 3.3024 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 116 | 1160 | 0.0040 | 0.0160 | 3.5520 | 2.1444 | 0.0142 | 3.3183 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 117 | 1170 | 0.0040 | 0.0160 | 3.5680 | 2.1586 | 0.0142 | 3.3343 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 118 | 1180 | 0.0040 | 0.0160 | 3.5840 | 2.1729 | 0.0142 | 3.3502 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 119 | 1190 | 0.0040 | 0.0160 | 3.6000 | 2.1871 | 0.0142 | 3.3662 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 120 | 1200 | 0.0040 | 0.0160 | 3.6160 | 2.2013 | 0.0142 | 3.3821 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 121 | 1210 | 0.0040 | 0.0160 | 3.6320 | 2.2156 | 0.0143 | 3.3981 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 122 | 1220 | 0.0040 | 0.0160 | 3.6480 | 2.2298 | 0.0143 | 3.4140 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 123 | 1230 | 0.0040 | 0.0160 | 3.6640 | 2.2441 | 0.0143 | 3.4300 | 0.0160 | 0.0149 | 0.46 | 0.46 |
| 124 | 1240 | 0.0040 | 0.0160 | 3.6800 | 2.2584 | 0.0143 | 3.4459 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 125 | 1250 | 0.0040 | 0.0160 | 3.6960 | 2.2727 | 0.0143 | 3.4619 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 126 | 1260 | 0.0040 | 0.0160 | 3.7120 | 2.2870 | 0.0143 | 3.4778 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 127 | 1270 | 0.0040 | 0.0160 | 3.7280 | 2.3013 | 0.0143 | 3.4938 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 128 | 1280 | 0.0040 | 0.0160 | 3.7440 | 2.3157 | 0.0143 | 3.5098 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 129 | 1290 | 0.0040 | 0.0160 | 3.7600 | 2.3300 | 0.0143 | 3.5257 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 130 | 1300 | 0.0040 | 0.0160 | 3.7760 | 2.3444 | 0.0144 | 3.5417 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 131 | 1310 | 0.0040 | 0.0160 | 3.7920 | 2.3587 | 0.0144 | 3.5576 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 132 | 1320 | 0.0040 | 0.0160 | 3.8080 | 2.3731 | 0.0144 | 3.5736 | 0.0160 | 0.0150 | 0.46 | 0.46 |
| 133 | 1330 | 0.0040 | 0.0160 | 3.8240 | 2.3875 | 0.0144 | 3.5895 | 0.0160 | 0.0150 | 0.47 | 0.46 |
| 134 | 1340 | 0.0040 | 0.0160 | 3.8400 | 2.4019 | 0.0144 | 3.6055 | 0.0160 | 0.0150 | 0.47 | 0.46 |
| 135 | 1350 | 0.0040 | 0.0160 | 3.8560 | 2.4163 | 0.0144 | 3.6215 | 0.0160 | 0.0150 | 0.47 | 0.47 |
| 136 | 1360 | 0.0040 | 0.0160 | 3.8720 | 2.4307 | 0.0144 | 3.6374 | 0.0160 | 0.0150 | 0.47 | 0.47 |
| 137 | 1370 | 0.0040 | 0.0160 | 3.8880 | 2.4451 | 0.0144 | 3.6534 | 0.0160 | 0.0150 | 0.47 | 0.47 |
| 138 | 1380 | 0.0040 | 0.0160 | 3.9040 | 2.4595 | 0.0144 | 3.6693 | 0.0160 | 0.0150 | 0.47 | 0.47 |
| 139 | 1390 | 0.0040 | 0.0160 | 3.9200 | 2.4740 | 0.0144 | 3.6853 | 0.0160 | 0.0150 | 0.47 | 0.47 |
| 140 | 1400 | 0.0040 | 0.0160 | 3.9360 | 2.4884 | 0.0145 | 3.7013 | 0.0160 | 0.0151 | 0.47 | 0.47 |
| 141 | 1410 | 0.0040 | 0.0160 | 3.9520 | 2.5029 | 0.0145 | 3.7172 | 0.0160 | 0.0151 | 0.47 | 0.47 |
| 142 | 1420 | 0.0040 | 0.0160 | 3.9680 | 2.5173 | 0.0145 | 3.7332 | 0.0160 | 0.0151 | 0.47 | 0.47 |
| 143 | 1430 | 0.0040 | 0.0160 | 3.9840 | 2.5318 | 0.0145 | 3.7491 | 0.0160 | 0.0151 | 0.47 | 0.47 |
| 144 | 1440 | 0.0040 | 0.0160 | 4.0000 | 2.5463 | 0.0145 | 3.7651 | 0.0160 | 0.0151 | 0.47 | 0.47 |

