EXHIBIT A

CITY OF SANDY, OREGON

LAND USE APPLICATION FORM

(Please print or type the information below)

Planning Department
39250 Pioneer Blvd.
Sandy OR 97055
503-668-4886

Name of Project Sandy Health Clinic

Location or Address 39831 Hwy 26, Sandy, OR 97055

Map & Tax Lot Number T 2S, R 4E, Section 13; Tax Lot(s) 24E13AD01001

Plan Designation C-1 Zoning Designation Commercial Acres 0.47

Request:

Request for a Type II Design Review with (2) Type II Adjustments for a new health clinic. Project will consist of demolition of existing one-story building, construction of a new health clinic building, and associated site work.

I am the (check one) ☑ owner ☐ lessee of the property listed above and the statements and information contained herein are in all respects true, complete and correct to the best of my knowledge and belief.

Applicant Steve Kelly	Owner
Address 2051 Kaen Road	Address
City/State/Zip Oregon City, OR 97045	City/State/Zip
Phone 503-655-8591	Phone
Email stevekel@clackamas.us	Email
Signature Steve Kelly	Signature

If signed by Agent, owner's written authorization must be attached.

File No.	Date	Rec. No.	Fee $
Type of Review (circle one): Type I Type II Type III Type IV			

CITY OF SANDY, OREGON

SUPPLEMENTAL APPLICATION
DESIGN REVIEW / CONDITIONAL USE PERMIT

(Please print or type the information below)

Planning Department
39250 Pioneer Blvd.
Sandy OR 97055
503-668-4886

Name of Project Sandy Health Clinic

Location or Address 39831 Hwy 26, Sandy, OR 97055

Type of Business Health clinic with primary care, behavioral health, and dental services

Products Manufactured none

Hours of Operation Monday through Friday, 8am-6pm

No. of Employees per Shift staff of 10-12 individuals

Total Site Size 0.47 acre Total Bldg. Square Footage 9,459 SF

Project Summary

Demolition of existing 6,700 sf, one-story building, construction of a health clinic building and associated site work. Health clinic will provide primary care, behavioral health, and dental services. The clinic will be 9,381 GSF and one-story.

USES WITHIN BUILDING (SQUARE FOOTAGE)

Offices: 3,777 SF Shop: _____ Storage: 431 SF

Kitchen: _____ Laundry: _____ Rest Rooms: 283 SF

Other: 4,890 SF

OCCUPANCY & CONSTRUCTION TYPE

(List all occupancies by square footage)

UBC Occupancy Rating: B

UBC Type of Construction: V-B

Will fire sprinklers be installed in the building? ☑ Yes ☐ No

SITE ANALYSIS DATA		
Type	**Lot Coverage (Square Feet)**	**Lot Coverage (Percent of Site)**
Buildings	9,381	46%
Parking Lots and Driveways	5,393	27%
Private Walks & Pedestrian Ways	2,210	11%
Landscaping – Improved Area	2,999	15%
Landscaping – Natural areas	0	0%
Storm Water Detention, Retention & Bioswale Areas	288	1%
Other (describe)		
Other (describe)		

CONSTRUCTION MATERIAL DETAILS

Color & Type of Siding Materials: horizontal redwood fiberboard; vertical weathered copper fiberboard

Color & Type of Trim Materials: Sturgis gray painted wood trim; Ebony split face CMU base material

Color & Type of Roof Materials: Gray standing seam metal roof

Color & Type of Exterior Doors: Sturgis gray painted hollow metal doors

Color & Type of Exterior Stairs, Balconies & Railings: Strugis gray painted exterior railings

Trash & Recycling Enclosure (describe type, colors, height):

Ebony color split face CMU enclosure; 10 feet wide x 8 feet deep x 11 feet 5 inches tall

Type of Lighting Fixtures (describe):

Pole: D-Series LED, 25 feet tall, charcoal color (S1 fixture) (match pole fixtures at police station)

Wall-Mounted: SY302 Series LED wall up/down light (S3 fixture)

Fencing (height and type): 8 feet tall, vertical stained wood fencing

Mailboxes (location and type): Mail is received internally at the reception area

Private Pedestrian Walkways (type of surfacing): Concrete

Recreational Amenities (describe type and location):

No recreational amenities provided other than outdoor seating.

Other Site Elements (describe):

Boulders, Powder-coated aluminum planters, Heavy timber benches, Monument sign, Steel bike rack

TYPE OF IRRIGATION SYSTEM

Describe type and brand of irrigation system to be installed. Formal irrigation plans must be submitted with construction plans.

Basis of design is Rain Bird Sales, Inc. electric solenoid controlled underground irrigation system, with low point self drain

PROPOSED SOIL AMENDMENTS

Describe soil conditions and proposed plans for soil treatment & amendments:

Geotechnical engineer will test the native soils once site clearing has been completed, to review the construction parameters.

ADDITIONAL LANDSCAPING INFORMATION

The shrubs used for parking screen are evergreen and will grow into a hedge (17.92.50.G). Parking lot/new street trees were selected for hardiness and fall color. Per section 17.92.50.A, the plans exceed 75% of planted required landscaping areas. Sizes indicated on following page meet or exceed caliper, gallon, or height requirements. Vines indicated are 1 gallon size but are not used as a physical barrier requirement. Groundcovers selected are either flowering or evergreen and will fill in in under the 3 yrs required (17.92.50.I). Other plant selections were made based on regional-appropriateness, owner maintenance, visual interest, and bloom/scent for staff/visitors.

LANDSCAPE MATERIALS				
Quantity	Type – Include botanical and common names. Plants must be keyed to landscape plan.	Size	Height	Spacing
9	Nyssa Sylvatica 'Hayman's Red' / Red Rage Tupelo	2" cal		
18	Ilex Crenata 'Steeds' / Upright Holly	7 gal	6 ft	
10	Osmanthus Xfortunei 'San Jose' / Sweet Tea Olive	3 gal		
66	Ophiopogon Planiscapus 'Nigrescens' / Mondo Grass	3 gal		
28	Delphinium Elatum / Magic Fountain Mix	3 gal		
55	Carex Morrowii 'Aurea-Variegata' / Varigated Japanese Sedge	3 gal		
2	Clematis Armandii 'Apple Blossom' / White Evergreen Clematis	1 gal		
110 SF	Carex Obnupta / Slough Sedge	1 gal		12"
110 SF	Juncus Effusus / Soft Rush	1 gal		12"
2600 SF	Potentilla N. 'Nana' / Cinquefoil	1 gal		18"
1500 SF	Euonymus 'Coloratus' / Purple Winter Creeper	1 gal		18"

EXHIBIT B

Ankrom Moisan

Sandy Health Clinic
39831 Highway 26
Sandy, OR 97055

Type II Design Review Project Narrative

February 12, 2020

Table of Contents

Application forms

Attached separately
Land Use Application Form, Supplemental Application Form, and fee

Design Review Drawings

Attached separately

Contacts

Developer	Clackamas County 2051 Kaen Road Oregon City, OR 97045	Steve Kelly stevekel@clackamas.us 503.655.8591
Architect	Ankrom Moisan Architects 38 NW Davis Street Suite 300 Portland, OR 97209 503.245.7100	Lori Kellow, Project Manager lorik@ankrommoisan.com 503.245-7100 Scott Soukup, Project Architect scotts@ankrommoisan.com 503.245-7100
City Design Review	Development Services Planning Division City of Sandy 39250 Pioneer Blvd Sandy, OR 97055	Kelly O'Neill Jr., Planning & Building Dir. koneill@cityofsandy.com 503.489.2163 Emily Meharg, Associate Planner emeharg@cityofsandy.com 503.783.2585

Land Use / Design Reviews

Application Requested	Type II Design Review (2) Type II Adjustments, please see Sections B.3 and E.2 in the Building Design Standards, below. Sections are highlighted in red for clarity.
Pre-Application Conference	Conference held December 18th, 2019
Design Review Application	Submittal: Feb 12, 2020

Site Description

Site Address:	Sandy Health Clinic 39831 HWY 26 Sandy, OR 97055
Jurisdiction:	Sandy, OR / Clackamas County
Map & Tax Lot Numbers:	T2S, R4E, Section 13; Tax Lot 24E13AD01001
Parcel Number:	01830433
Total Site Area:	0.47 acres (20,473sf)
Zoning:	C-1 (Central Business District)
Current title Owner:	Clackamas County Health Centers 2051 Kaen Road, 3rd Floor Oregon City, OR 97045

Street classification

Hwy 26 / Mt. Hood Highway	Major Arterial roadway
SE Ten Eyck Road	Minor Arterial roadway
Pleasant Street	Local Street

Project Description

Overview

The project site is located between Hwy 26 / Mt. Hood Highway and Pleasant Street, at the corner of SE Ten Eyck Road. The site is generally flat, with an approximate 2 ½-foot slope rising from the north to south at the sidewalk along Hwy 26, and an approximate 2 ¾-foot slope rising from the north to the south at the sidewalk along Pleasant Street. The parcel currently has a vacant building that was previously a distribution center, and an auto dealership. Zoning is C-1. The building height limit is 45 feet.

The proposed construction is for a one story Type VB, sprinklered health clinic, with primary care, behavioral health, and dental services. The reception / waiting area will be accessed from the parking lot, between the Sandy police station and the new building, at the northeast corner of the building. There will be other access points facing Hwy 26 and Pleasant Street. The Sandy clinic will operate Monday through Friday with hours of 8am-6pm. For the proposed development, 6 of the required spaces of the off-street parking will be shared on site with the Sandy Police Station. A parking agreement with Immanuel Lutheran Church, northeast of the property, will accommodate all staff parking and overflow visitor parking.

Total gross floor area: 9,381 gsf

Parking stalls: 22 stalls including 1 accessible van space and 6 compact spaces.

Bike storage: 5% or 2 whichever is greater
2 total (2 ½ feet x 6 feet x 7 feet vertical) for commercial use

Project Code Summary

Occupancy: B - Business

Construction type summary: One-story
Type VB
NFPA 13 Sprinkler System throughout.

Max code height: 60 ft maximum
Building is approximately 28 ft high

Zoning Requirements Narrative

Zoning: C-1 (Central Business District)

Land Use Review process: Preapplication Conference (December 18th, 2019)
Type II Design Review procedure

17.42.00: This district is intended to provide the community with a mix of retail, personal services, offices, and residential needs of the community and its trade area in the city's traditional commercial core. This district is not intended for intensive automobile or industrial uses. This district is intended to provide the principal focus for civil and social functions within the community.

This commercial district is intended for civic uses and to provide all basic services and amenities required to keep the downtown the vital center of our community. While the district does not permit new low density building types, it is not intended to preclude dwelling units in buildings containing commercial activities. All development and uses shall be consistent with the intent of the district, as well as compatible with the space, access and exposure constraints and opportunities of the central city.

Zoning Requirements Narrative

Please see attached drawings for additional clarification regarding compliance.

Topic	Requirement	Chapter	Compliance
Permitted Uses	Commercial in buildings with up to 30,000 sf of gross floor area and without drive-through facilities	17.42.10.B.2.g	Medical facilities permitted outright.
Development Standards	Lot Area: No minimum Lot Dimensions: No minimum Setbacks: No minimum; maximum 10 ft Lot Coverage: No maximum Landscaping: 10% minimum Structure Height: 45 ft maximum	17.42.30.A	Lot Area: Comply Lot Dimensions: Comply Setbacks: Comply Lot Coverage: Comply Landscaping: 14% provided Structure Height: 28 ft
Special Setbacks	Property abutting a more restrictive zoning district shall have the same yard setback as required by the abutting district. Pleasant Street: Across street from more restrictive R-2., requiring 10 ft minimum setback and additional 10 ft added for each 10 ft increment in building height over 35 ft.	17.42.30.B	10 ft minimum setback provided from north property line.
Landscaping Preservation	Significant plant and tree specimens should be preserved to the greatest extent practicable.	17.92.10.C	Significant trees are currently at the sidewalks along Hwy 26 and Pleasant Street and will be preserved in the design. Trees will be preserved during construction by construction fences.
Planter Sizing	Planter and boundary areas used for required plantings shall have a minimum diameter of 5 feet.	17.92.10.D	Planted areas are 5 feet wide, minimum.
Planting Vision Clearance	Plantings or other screening is not permitted within vision clearance areas.	17.92.10.E	Tall plantings and screens are kept back from the street intersections.
Pedestrian Amenities	Up to 35% of the total required landscaped area may be developed into pedestrian amenities.	17.92.10.F	Area developed for pedestrian amenities are the civic space near the main entry and the internal courtyard / break area. Spaces are less than 35% total landscaped area.
Landscaping Extent	All areas not occupied by paved roadways, walkways, patios, or buildings shall be landscaped.	17.92.10.K	Complies.

Topic	Requirement	Chapter	Compliance
Minimum Landscaping and Screening Improvements	10% required for C-1 zone (2,047 SF)	17.92.20	15% (2,999 SF) provided.
Required Tree Plantings	1 medium canopy street tree at 30 feet on center. 1 medium parking lot tree per 8 cars (8 / 21 total cars = 2.6 trees)	17.92.30	Compliant street trees and parking lot trees provided. See Landscape Plan L1.01.
Irrigation	Landscaping to be irrigated to sustain viable plant life	17.92.40	Electric solenoid controlled underground irrigation system, with low point self drain will be used.
Types and Sizes of Plant Materials	A. 75% landscape area to be combination of trees, shrubs, or evergreen ground cover. B. Use native plant materials acclimatized to the Pacific Northwest. C. Trees with a mature spread of crown greater than 15 feet should have trunks with maintained clear condition of over 5 feet of clear wood. D. Deciduous trees to be balled and burlapped, minimum of 7 feet in overall height or 1 ½" in caliper 6" above the ground. E. Coniferous trees to be minimum of 5 feet above the ground at time of planting. F. Shrubs to be a minimum of 1 gal in size or 2 feet in height. G. Hedges to form a continuous, solid visual screen within 2 years after planting. H. Vines for screening to be minimum of 1 gal. or 30" in height. I. Groundcover to be fully rooted and well branched or leafed and provide complete coverage in one year. J. Turf areas to be species normally grown as permanent lawns in western Oregon. K. Landscaped areas may include architectural features or artificial ground cover not to exceed 25% of the required landscaped area.	17.92.50	A. Complies B. Complies C. Complies D. Complies E. Complies F. Complies G. No hedges in design. H. Vines not used for site screening. I. Complies J. No turf in design. K. Design includes benches, boulders, aluminum planters, wood fences, dark brown mulch, stone pavers, and a monument sign that do not exceed 25% of the landscaped area.
Landscaping Between Public Right-of-Way and Property Lines	Except for portions allowed for parking, loading, or traffic maneuvering, a required setback area abutting a public street and open area between property and roadway in the public street to be landscaped.	17.92.70	Area between property line and public streets are landscaped except where there is a sidewalk or driveway.

Topic	Requirement	Chapter	Compliance
Screening	A. Height and Opacity B. Chain Link Fencing C. Height Measurement D. Berms	17.92.90	A. Wood fencing is 8'-0" tall and at least 80% opaque. B. Not in project. C. Screen height is measured from the finished grade of screened improvements. D. Not in project.
Screening of Service Facilities	Equipment and trash and recycling areas to be screened.	17.92.100	The site transformer and condensing unit are screened, and the trash enclosure is CMU to match the building base material.
Off Street Parking Requirements	For medical office / clinic use: **<u>Number of car parking spaces</u>**: 1 per 300 sf, plus 1 per 2 employees **<u>Number of bike parking spaces</u>**: 5% or 2 whichever is greater	17.98.20	**<u>Car parking spaces</u>**: 8,345 GSF / 300 = 27.81 stalls 25% reduction for C-1 zone = *20.86 (21) required stalls.* 6 of these required stalls are shared with the police station. 12 staff, *6 staff parking stalls* at Immanuel Lutheran Church parking lot via agreement with church. **<u>Bike parking spaces:</u>** 27 stalls x 5% = 1.4 *2 required bike spaces area provided near the main entry.*
Accessible (ADA) Parking Stalls	1 accessible parking space required for parking facility with 1 to 25 stalls.	2010 ADA Standards Table 208.2	1 van accessible parking stall provided

Topic	Requirement	Chapter	Compliance
Parking Lot Design and Size	No more than 35% of parking stalls shall be compact spaces. 90 degree parking aisle width: 20 feet single sided one-way, 25 feet double sided two-way	17.98.60	6 compact spaces / 22 total spaces = 27%, therefore ok All parking it 90 degree. 25 foot aisle provided off of Pleasant Street. 17'-3" aisle provided at south end of site, near compact parking stalls. This is larger than the approximately 14 foot aisle that currently exists at the south end of the 6 shared stalls. If a stall needs to be removed to provide a 20 foot space, there will be one parking stall fewer than required. Because these stalls are compact, 17'-3" will be adequate for cars to back up into the aisle.
On-Site Circulation	Groups of more than 3 parking spaces shall be provided with adequate aisles or turnaround areas so that all vehicles enter the right-of-way in a forward manner.	17.98.70	Complies
Driveway	Driveway to an off-street parking area shall be a minimum of 20 feet for a two-way drive for the first 20 feet of the driveway. Shall not traverse a slope in excess of 15% at any point along the driveway length.	17.98.100	Complies
Landscaping and Screening	Between, and at the end of each parking bay, there shall be planters that have a minimum width of 5 feet and a minimum length of 17 feet for a single depth bay and 34 feet for a double bay. Each planter shall contain one major structural tree and ground cover.	17.98.120.D	Complies. Please see Site Plan and Landscape Plan
Paving	Parking areas, driveways, aisles, and turnarounds shall be paved with concrete, asphalt, or comparable surfacing, constructed to city standards for off-street vehicle areas.	17.98.130.A	Permeable asphalt will be used for the parking lot surface.

Topic	Requirement	Chapter	Compliance
Drainage	Provide adequate provisions for collection of drainage waters to eliminate sheet flow of water onto sidewalks, public rights-of-way, and abutting private property.	17.98.140	Permeable asphalt will be used for the parking lot surface.
Lighting	Artificial lighting to be provided at parking.	17.98.150	See sheet E1.02 – Electrical Site Lighting Plan.
Bicycle Parking Facilities	A. Location B. Bicycle Parking Space Dimensions C. Security D. Signing	17.98.160	A. Bike parking is located next to the primary building entrance, visible from the reception/waiting room, separated from the vehicular parking area, with direct access to the public right-of-way. B. Each of the (2) bike parking spaces are 2 ½ feet by 6 feet, covered with a vertical clearance of 12 feet. C. Bikes can be locked to a provided bike rack with both cable and U-shaped locks, permitting the frame and one wheel to be secured. Bike rack is anchored to the ground and sheltered under a roof overhang. D. Bike parking is visible from the entry and public right-of-way, so no signage is needed.
Off-Street Loading Facilities	A. minimum area of loading zone to be 250 sf. B. Loading berth to be 10 feet by 35 feet minimum with a height clearance of 14 feet. C. Loading areas to be screened from public view with the same screening as parking lots. F. Off-street loading facilities not required when buildings abut a public alley in a way that loading can be conducted from the alley in accordance with applicable traffic and parking ordinances.	17.98.190	F. Loading will be conducted from clinic side of parking lot. Loading will be conducted off clinic hours. Deliveries anticipated at this clinic will be smaller in quantity due to requirements of the building program.