TotalRunoffVolume (cu. ft.)=

55974

| | | | | | | | | | | | |
|----|-----|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 28 | 280 | 0.0070 | 0.0280 | 0.5920 | 0.0375 | 0.0070 | 0.4022 | 0.0259 | 0.0145 | 0.63 | 0.60 |
| 29 | 290 | 0.0082 | 0.0328 | 0.6248 | 0.0465 | 0.0090 | 0.4328 | 0.0305 | 0.0176 | 0.77 | 0.65 |
| 30 | 300 | 0.0082 | 0.0328 | 0.6576 | 0.0562 | 0.0098 | 0.4634 | 0.0307 | 0.0181 | 0.79 | 0.72 |
| 31 | 310 | 0.0082 | 0.0328 | 0.6904 | 0.0668 | 0.0105 | 0.4943 | 0.0309 | 0.0187 | 0.81 | 0.76 |
| 32 | 320 | 0.0082 | 0.0328 | 0.7232 | 0.0781 | 0.0113 | 0.5253 | 0.0310 | 0.0191 | 0.84 | 0.79 |
| 33 | 330 | 0.0082 | 0.0328 | 0.7560 | 0.0900 | 0.0120 | 0.5564 | 0.0311 | 0.0196 | 0.86 | 0.82 |
| 34 | 340 | 0.0082 | 0.0328 | 0.7888 | 0.1026 | 0.0126 | 0.5876 | 0.0312 | 0.0200 | 0.87 | 0.84 |
| 35 | 350 | 0.0095 | 0.0380 | 0.8268 | 0.1180 | 0.0154 | 0.6240 | 0.0363 | 0.0237 | 1.04 | 0.90 |
| 36 | 360 | 0.0095 | 0.0380 | 0.8648 | 0.1342 | 0.0162 | 0.6604 | 0.0364 | 0.0243 | 1.06 | 0.97 |
| 37 | 370 | 0.0095 | 0.0380 | 0.9028 | 0.1511 | 0.0169 | 0.6970 | 0.0366 | 0.0248 | 1.08 | 1.02 |
| 38 | 380 | 0.0095 | 0.0380 | 0.9408 | 0.1687 | 0.0176 | 0.7336 | 0.0367 | 0.0252 | 1.10 | 1.06 |
| 39 | 390 | 0.0095 | 0.0380 | 0.9788 | 0.1871 | 0.0183 | 0.7704 | 0.0367 | 0.0257 | 1.12 | 1.08 |
| 40 | 400 | 0.0095 | 0.0380 | 1.0168 | 0.2060 | 0.0190 | 0.8072 | 0.0368 | 0.0261 | 1.14 | 1.11 |
| 41 | 410 | 0.0134 | 0.0536 | 1.0704 | 0.2338 | 0.0278 | 0.8593 | 0.0521 | 0.0375 | 1.64 | 1.25 |
| 42 | 420 | 0.0134 | 0.0536 | 1.1240 | 0.2627 | 0.0289 | 0.9115 | 0.0522 | 0.0382 | 1.67 | 1.45 |
| 43 | 430 | 0.0134 | 0.0536 | 1.1776 | 0.2927 | 0.0300 | 0.9638 | 0.0523 | 0.0389 | 1.70 | 1.57 |
| 44 | 440 | 0.0180 | 0.0720 | 1.2496 | 0.3346 | 0.0419 | 1.0342 | 0.0704 | 0.0533 | 2.32 | 1.79 |
| 45 | 450 | 0.0180 | 0.0720 | 1.3216 | 0.3781 | 0.0435 | 1.1048 | 0.0706 | 0.0543 | 2.37 | 2.07 |
| 46 | 460 | 0.0340 | 0.1360 | 1.4576 | 0.4643 | 0.0862 | 1.2384 | 0.1336 | 0.1052 | 4.59 | 2.77 |
| 47 | 470 | 0.0540 | 0.2160 | 1.6736 | 0.6106 | 0.1463 | 1.4514 | 0.2130 | 0.1729 | 7.54 | 4.42 |
| 48 | 480 | 0.0270 | 0.1080 | 1.7816 | 0.6874 | 0.0768 | 1.5581 | 0.1067 | 0.0888 | 3.87 | 5.06 |
| 49 | 490 | 0.0180 | 0.0720 | 1.8536 | 0.7398 | 0.0524 | 1.6294 | 0.0712 | 0.0599 | 2.61 | 4.15 |
| 50 | 500 | 0.0134 | 0.0536 | 1.9072 | 0.7794 | 0.0396 | 1.6824 | 0.0531 | 0.0450 | 1.96 | 3.22 |