Building Design Standards Narrative

SANDY DESIGN STANDARDS (17.90.110)	PROPOSAL RESPONSE
A Site Layout and Vehicle Access	
A.1. Lot shall abut or have cross access to a dedicated public street	• The lot has access to Hwy 26/Mt Hood Hwy and Pleasant Street
A.3. Off street parking located to the rear or side of buildings, with no portion of the lot within required setbacks or within 10-feet of the public right-of-way. Driveways for ingress or egress shall be limited to one per 150 ft.	• Parking lot is an extension of the police station parking lot and sited between the two buildings. All portions of the lot are within required setbacks.
A.4. Adjacent parking lots shall be connected to one another when the City determines it is practicable to do so.	• Parking lot is an extension of the police station parking lot and sited between the two buildings.
A.5. Urban design details shall be used to calm traffic and protect pedestrians in parking areas.	• Sidewalk crossing the driveway will be a different paving material than the parking lot.
A.8. Raised walkways or painted crossings from public street sidewalk to building entrance(s).	• There is a different paving material used from the sidewalk to the main building entrance.
A.12. Free-standing buildings shall be connected to one another with a seamless pedestrian network that provides access to building entrances and civic spaces.	• The sidewalks along Pleasant Street and Hwy 26 connect to the health clinic and police station entrances.
B Building Facades, Materials, and Colors	
B.1. Articulation	• 1) All elevations facing public streets are broken into 30 feet or shorter. Each plane projects or recedes 24 inches from the adjacent plane. • 2) Wall planes incorporate visually contrasting and complimentary trim.
B.2. Pedestrian Shelters	• a) Shelter over building's main entry is provided by roof projecting over entry. Metal canopies are provided over the other entries. • b) Canopies, roof overhangs, and alcoves are provided. • c) Overhang over entry projects 5 feet to protect pedestrians. • d) Shelter over main entry is extension of roof with same roof slope.
B.3. Building Materials	• a) Building is architecturally unified by palette of earth tone material colors, continuous gabled roof form, and repeated dormer/pop-out language.

	• b) Building has a 36-inch base of Ebony colored, split-faced concrete block veneer with running bond pattern. Type II adjustment, based on notes from pre-application meeting: Percentage of gaps in base material is 18%. Please see Base Material Diagram on Sheet G1.30. • c) Foundation is sheathed with the split-faced concrete block veneer. • d) Siding above veneer base consists of horizontal wood textured fiberboard sizing (redwood color), vertical ribbed fiberboard panels (1 5/8" ribs and weathered copper color) • e) Building elevations facing a public right-of-way or civic space incorporate the following features: - Wood door and window trim and fascia - Metal canopies - Metal brackets – these are cosmetic metal applied to the ends of the extruded framed walls, labeled "break metal trim" on the exterior elevations • f) Materials required on elevations visible from abutting public streets turn the corner and are consistent around the full perimeter of the building.
B.4. Colors	• a) Color palette is warm earth tones and wood look. Material colors are noted in B.3. section above. Exterior paint for trim and fascia is Miller Historic color H119 Sturgis Gray • b) Black color is only used for metal canopies • c) No day-glow or reflective colors are used.
C Roof Pitch, Materials, and Parapets	
C.1. Gabled Roof Pitch	• Primary roof forms are 6:12, except at the east roof. East roof is 4 feet wider than the rest of the roofs, so the pitch is 5 5/8:12 to allow the ridges to be at the same level. 6:12 pitch is only required for new buildings with a span of 50 feet or less. Portion of roofing at 5 5/8:12 is 62'-8" wide due to building program needs. Secondary roof forms are 4 1/2:12.
C.2. Secondary Roof Forms	• Secondary roof forms comprise of 13% of roof area. (1,514 secondary roof area, 11,624 total roof area)
C.3. Gable	• Gable ends of the roof face Hwy 26, the intersection of Hwy 26 and SE Ten Eyck Road, and the parking lot. The gable facing the parking lot, and part of the main entrance, is visible from Pleasant Street.
C.4. Secondary Roof Form Quantities	• (2) secondary roof forms on the 76'-7" length of roof facing Ten Eyck. (2) secondary roof forms on the 114'-11" length of roof facing Pleasant Street.
C.5. Roof Materials	• Roofing is a standing seam metal roof, color is gray.
C.6. Roof and Wall Mounted Equipment	• There is no rooftop equipment other than an approximately 12" tubular skylight centered on the roof. Mechanical and electrical equipment is internal in dedicated rooms and in the attic space.

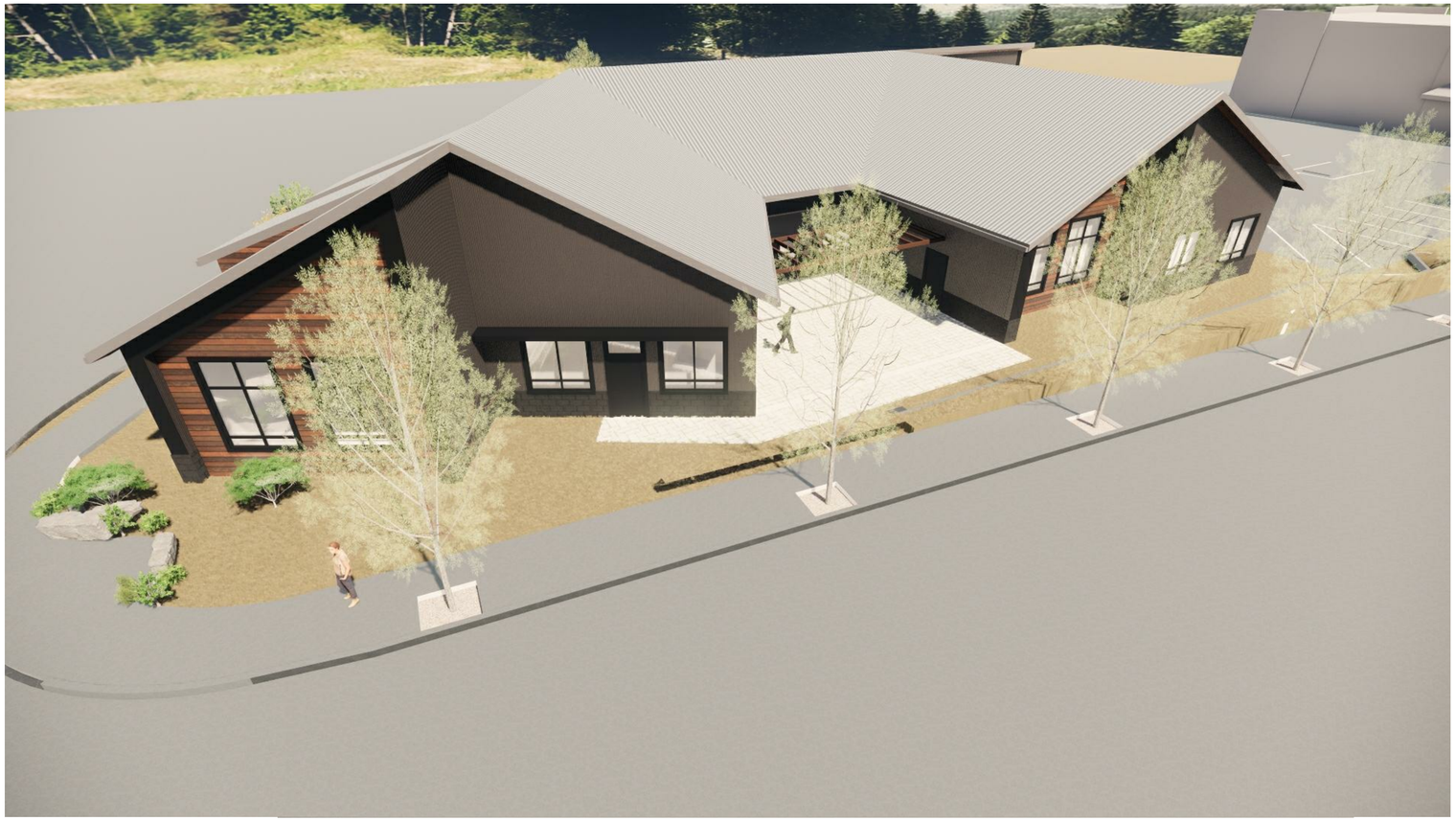
D Building Orientation and Entrances	
D.1. Orientation	• More than 50% of the building's street frontage is within 10 feet or a sidewalk or civic space. The edges of the building are as close to the property line as allowed. No off-street parking is placed between the building and adjacent streets.
D.2. Parking Placement	• Not applicable
D.3. Ground Floor Connection	• Ground floor spaces are connected to the sidewalks along Pleasant Street and Hwy 26.
D.4. Corner Entrance	• There is a door into the building within 40 feet of the corner at the intersection of Ten Eyck and Hwy 26, and an door into the building within 40 feet of the corner at the intersection of Ten Eyck and Pleasant Street. A direct corner entrance is not practical due to the nature of the building's use as a health clinic and its relation to the parking lot. The corners have detailing consistent with the Sandy Style.
D.6. Activated Pedestrian Environment on two Elevations	• There is an entrance with a pedestrian shelter facing Hwy 26 and facing Pleasant Street, however, due to the nature of the clinic, these are staff entrances, not customer entrances. The patient entrance faces the parking lot. Patients may leave the other (2) doors, but these are primarily intended for clinic staff.
D.7. Primary Entry Spacing	• Due to the nature of the medical clinic, entrances are spaced further than 30' apart. There is no public retail as a part of this building.
D.8. Primary Entrance Architecture	• The roof overhangs the main entrance by 5' and there is a bench and landscaped elements to emphasize it. There is a metal canopy over the other entrances, with landscaping near these entries.
E Windows	
E.1. Unified Design	• There are only 4 different sizes of windows in this design, and their headers, sills, and mullions are in consistent planes in relation to each other.
E.2. Ground Floor Windows	• Type II adjustment: Percentage of window area on Hwy 26 elevation is 27%. Percentage of window area on SE Ten Eyck Road elevation is 28%. Percentage of window area facing Pleasant street is 23%. Due to the use of the building as a clinic, it is not practical to have 40% windows on (2) of these frontages. The building GSF is just shy of 10,000 SF, which only requires 25% window area, which we are meeting on (2) frontages. • a) Typical windows have a sill 3 feet above grade. • b) Windows are square and vertically oriented. • c) Windows are divided into panes that are smaller than 6 feet. • d) Windows have 4 inch wood trim around them.
E.4. Prohibited Windows	• a) None of the windows are darkly tinted or mirrored.