| 51 | 510 | 0.0134 | 0.0536 | 1.9608 | 0.8194 | 0.0400 | 1.7355 | 0.0531 | 0.0453 | 1.97 | 2.59 |
| 52 | 520 | 0.0134 | 0.0536 | 2.0144 | 0.8599 | 0.0405 | 1.7886 | 0.0531 | 0.0455 | 1.99 | 2.29 |
| 53 | 530 | 0.0088 | 0.0352 | 2.0496 | 0.8867 | 0.0268 | 1.8235 | 0.0349 | 0.0300 | 1.31 | 1.97 |
| 54 | 540 | 0.0088 | 0.0352 | 2.0848 | 0.9137 | 0.0270 | 1.8584 | 0.0349 | 0.0301 | 1.32 | 1.64 |
| 55 | 550 | 0.0088 | 0.0352 | 2.1200 | 0.9409 | 0.0272 | 1.8933 | 0.0349 | 0.0303 | 1.32 | 1.48 |
| 56 | 560 | 0.0088 | 0.0352 | 2.1552 | 0.9682 | 0.0273 | 1.9283 | 0.0349 | 0.0304 | 1.32 | 1.40 |
| 57 | 570 | 0.0088 | 0.0352 | 2.1904 | 0.9957 | 0.0275 | 1.9632 | 0.0349 | 0.0305 | 1.33 | 1.36 |
| 58 | 580 | 0.0088 | 0.0352 | 2.2256 | 1.0233 | 0.0276 | 1.9981 | 0.0349 | 0.0305 | 1.33 | 1.35 |
| 59 | 590 | 0.0088 | 0.0352 | 2.2608 | 1.0511 | 0.0278 | 2.0331 | 0.0349 | 0.0306 | 1.34 | 1.34 |
| 60 | 600 | 0.0088 | 0.0352 | 2.2960 | 1.0790 | 0.0279 | 2.0680 | 0.0350 | 0.0307 | 1.34 | 1.34 |
| 61 | 610 | 0.0088 | 0.0352 | 2.3312 | 1.1071 | 0.0281 | 2.1030 | 0.0350 | 0.0308 | 1.34 | 1.34 |
| 62 | 620 | 0.0088 | 0.0352 | 2.3664 | 1.1353 | 0.0282 | 2.1380 | 0.0350 | 0.0309 | 1.35 | 1.34 |
| 63 | 630 | 0.0088 | 0.0352 | 2.4016 | 1.1636 | 0.0283 | 2.1729 | 0.0350 | 0.0310 | 1.35 | 1.35 |
| 64 | 640 | 0.0088 | 0.0352 | 2.4368 | 1.1921 | 0.0285 | 2.2079 | 0.0350 | 0.0311 | 1.36 | 1.35 |
| 65 | 650 | 0.0072 | 0.0288 | 2.4656 | 1.2154 | 0.0234 | 2.2365 | 0.0286 | 0.0255 | 1.11 | 1.29 |
| 66 | 660 | 0.0072 | 0.0288 | 2.4944 | 1.2389 | 0.0235 | 2.2652 | 0.0286 | 0.0255 | 1.11 | 1.20 |
| 67 | 670 | 0.0072 | 0.0288 | 2.5232 | 1.2624 | 0.0235 | 2.2938 | 0.0286 | 0.0256 | 1.12 | 1.16 |
| 68 | 680 | 0.0072 | 0.0288 | 2.5520 | 1.2861 | 0.0236 | 2.3224 | 0.0286 | 0.0256 | 1.12 | 1.14 |
| 69 | 690 | 0.0072 | 0.0288 | 2.5808 | 1.3098 | 0.0237 | 2.3511 | 0.0286 | 0.0257 | 1.12 | 1.13 |
| 70 | 700 | 0.0072 | 0.0288 | 2.6096 | 1.3335 | 0.0238 | 2.3797 | 0.0286 | 0.0257 | 1.12 | 1.12 |
| 71 | 710 | 0.0072 | 0.0288 | 2.6384 | 1.3574 | 0.0238 | 2.4084 | 0.0286 | 0.0258 | 1.12 | 1.12 |
| 72 | 720 | 0.0072 | 0.0288 | 2.6672 | 1.3813 | 0.0239 | 2.4370 | 0.0286 | 0.0258 | 1.13 | 1.12 |
| 73 | 730 | 0.0072 | 0.0288 | 2.6960 | 1.4053 | 0.0240 | 2.4657 | 0.0287 | 0.0259 | 1.13 | 1.13 |
| 74 | 740 | 0.0072 | 0.0288 | 2.7248 | 1.4294 | 0.0241 | 2.4943 | 0.0287 | 0.0259 | 1.13 | 1.13 |
| 75 | 750 | 0.0072 | 0.0288 | 2.7536 | 1.4535 | 0.0241 | 2.5230 | 0.0287 | 0.0259 | 1.13 | 1.13 |