	• b) Storefront windows are located at the entrance. The rest of the windows are vinyl.
F Landscaping and Streetscape Design	
F.1. Landscape and Screening General Standards (Chapter 17.92)	• Please see Chapter 17.92 sections in the Zoning Requirements Narrative above.
F.2. Streetscape Design Conflicts	• There are no conflicts with the Streetscape design and Landscaping and Screening General Standards.
G Civic Space	
G.1. Percent of Ground Floor Area	• The civic space near the main entry to the clinic is 3% of the ground floor area. (320 SF / 9,381 SF).
G.2. Dimensions and Area	• The civic space is 19'-8" across and 320 SF.
G.3. Type	• The civic space is an extension of the sidewalk in front of the clinic entrance, with benches for seating, and doubles as a zone for patients to await pick-up.
G.4. Location	• The civic space is located roughly mid-block, near the entrance, which will be a zone with higher pedestrian activity.
G.5. Adjacency to Right-of-Way	• The civic space is directly adjacent to the sidewalk on Pleasant Street, with rectangular stone pavers to identify it. This space is not gated or otherwise closed to public access.
H Lighting	
H.1. Chapter 15.30, Dark Sky Ordinance	• Streetscape lighting conforms to the Downtown Sandy Streetscape Design and Dark Sky Ordinance. See sheet E1.02 – Electrical Site Lighting Plan. The area 10 feet beyond the property line receives no more than 0.25 of a foot-candle of light and the new lighting does not exceed 4,125 Kelvins.
H.2. Integration	• Site lighting is situated to highlight the architectural design of the clinic and to compliment the site lighting at the nearby police station.
H.3. Safety	• Exterior can lights are integrated into the metal canopies over the entries. Walkways, parking lot, and entries are illuminated at 1.5-2.0 foot candles: see sheet E1.02 – Electrical Site Lighting Plan.
I Safety and Security	
I.1. Windows	• Windows are located around the full perimeter of the building, facing pedestrian, parking, and loading areas.
I.2. Interior Surveillance	• Windows are located so interior activity by be seen from all public right-of-ways, however, due to the nature of the building as a medical clinic, internal shades will be used to provide patients and staff with privacy as needed. The police station is also right

	next to the clinic, which will aid in surveillance of the site.
I.3. Street Address	• 8" tall street address numbers are near south entry, near the intersection of Hwy 26 and Pleasant Street, shown on sheet A3.11, elevation 6.
I.4. On-Site Lighting Orientation	• Site lighting is placed to provide adequate surveillance of on-site activities. See sheet E1.02 – Electrical Site Lighting Plan.
J External Storage and Screening	
J.1. Exterior Storage	• There will be no exterior storage of merchandise or materials.
J.3. Equipment Screening	• Mechanical condensing unit and transformer are screened from view with wood landscape fencing. Garbage storage is screened within trash enclosure.
J.4. Trash Screening	• Trash and recycling storage is in a split face CMU enclosure in the southeast corner of the site. Enclosure CMU matches the color of the concrete block veneer base of the building. And the metal roof of the trash enclosure matches the metal roofing color.

3/18/2020 1:52:07 PM

EXHIBIT C



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AMA TEAM

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SCOTT SOUKUP scotts@ankrommoisan.com

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OWNER TEAM

OWNER
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OREGON CITY, OR 97045 www.clackamas.us/communitydevelopment
PROJECT COORDINATOR 503.650.5665
STEVE KELLY stevekel@clackamas.us
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DEBORAH COCKRELL dcockrell@clackamas.us

OWNER/OPERATIONS
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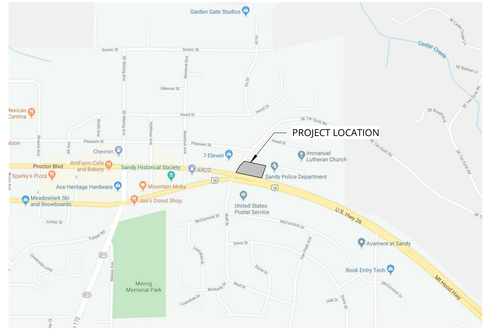
BLDG CONSTR SUPERVISOR 503.655.8591
DANIEL ROBERTSON danielrob@clackamas.us

VICINITY MAP



NOT FOR CONSTRUCTION

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SANDY HEALTH CENTER
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

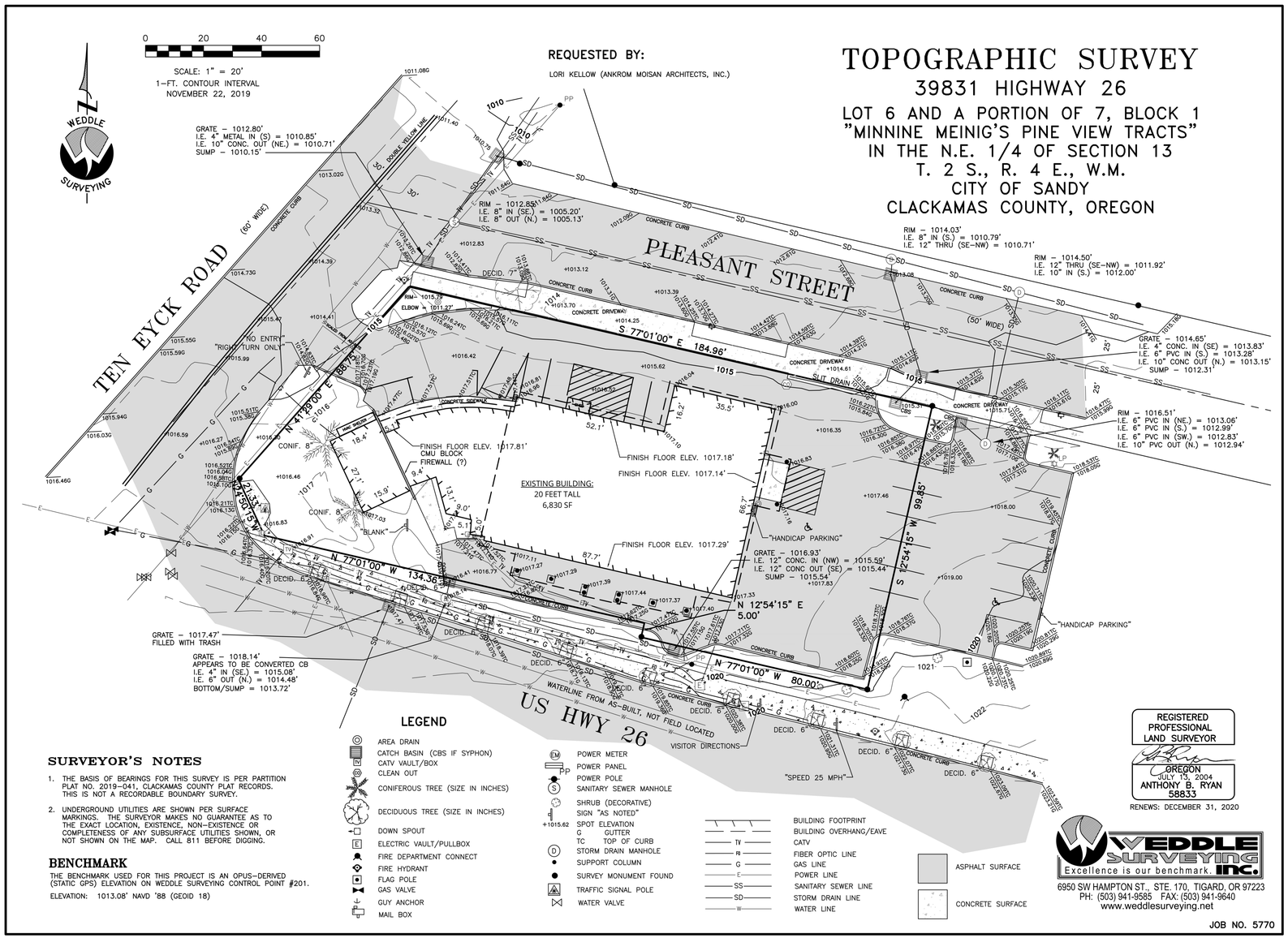
COVER SHEET

DESIGN REVIEW

DATE 4.3.2020
PROJECT NUMBER 192530

SHEET NUMBER
CS

C:_Revit Projects\192530-17-Sandy Clinic\192530-17-Sandy_Clinic_scotts.rvt



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SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