| 76 | 760 | 0.0072 | 0.0288 | 2.7824 | 1.4777 | 0.0242 | 2.5516 | 0.0287 | 0.0260 | 1.13 | 1.13 |
| 77 | 770 | 0.0057 | 0.0228 | 2.8052 | 1.4969 | 0.0192 | 2.5743 | 0.0227 | 0.0206 | 0.90 | 1.07 |
| 78 | 780 | 0.0057 | 0.0228 | 2.8280 | 1.5161 | 0.0192 | 2.5970 | 0.0227 | 0.0206 | 0.90 | 0.99 |
| 79 | 790 | 0.0057 | 0.0228 | 2.8508 | 1.5354 | 0.0193 | 2.6197 | 0.0227 | 0.0206 | 0.90 | 0.94 |
| 80 | 800 | 0.0057 | 0.0228 | 2.8736 | 1.5547 | 0.0193 | 2.6424 | 0.0227 | 0.0207 | 0.90 | 0.92 |
| 81 | 810 | 0.0057 | 0.0228 | 2.8964 | 1.5741 | 0.0194 | 2.6651 | 0.0227 | 0.0207 | 0.90 | 0.91 |
| 82 | 820 | 0.0057 | 0.0228 | 2.9192 | 1.5935 | 0.0194 | 2.6878 | 0.0227 | 0.0207 | 0.90 | 0.91 |
| 83 | 830 | 0.0057 | 0.0228 | 2.9420 | 1.6129 | 0.0194 | 2.7105 | 0.0227 | 0.0207 | 0.90 | 0.91 |
| 84 | 840 | 0.0057 | 0.0228 | 2.9648 | 1.6324 | 0.0195 | 2.7332 | 0.0227 | 0.0208 | 0.91 | 0.91 |
| 85 | 850 | 0.0057 | 0.0228 | 2.9876 | 1.6519 | 0.0195 | 2.7559 | 0.0227 | 0.0208 | 0.91 | 0.91 |
| 86 | 860 | 0.0057 | 0.0228 | 3.0104 | 1.6714 | 0.0195 | 2.7786 | 0.0227 | 0.0208 | 0.91 | 0.91 |
| 87 | 870 | 0.0057 | 0.0228 | 3.0332 | 1.6910 | 0.0196 | 2.8013 | 0.0227 | 0.0208 | 0.91 | 0.91 |
| 88 | 880 | 0.0057 | 0.0228 | 3.0560 | 1.7106 | 0.0196 | 2.8240 | 0.0227 | 0.0208 | 0.91 | 0.91 |
| 89 | 890 | 0.0050 | 0.0200 | 3.0760 | 1.7278 | 0.0172 | 2.8440 | 0.0199 | 0.0183 | 0.80 | 0.88 |
| 90 | 900 | 0.0050 | 0.0200 | 3.0960 | 1.7450 | 0.0172 | 2.8639 | 0.0199 | 0.0183 | 0.80 | 0.84 |
| 91 | 910 | 0.0050 | 0.0200 | 3.1160 | 1.7623 | 0.0173 | 2.8838 | 0.0199 | 0.0183 | 0.80 | 0.82 |
| 92 | 920 | 0.0050 | 0.0200 | 3.1360 | 1.7796 | 0.0173 | 2.9037 | 0.0199 | 0.0183 | 0.80 | 0.81 |
| 93 | 930 | 0.0050 | 0.0200 | 3.1560 | 1.7969 | 0.0173 | 2.9236 | 0.0199 | 0.0184 | 0.80 | 0.81 |
| 94 | 940 | 0.0050 | 0.0200 | 3.1760 | 1.8143 | 0.0173 | 2.9436 | 0.0199 | 0.0184 | 0.80 | 0.80 |
| 95 | 950 | 0.0050 | 0.0200 | 3.1960 | 1.8316 | 0.0174 | 2.9635 | 0.0199 | 0.0184 | 0.80 | 0.80 |
| 96 | 960 | 0.0050 | 0.0200 | 3.2160 | 1.8490 | 0.0174 | 2.9834 | 0.0199 | 0.0184 | 0.80 | 0.80 |
| 97 | 970 | 0.0050 | 0.0200 | 3.2360 | 1.8664 | 0.0174 | 3.0034 | 0.0199 | 0.0184 | 0.80 | 0.80 |
| 98 | 980 | 0.0050 | 0.0200 | 3.2560 | 1.8839 | 0.0174 | 3.0233 | 0.0199 | 0.0184 | 0.80 | 0.80 |
| 99 | 990 | 0.0050 | 0.0200 | 3.2760 | 1.9013 | 0.0175 | 3.0432 | 0.0199 | 0.0184 | 0.80 | 0.80 |