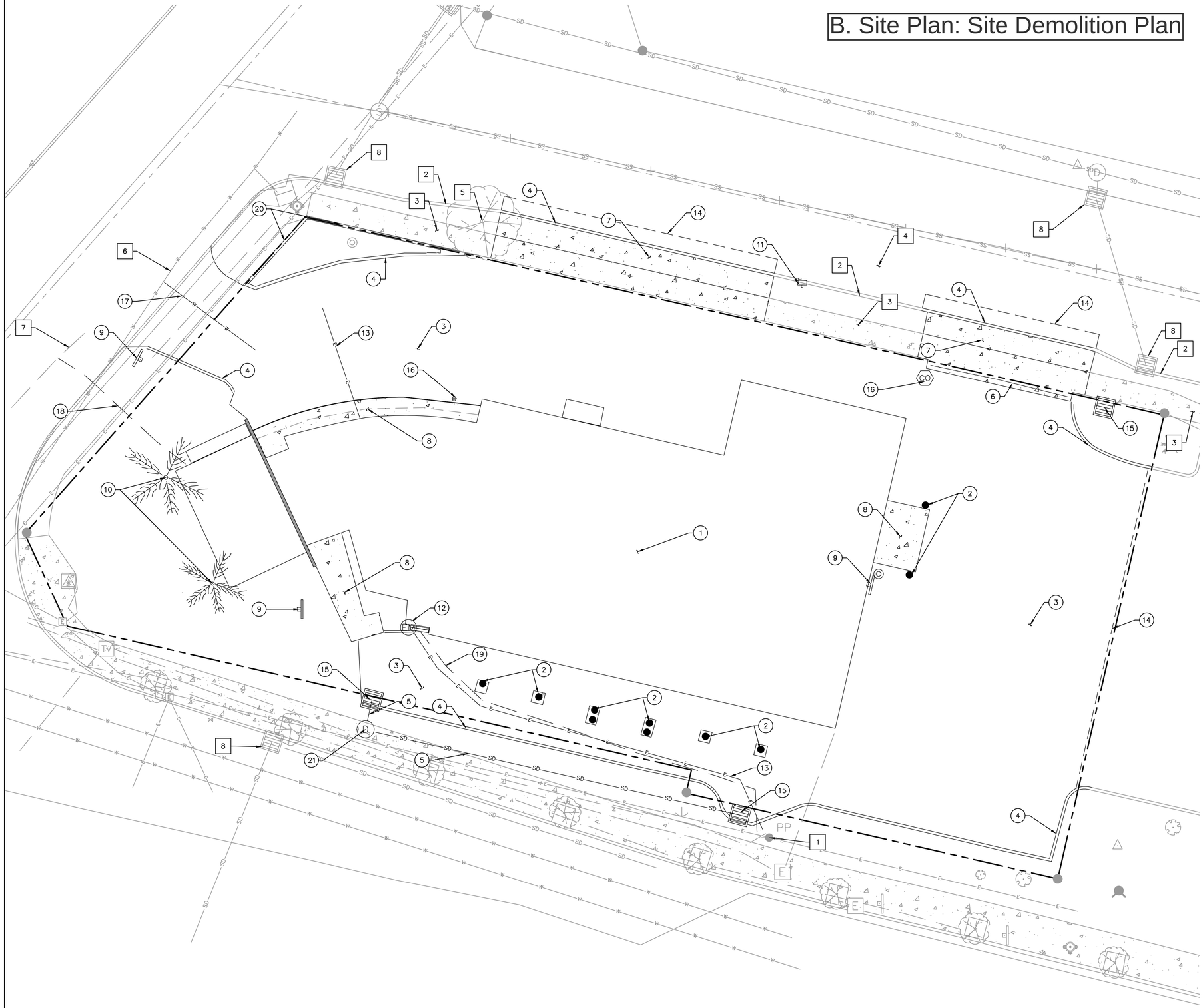
SURVEY

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
1.24.2020	192530

SHEET NUMBER
G0.11

B. Site Plan: Site Demolition Plan



SHEET NOTES

1. SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
2. CONTRACTOR MAY STAGE WITHIN LIMITS OF DEMOLITION.
3. REMOVE ALL SITE COMPONENTS AND RECYCLE COMPONENTS AS REQUIRED IN THE SPECIFICATIONS.
4. ALL TRADE LICENSES AND PERMITS NECESSARY FOR THE PROCUREMENT AND COMPLETION OF THE WORK SHALL BE SECURED BY THE CONTRACTOR PRIOR TO COMMENCING DEMOLITION.
5. THE CONTRACTOR SHALL PRESERVE AND PROTECT FROM DAMAGE ALL EXISTING RIGHT-OF-WAY SURVEY MONUMENTATION DURING DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PAYING FOR THE REPLACEMENT BY A LICENSED SURVEYOR OF ANY DAMAGED OR REMOVED MONUMENTS.
6. PROTECT ALL ITEMS ON ADJACENT PROPERTIES AND IN THE RIGHT OF WAY INCLUDING BUT NOT LIMITED TO SIGNAL EQUIPMENT, PARKING METERS, SIDEWALKS, STREET TREES, STREET LIGHTS, CURBS, PAVEMENT AND SIGNS. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY DAMAGED ITEMS TO ORIGINAL CONDITION.
7. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, AND OTHER FACILITIES IMMEDIATELY ADJACENT TO EXCAVATIONS FROM DAMAGES CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT AND OTHER HAZARDS.
8. SAWCUT STRAIGHT LINES IN SIDEWALK, AS NECESSARY.
9. CONTRACTOR IS RESPONSIBLE TO CONTROL DUST AND MUD DURING THE DEMOLITION PERIOD, AND DURING TRANSPORTATION OF DEMOLITION DEBRIS. ALL STREET SURFACES OUTSIDE THE CONSTRUCTION ZONE MUST BE KEPT CLEAN.
10. PROTECT ALL EXISTING UTILITY STRUCTURES AND UNDERGROUND MAINS TO REMAIN.
11. PROTECT ALL EXISTING VEGETATION TO REMAIN.

(X) PROTECTION NOTES

1 PROTECT EXISTING UTILITY POLE
2 PROTECT EXISTING CURB
3 PROTECT EXISTING SIDEWALK
4 PROTECT EXISTING ASPHALT
5 PROTECT EXISTING TREE
6 PROTECT EXISTING WATER LINE
7 PROTECT EXISTING GAS LINE
8 PROTECT EXISTING CATCH BASIN

(X) DEMOLITION NOTES

1 REMOVE EXISTING BUILDING
2 REMOVE EXISTING COLUMNS AND FOUNDATIONS
3 REMOVE EXISTING ASPHALT
4 REMOVE EXISTING CURB
5 REMOVE EXISTING STORM LINE
6 REMOVE EXISTING TRENCH DRAIN
7 REMOVE EXISTING DRIVEWAY
8 REMOVE EXISTING CONCRETE SURFACE
9 REMOVE EXISTING SIGN
10 REMOVE EXISTING TREE
11 REMOVE EXISTING MAILBOX
12 REMOVE EXISTING ELECTRICAL BOX. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY.
13 REMOVE EXISTING ELECTRICAL LINE. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY.
14 SAWCUT LINE
15 REMOVE EXISTING CATCH BASIN
16 REMOVE EXISTING CLEANOUT
17 REMOVE EXISTING WATER LINE. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY.
18 REMOVE EXISTING GAS LINE. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY
19 REMOVE EXISTING CATV CABLE. CONTRACTOR TO COORDINATE WITH CABLE COMPANY.
20 REMOVE EXISTING PLANTER WALL
21 REMOVE EXISTING DRYWELL

NORTH

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 feet

NOT FOR CONSTRUCTION

Ankrom Moisan

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SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

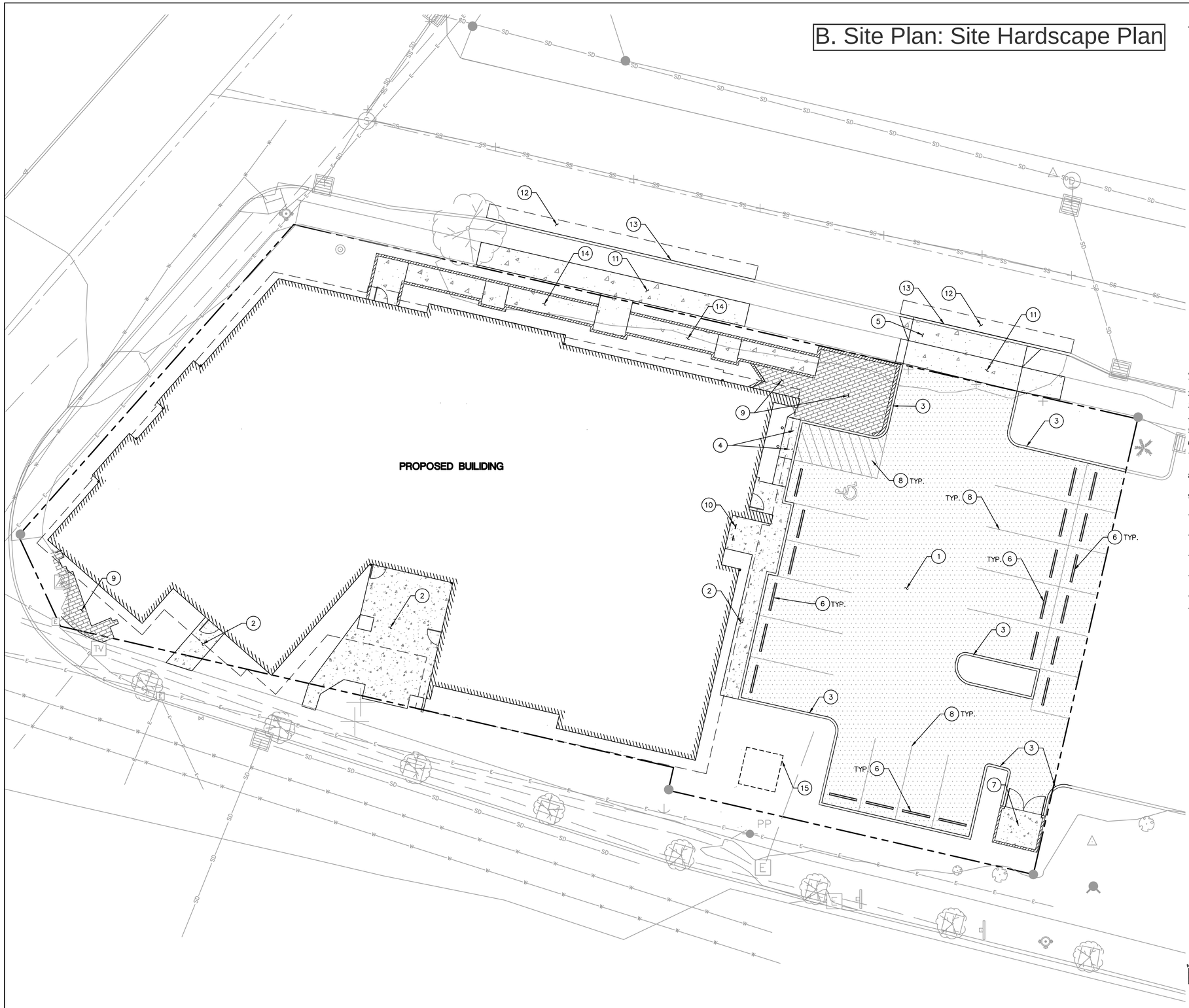
DEMOLITION PLAN

DESIGN DEVELOPMENT

DATE 01.24.2020
PROJECT NUMBER 192530

SHEET NUMBER
C0.3

B. Site Plan: Site Hardscape Plan



SHEET NOTES

1. SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
2. CONTRACTOR MAY STAGE WITHIN LIMITS OF DEMOLITION.
3. REMOVE ALL SITE COMPONENTS AND RECYCLE COMPONENTS AS REQUIRED IN THE SPECIFICATIONS.
4. ALL TRADE LICENSES AND PERMITS NECESSARY FOR THE PROCUREMENT AND COMPLETION OF THE WORK SHALL BE SECURED BY THE CONTRACTOR PRIOR TO COMMENCING DEMOLITION.
5. THE CONTRACTOR SHALL PRESERVE AND PROTECT FROM DAMAGE ALL EXISTING RIGHT-OF-WAY SURVEY MONUMENTATION DURING DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PAYING FOR THE REPLACEMENT BY A LICENSED SURVEYOR OF ANY DAMAGED OR REMOVED MONUMENTS.
6. PROTECT ALL ITEMS ON ADJACENT PROPERTIES AND IN THE RIGHT OF WAY INCLUDING BUT NOT LIMITED TO SIGNAL EQUIPMENT, PARKING METERS, SIDEWALKS, STREET TREES, STREET LIGHTS, CURBS, PAVEMENT AND SIGNS. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY DAMAGED ITEMS TO ORIGINAL CONDITION.
7. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, AND OTHER FACILITIES IMMEDIATELY ADJACENT TO EXCAVATIONS FROM DAMAGES CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT AND OTHER HAZARDS.
8. SAWCUT STRAIGHT LINES IN SIDEWALK, AS NECESSARY.
9. CONTRACTOR IS RESPONSIBLE TO CONTROL DUST AND MUD DURING THE DEMOLITION PERIOD, AND DURING TRANSPORTATION OF DEMOLITION DEBRIS. ALL STREET SURFACES OUTSIDE THE CONSTRUCTION ZONE MUST BE KEPT CLEAN.
10. PROTECT ALL EXISTING UTILITY STRUCTURES AND UNDERGROUND MAINS TO REMAIN.
11. PROTECT ALL EXISTING VEGETATION TO REMAIN.

(X) CONSTRUCTION NOTES

1 INSTALL PERVIOUS PAVEMENT PER DETAIL 1/C4.0
2 INSTALL PRIVATE CONCRETE SIDEWALK PER DETAIL 2/C4.0
3 INSTALL CONCRETE CURB PER DETAIL 3/C4.0
4 INSTALL BOLLARDS PER DETAIL 4/C4.0
5 INSTALL DRIVEWAY PER DETAIL 208A/C4.2
6 INSTALL WHEEL STOPS PER DETAIL 5/C4.0
7 INSTALL TRASH ENCLOSURE. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.
8 INSTALL STRIPING. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.
9 INSTALL UNIT PAVERS. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.
10 INSTALL BIKE PARKING. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.
11 INSTALL PUBLIC SIDEWALK, PER CITY OF SANDY DETAIL 205/C4.2
12 SAWCUT AND INSTALL PUBLIC ASPHALT, PER CITY OF SANDY DETAIL 201/C4.2
13 INSTALL PUBLIC CURB, PER CITY OF SANDY DETAIL 203/C4.2.
14 INSTALL RAMP. DESIGN BY OTHERS.
15 COMMUNICATIONS BOX FOUNDATION

NORTH

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 feet

NOT FOR CONSTRUCTION

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Project No. A19188.10

SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

HARDSCAPE PLAN

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
01.24.2020	192530

SHEET NUMBER
C1.0

3/18/2020 2:40:02 PM

B. Site Plan: Site Plan

ZONING: C-1 (CENTRAL BUSINESS DISTRICT)

SETBACKS: 10' ABUTTING RESIDENTIAL ZONE
5' LANDSCAPE BUFFER PLANTINGS AT PARKING ADJACENT TO THE R-O-W
10' MAXIMUM SETBACK

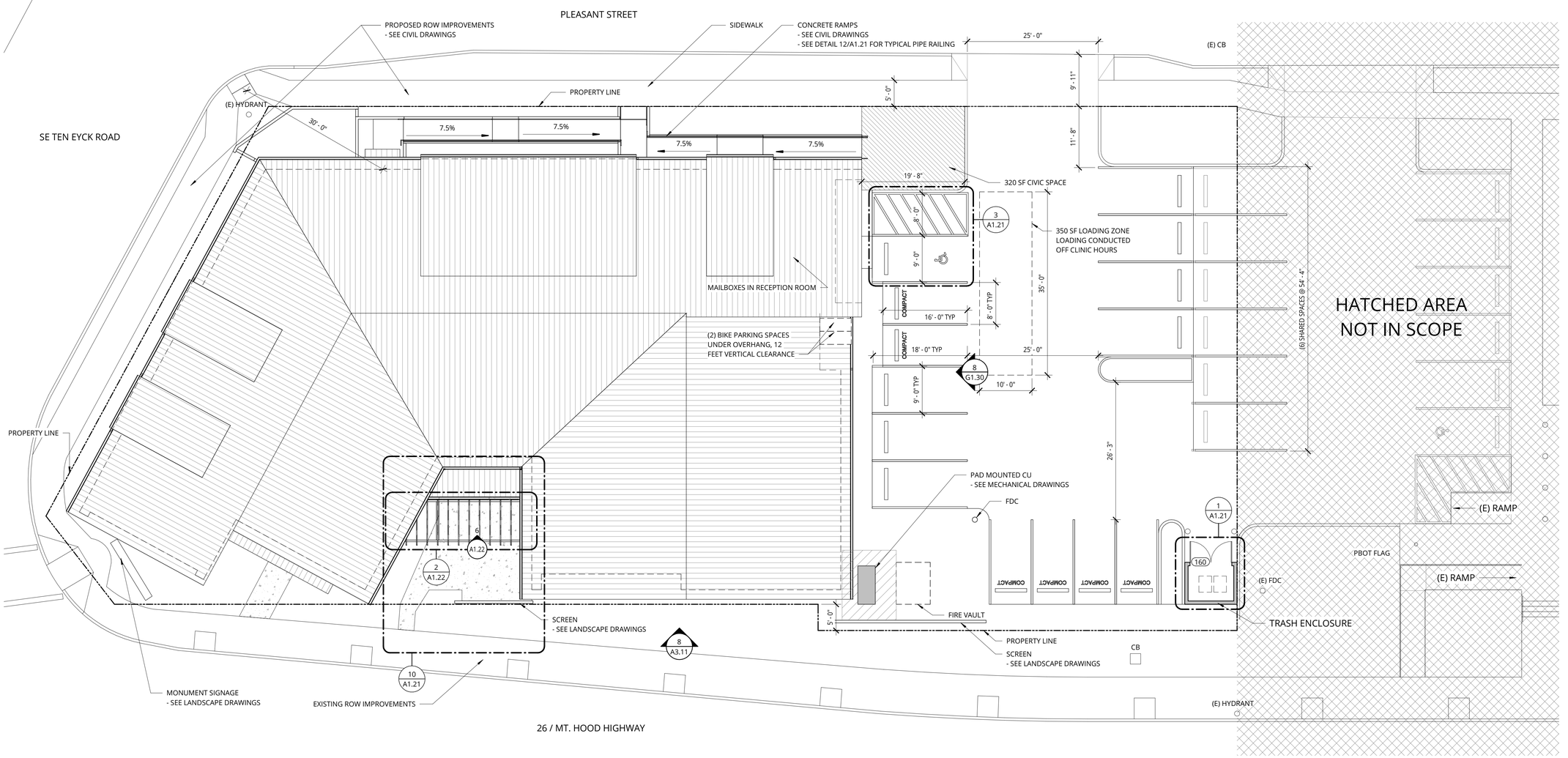
OFF-STREET CAR PARKING REQUIRED:
1 PER 300 SF; 1 PER 2 EMPLOYEES
PATIENT SPACES: 8,345 GSF / 300 = 27.81 STALLS
25% REDUCTION FOR C-1 ZONE = 20.86 REQUIRED STALLS
STAFF SPACES: 12 MAX STAFF, 6+ PARKING STALLS AT IMMANUEL LUTHERAN CHURCH PARKING LOT
COMPACT: 6 SPACES/21 TOTAL SPACES 29%>35% (OK)
ACCESSIBLE: 1 VAN ACCESSIBLE STALL

BIKE PARKING REQUIRED:
5% OR 2: TOTAL PARKING = 27 x 5% = 1.4; 2 BIKE PARKING SPACES REQUIRED

LANDSCAPING:
REQUIRED: 10% MINIMUM (INCLUDING REQUIRED CIVIC SPACE) x 20,473 SF = 2,047 SF
PROVIDED: 15% (2,999 SF TOTAL)

GENERAL NOTES - SITE PLAN

1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION, CONFLICTS ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION RELATED TO SUCH.
3. REFER TO CIVIL DRAWINGS FOR GRADING AND UTILITY INFORMATION.
4. CONTRACTORS SHALL VERIFY ALL LOCATIONS OF EXISTING UTILITIES, CARE SHOULD BE TAKE TO AVOID DAMAGE TO OR DISTURBANCE OF EXISTING UTILITIES.
5. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ALL PUBLIC RIGHT-OF-WAY IMPROVEMENTS.
6. REFER TO LANDSCAPE DRAWINGS FOR QUANTITY AND LOCATION OF LANDSCAPED AREAS.
7. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULL BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR THE LOCATION OF THE HOOK-UP.
8. THE CONSTRUCTION SHALL NOT BE WITHIN 10' OF ANY POWER LINES - WHETHER OR NOT THE POWER LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS OR ADDITIONAL EXPENSES.