| | | | | | | | | | | | |
|-----|------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| 100 | 1000 | 0.0050 | 0.0200 | 3.2960 | 1.9188 | 0.0175 | 3.0631 | 0.0199 | 0.0185 | 0.81 | 0.80 |
| 101 | 1010 | 0.0040 | 0.0160 | 3.3120 | 1.9328 | 0.0140 | 3.0791 | 0.0159 | 0.0148 | 0.64 | 0.76 |
| 102 | 1020 | 0.0040 | 0.0160 | 3.3280 | 1.9468 | 0.0140 | 3.0950 | 0.0159 | 0.0148 | 0.64 | 0.70 |
| 103 | 1030 | 0.0040 | 0.0160 | 3.3440 | 1.9609 | 0.0140 | 3.1110 | 0.0159 | 0.0148 | 0.65 | 0.67 |
| 104 | 1040 | 0.0040 | 0.0160 | 3.3600 | 1.9749 | 0.0140 | 3.1269 | 0.0159 | 0.0148 | 0.65 | 0.66 |
| 105 | 1050 | 0.0040 | 0.0160 | 3.3760 | 1.9890 | 0.0141 | 3.1429 | 0.0159 | 0.0148 | 0.65 | 0.65 |
| 106 | 1060 | 0.0040 | 0.0160 | 3.3920 | 2.0030 | 0.0141 | 3.1588 | 0.0159 | 0.0148 | 0.65 | 0.65 |
| 107 | 1070 | 0.0040 | 0.0160 | 3.4080 | 2.0171 | 0.0141 | 3.1748 | 0.0159 | 0.0148 | 0.65 | 0.65 |
| 108 | 1080 | 0.0040 | 0.0160 | 3.4240 | 2.0312 | 0.0141 | 3.1907 | 0.0159 | 0.0148 | 0.65 | 0.65 |
| 109 | 1090 | 0.0040 | 0.0160 | 3.4400 | 2.0453 | 0.0141 | 3.2067 | 0.0159 | 0.0148 | 0.65 | 0.65 |
| 110 | 1100 | 0.0040 | 0.0160 | 3.4560 | 2.0594 | 0.0141 | 3.2226 | 0.0159 | 0.0149 | 0.65 | 0.65 |
| 111 | 1110 | 0.0040 | 0.0160 | 3.4720 | 2.0736 | 0.0141 | 3.2386 | 0.0159 | 0.0149 | 0.65 | 0.65 |
| 112 | 1120 | 0.0040 | 0.0160 | 3.4880 | 2.0877 | 0.0141 | 3.2545 | 0.0159 | 0.0149 | 0.65 | 0.65 |
| 113 | 1130 | 0.0040 | 0.0160 | 3.5040 | 2.1019 | 0.0142 | 3.2705 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 114 | 1140 | 0.0040 | 0.0160 | 3.5200 | 2.1161 | 0.0142 | 3.2864 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 115 | 1150 | 0.0040 | 0.0160 | 3.5360 | 2.1302 | 0.0142 | 3.3024 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 116 | 1160 | 0.0040 | 0.0160 | 3.5520 | 2.1444 | 0.0142 | 3.3183 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 117 | 1170 | 0.0040 | 0.0160 | 3.5680 | 2.1586 | 0.0142 | 3.3343 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 118 | 1180 | 0.0040 | 0.0160 | 3.5840 | 2.1729 | 0.0142 | 3.3502 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 119 | 1190 | 0.0040 | 0.0160 | 3.6000 | 2.1871 | 0.0142 | 3.3662 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 120 | 1200 | 0.0040 | 0.0160 | 3.6160 | 2.2013 | 0.0142 | 3.3821 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 121 | 1210 | 0.0040 | 0.0160 | 3.6320 | 2.2156 | 0.0143 | 3.3981 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 122 | 1220 | 0.0040 | 0.0160 | 3.6480 | 2.2298 | 0.0143 | 3.4140 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 123 | 1230 | 0.0040 | 0.0160 | 3.6640 | 2.2441 | 0.0143 | 3.4300 | 0.0160 | 0.0149 | 0.65 | 0.65 |