1 SITE PLAN

1" = 10'-0"

NOT FOR CONSTRUCTION

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SANDY HEALTH CENTER
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

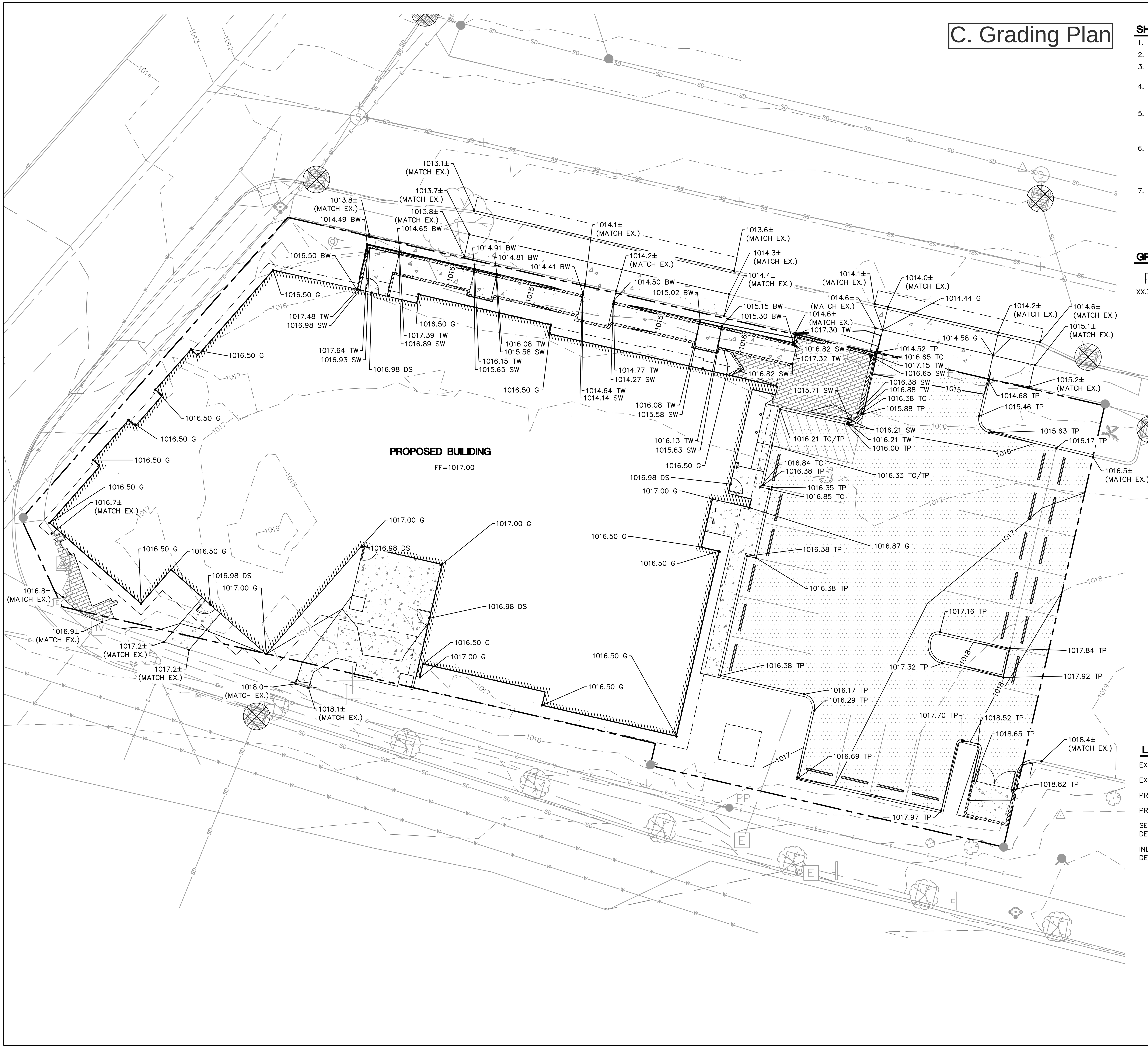
SITE PLAN

DESIGN REVIEW

DATE 4.3.2020
PROJECT NUMBER 192530

SHEET NUMBER
A1.01

C. Grading Plan



SHEET NOTES

1. SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
2. CURB HEIGHTS ARE 6" UNLESS NOTED OTHERWISE.
3. LANDINGS ON ACCESSIBLE ROUTES SHALL NOT EXCEED 2% IN ANY DIRECTION.
4. ALL ACCESSIBLE ROUTES SHALL COMPLY WITH CURRENT ADA ACCESSIBILITY GUIDELINES FOR BUILDING AND FACILITIES (ADAAG).
5. ALL WALKWAYS FROM ACCESSIBLE UNITS ARE DESIGNED TO NOT REQUIRE HANDRAILS. THEREFORE, RAMPS WITH SLOPES STEEPER THAN 5.0% AND LESS THAN 8.33% SHALL NOT EXCEED 0.5' RISE OR 6.0' LENGTH.
6. FINISH GRADES ARE TO BE BROUGHT TO WITHIN 0.08 FT IN 10 FT OF THE GRADES SHOWN AT SUBGRADE AND TO WITHIN 0.03 FT IN 10 FT AT FINISH GRADE. CONTRACTOR TO ALLOW FOR PLACEMENT OF REQUIRED TOPSOIL IN ROUGH GRADING.
7. GRADING ELEVATIONS AS SHOWN ON SITE AND LANDSCAPE PLANS ARE FINISHED GRADE WHICH INCLUDES SUBGRADE SOIL, TOPSOIL, SOIL AMENDMENTS, ROCKERY AND RUNOFF PROTECTION. CONTRACTOR IS RESPONSIBLE TO COORDINATE GRADING WITH BOTH EXCAVATOR AND LANDSCAPE CONTRACTOR.

GRADING LABEL LEGEND

SPOT ELEVATION

XX.XX XX ← DESCRIPTION LISTED BELOW.

BS	BOTTOM OF STAIRS
BW	FINISHED GRADE AT BOTTOM OF WALL
DS	DOOR SILL
EX	EXISTING GRADE
FF	FINISHED FLOOR ELEVATION
FG	FINISH GRADE
G	GROUND
SW	SIDEWALK
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TS	TOP OF STAIRS
TW	FINISHED GRADE AT TOP OF WALL

LEGEND

EXISTING CONTOUR MINOR	102
EXISTING CONTOUR MAJOR	100
PROPOSED CONTOUR MINOR	102
PROPOSED CONTOUR MAJOR	100
SEDIMENT FENCE PER DETAIL 875/C4.1	
INLET PROTECTION PER DETAIL 920/C4.1	