| 124 | 1240 | 0.0040 | 0.0160 | 3.6800 | 2.2584 | 0.0143 | 3.4459 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 125 | 1250 | 0.0040 | 0.0160 | 3.6960 | 2.2727 | 0.0143 | 3.4619 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 126 | 1260 | 0.0040 | 0.0160 | 3.7120 | 2.2870 | 0.0143 | 3.4778 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 127 | 1270 | 0.0040 | 0.0160 | 3.7280 | 2.3013 | 0.0143 | 3.4938 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 128 | 1280 | 0.0040 | 0.0160 | 3.7440 | 2.3157 | 0.0143 | 3.5098 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 129 | 1290 | 0.0040 | 0.0160 | 3.7600 | 2.3300 | 0.0143 | 3.5257 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 130 | 1300 | 0.0040 | 0.0160 | 3.7760 | 2.3444 | 0.0144 | 3.5417 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 131 | 1310 | 0.0040 | 0.0160 | 3.7920 | 2.3587 | 0.0144 | 3.5576 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 132 | 1320 | 0.0040 | 0.0160 | 3.8080 | 2.3731 | 0.0144 | 3.5736 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 133 | 1330 | 0.0040 | 0.0160 | 3.8240 | 2.3875 | 0.0144 | 3.5895 | 0.0160 | 0.0150 | 0.65 | 0.65 |
| 134 | 1340 | 0.0040 | 0.0160 | 3.8400 | 2.4019 | 0.0144 | 3.6055 | 0.0160 | 0.0150 | 0.66 | 0.65 |
| 135 | 1350 | 0.0040 | 0.0160 | 3.8560 | 2.4163 | 0.0144 | 3.6215 | 0.0160 | 0.0150 | 0.66 | 0.65 |
| 136 | 1360 | 0.0040 | 0.0160 | 3.8720 | 2.4307 | 0.0144 | 3.6374 | 0.0160 | 0.0150 | 0.66 | 0.66 |
| 137 | 1370 | 0.0040 | 0.0160 | 3.8880 | 2.4451 | 0.0144 | 3.6534 | 0.0160 | 0.0150 | 0.66 | 0.66 |
| 138 | 1380 | 0.0040 | 0.0160 | 3.9040 | 2.4595 | 0.0144 | 3.6693 | 0.0160 | 0.0150 | 0.66 | 0.66 |
| 139 | 1390 | 0.0040 | 0.0160 | 3.9200 | 2.4740 | 0.0144 | 3.6853 | 0.0160 | 0.0150 | 0.66 | 0.66 |
| 140 | 1400 | 0.0040 | 0.0160 | 3.9360 | 2.4884 | 0.0145 | 3.7013 | 0.0160 | 0.0151 | 0.66 | 0.66 |
| 141 | 1410 | 0.0040 | 0.0160 | 3.9520 | 2.5029 | 0.0145 | 3.7172 | 0.0160 | 0.0151 | 0.66 | 0.66 |
| 142 | 1420 | 0.0040 | 0.0160 | 3.9680 | 2.5173 | 0.0145 | 3.7332 | 0.0160 | 0.0151 | 0.66 | 0.66 |
| 143 | 1430 | 0.0040 | 0.0160 | 3.9840 | 2.5318 | 0.0145 | 3.7491 | 0.0160 | 0.0151 | 0.66 | 0.66 |
| 144 | 1440 | 0.0040 | 0.0160 | 4.0000 | 2.5463 | 0.0145 | 3.7651 | 0.0160 | 0.0151 | 0.66 | 0.66 |

TotalRunoffVolume (cu. ft.)=

78793

Downstream Pipe Analysis
314 Pleasant Avenue

| Beginning Location | Ending Location | Pipe Dia. | Length | Slope, % |
|---|---|-----------|--------|----------|
| 1 Pleasant Ave & Caufield St, Stru. ID 31443 | Dewey Street & Molalla Ave, Stru. ID 34721 | 10" | 208 | 6 |
| 2 Dewey Street & Molalla Ave, Stru. ID 34721 | Molalla Ave & Pearl St, Stru. ID 34720 | 12" | 173 | 5 |
| 3 Molalla Ave & Pearl St, Stru. ID 34720 | Molalla Ave & Roosevelt St, Stru. ID 34719 | 18" | 240 | 4 |
| 4 Molalla Ave & Roosevelt St, Stru. ID 34719 | Roosevelt St & (W) Warren St, Stru. ID 36748 | 18" | 345 | 3 |
| 5 Roosevelt St & (W) Warren St, Stru. ID 36748 | East of Warren on Roosevelt, Stru. ID 33570 | 6" | 198 | 2 |
| 6 East of Warren on Roosevelt, Stru. ID 33570 | East to alley on Roosevelt St, Struc ID 36746 | 6" | 146 | 5.5 |
| 7 East to alley on Roosevelt St, Struc ID 36746 | Roosevelt & Euria, Structure ID 36745 | 6" | 244 | 7.3 |
| 8 Roosevelt & Euria, Structure ID 36745 | Outfall 39415 | 18" | 532 | 9 |

| Pipe Capacity, CFS | Basin Flow, CFS | Pipe Capacity Check |
|-----------------------|--------------------|---------------------------|
| 5.4 | 0.8 | yes |
| 8 | 2.17 | yes |
| 21 | 3.6 | yes |
| 18 | 5.06 | yes |
| 0.8 | 5.06 | no |
| 1.3 | 5.68 | no |
| 1.5 | 8.04 | no |
| 31.5 | 8.04 | yes |



| | |
|-----------------------------------|------------------------|
| Clackamas County Official Records | 2016-027679 |
| Sherry Hall, County Clerk | 04/29/2016 09:46:22 AM |
| D-D | Cnt=1 Stn=6 KARLYN |
| \$15.00 \$16.00 \$10.00 \$22.00 | \$63.00 |

Commercial Branch
File No. 32F0005147

After recording return to and send future tax statements to:
Pleasant Street Housing LLC
c/o Northwest Housing Alternatives
2316 SE Willard Street
Milwaukie, OR 97222

STATUTORY WARRANTY DEED

Clackamas Soil and Water Conservation District, who took title as Clackamas Soil & Water Conservation District, Grantor, conveys and warrants to **Pleasant Street Housing LLC**, an Oregon limited liability company Grantee, the following described real property free of encumbrances except as specifically set forth herein: SEE EXHIBIT A ATTACHED HERETO
Tax Account No. 00591648

This property is free of encumbrances, EXCEPT as noted on Exhibit A hereto.
The true consideration for this conveyance is \$375,000.00

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated 27 day of April, 2016

Clackamas Soil and Water Conservation District

Jeffrey J. Becker
BY Jeffrey J. Becker
ITS
Chair

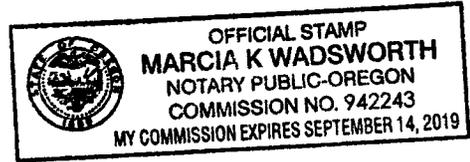
LAWYERS TITLE INS. CORP. 32F0005147
Commercial Services

STATE OF OREGON

COUNTY OF Clackamas

The foregoing instrument was acknowledged before me this 27th day of April, 2016 by Jeffrey James Becker as the Chairman of Clackamas Soil and Water Conservation District on its behalf.

Marcia Wadsworth
Notary Public State of Oregon
My commission expires: 09/14/2019



Order No. 32F0005147

Exhibit "A" with Exceptions

Part of the Wm. Holmes Donation Land Claim in Section 32, Township 2 South, Range 2 East of the Willamette Meridian, in the City of Oregon City, County of Clackamas and State of Oregon, described as follows:

Beginning at a point 10.00 feet North and 208.8 feet West of the Northeast corner of Pleasant Place, according to the duly recorded plat thereof, now within the city limits of Oregon City, Oregon, which beginning point is the Southeast corner of the tract of land conveyed to Martin Van Donge, by Deed recorded November 24, 1908 in Book 106 page 406, Records of Clackamas County, Oregon; thence North along the East line of the said Van Donge land 157.80 feet, more or less, to the South line of DARLING'S ADDITION TO OREGON CITY, OREGON; thence East along the South line of DARLING'S ADDITION aforesaid to an iron pipe on the West side of Molalla Avenue; thence Southwesterly along the Westerly side of the Old Territorial Road 2.75 chains, more or less, to the intersection with the Northerly line of Caufield Street; thence Westerly along said Northerly line a distance of 217 feet, more or less, to the point of beginning.

Subject to:

- 6. The subject property is under public, charitable, fraternal, or religious organization ownership and is exempt from ad valorem taxation. Any change in ownership prior to delivery of the assessment roll may result in tax liability.
Tax Account No. : 00591648; Levy Code: 062-002; Map 22E32CC-04700**
- 7. City Liens, if any, in favor of the City of Oregon City. An inquiry has been directed to the City Clerk concerning the status of said liens and a report will follow if such liens are found.**
- 8. Rights of the public to any portion of the Land lying within the area commonly known as streets, roads and highways.**
- 9. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Entitled : Easement, including the terms and provisions thereof
In favor of : Oregon City
Purpose : Utilities
Recording Date : March 30, 1972
Recording No. : 72-008501**
- 10. Any irregularities, reservations, easements or other matters in the proceedings occasioning the abandonment or vacation of the street/road shown below:
Name : Portion of Main Street (Pleasant Ave)
Recorded : July 1, 1979
Recorders No. : 79-028946**
- 11. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Entitled : Easement, including the terms and provisions thereof
In favor of : Pacific Northwest Bell Telephone Company
Purpose : Underground communication lines and above ground cabinet**

Recording Date : **November 17, 1986**
Recording No. : **86-045874**

12. Declaration of Covenants and Restrictions, including the terms and provisions thereof Agreement

Executed by : **Clackamas Soil and Water Conservation District, an Oregon special service district**

Recording Date : **December 18, 2015**

Recording No. : **2015-083575**