NORTH

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 feet

NOT FOR CONSTRUCTION

Ankrom Moisan

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Project No. A19188.10

SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

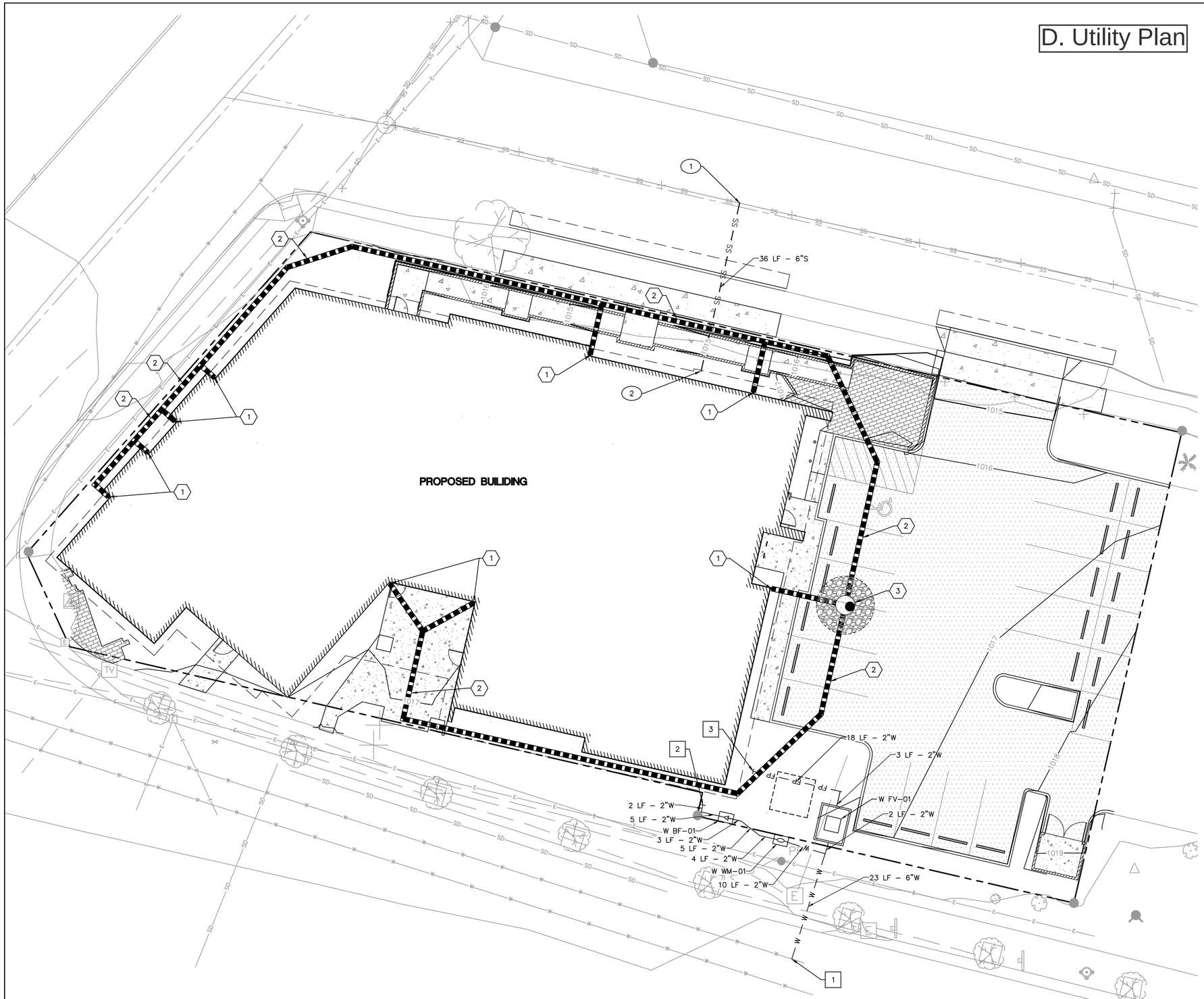
GRADING AND EROSION CONTROL PLAN

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
01.24.2020	192530

SHEET NUMBER
C2.0

D. Utility Plan



SHEET NOTES

1. SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
2. STRUCTURES HORIZONTAL LOCATIONS AND PIPE INVERTS ARE BASED ON THE CENTER OF THE STRUCTURE.
3. PIPE BEDDING AND BACKFILL UTILITIES SHALL BE DONE PER DETAIL 6/C4.0.
4. INSTALL THRUST BLOCKS ON FIRE AND WATER LINES PER DETAIL 8/C4.0.
5. ALL SANITARY PIPING SHALL BE PVC 3034 OR APPROVED EQUAL UNLESS NOTED OTHERWISE.
6. THIS PLAN IS GENERALLY DIAGRAMMATIC. IT DOES NOT SHOW EVERY JOINT, BEND, FITTING, OR ACCESSORY REQUIRED FOR CONSTRUCTION.
7. CLEAN OUTS SHALL BE INSTALLED IN CONFORMANCE WITH UPC CHAPTER SEVEN, SECTION 707 AND SECTION 719. THIS PLAN MAY NOT SHOW ALL REQUIRED CLEAN OUTS.
8. DOMESTIC WATER AND FIRE LINES AND ACCESSORIES BETWEEN THE WATER METER AND THE BUILDING SHALL BE INSTALLED BY A LICENSED PLUMBER EMPLOYED BY A LICENSED PLUMBING CONTRACTOR.
9. UTILITIES WITHIN FIVE FEET OF A BUILDING SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR INTERIOR USE AS DESCRIBED IN THE CURRENT EDITION OF THE UPC.
10. INLETS AND OUTLETS TO ON–SITE MANHOLES SHALL HAVE FLEXIBLE CONNECTION NO CLOSER THAN 12" AND NO FARTHER THAN 36" FROM THE MANHOLE.
11. CONTRACTOR TO VERIFY SANITARY AND WATER SIZING AND INVERTS WITH APPROVED PLUMBING PLANS PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION OF SAID UTILITIES.

LABEL LEGEND

PIPE LABELS

UTILITY LENGTH
UTILITY SIZE
XXLF – XX" XX ← UTILITY TYPE
S=X.XX% ← SLOPE (WHERE APPLICABLE)

STRUCTURE LABELS

UTILITY TYPE (FP=FIRE PROTECTION, S=SANITARY, SD=STORM DRAINAGE, W=WATER)
STRUCTURE TYPE (SEE BELOW)
XX XX–XX ← ID NUMBER (WHERE APPLICABLE)
RIM=XX.XX
IE IN=XX.X
IE OUT=XX.X ← STRUCTURE INFO (WHERE APPLICABLE)

STRUCTURE TYPES

TYPE	DESCRIPTION
BF	BACK FLOW PER DETAIL 7/C4.0
DW	DRYWELL PER DETAIL 9/C4.0
DS	DOWN SPOUT
FV	FIRE VAULT PER DETAIL 414/C4.2
WM	WATER MAIN PER CITY OF SANDY DETAIL WATER METER SETTING DETAIL ON SHEET C4.2

LEGEND

SANITARY SEWER LINE — SS — SS —
WATER LINE — W — W — W —
FIRE LINE — FP — FP — FP — FP —
FDC LINE — FDC — FDC — FDC —
STORM LINE

(X) WATER NOTES

1 6" TAP EXISTING WATER MAIN
2 2" DOMESTIC WATER STUB
3 6" FIRE WATER STUB

(X) SANITARY NOTES

1 6" TAP EXISTING MAIN 6" IE = 101075 MIN. CONTRACTOR TO VERIFY
2 6" SANITARY STUB IE = 1011.50

(X) STORM NOTES

1 INSTALL 4" DOWNSPOUT @ 1%
2 INSTALL 6" PVC @ 1%
3 48" DRYWELL WITH 12' ANNULUS ROCK
RIM=1016.55
IE IN=1009.55 (N, S, W)
SUMP=991.55

NORTH

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 feet

NOT FOR CONSTRUCTION

Ankrom Moisan

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Project No. A19188.10

SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

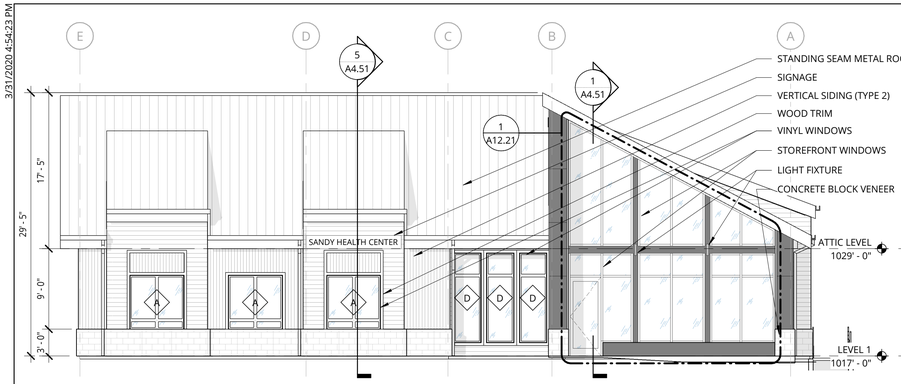
UTILITY PLAN

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
01.24.2020	192530

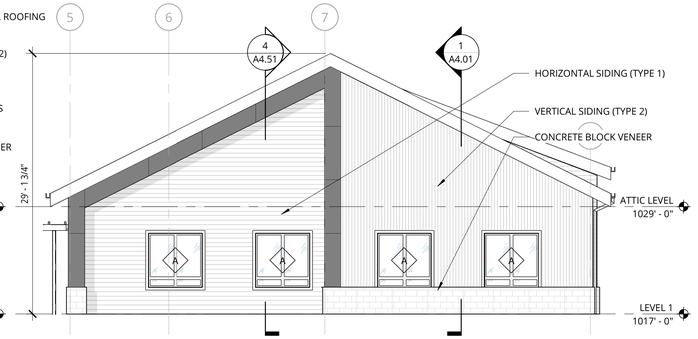
SHEET NUMBER
C3.0

3/31/2020 4:54:23 PM



1 EAST ELEVATION

1/8" = 1'-0"



2 SOUTH ELEVATION - 1

1/8" = 1'-0"

GENERAL NOTES - EXTERIOR ELEVATIONS

1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. ELEVATIONS NOTED ARE RELATIVE TO SEA LEVEL (OR PROJECT DATUM).
3. SEE SHEET A12.21 FOR WINDOW SCHEDULE.
4. SEE DOOR SCHEDULE SHEET A12.01 FOR DOOR LOCATIONS AND TYPES.
5. SEE WALL SECTIONS FOR ADDITIONAL EXTERIOR DETAILS.
6. REFER TO A0.11 FOR EXTERIOR WALL TYPES

EXTERIOR ELEVATIONS LEGEND

ENCLOSING ELEMENTS

HORIZONTAL WOOD PLANK FIBER CEMENT (TYPE 1)
COLOR: REDWOOD

VERTICAL RIBBED FIBER CEMENT (TYPE 2)
COLOR: WEATHERED COPPER

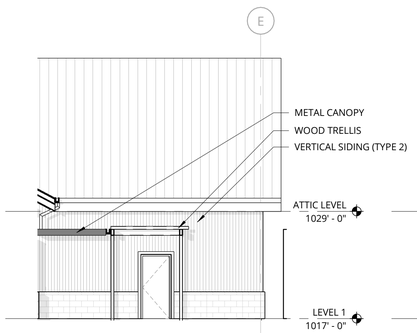
CONCRETE BLOCK VENEER
COLOR: EBONY M

STANDING SEAM METAL ROOF PANELS
COLOR: OLD TOWN GRAY

PAINTED WOOD TRIM AND FASCIA
COLOR: MILLER H119 STURGIS GRAY

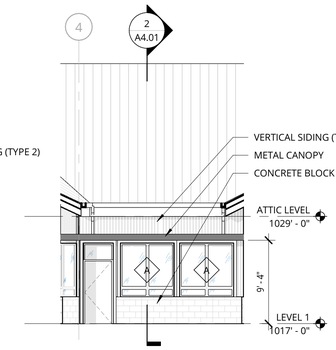
SHEET METAL TRIM
COLOR: CHARCOAL

NOTE: METAL CANOPIES, VINYL WINDOWS, AND ALUMINUM STOREFRONT AT ENTRANCE TO BE BLACK



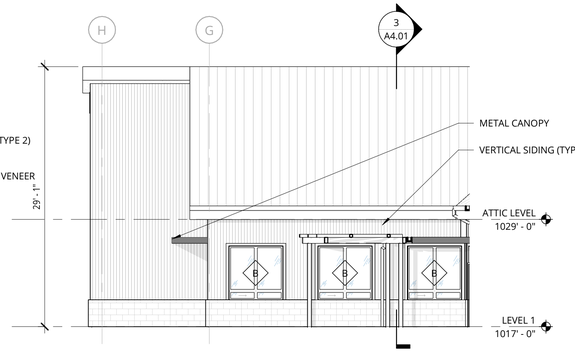
3 SOUTH ELEVATION - 2

1/8" = 1'-0"



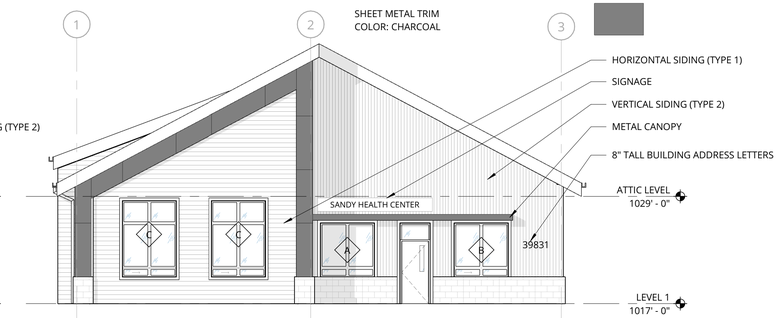
4 SOUTH ELEVATION - 3

1/8" = 1'-0"



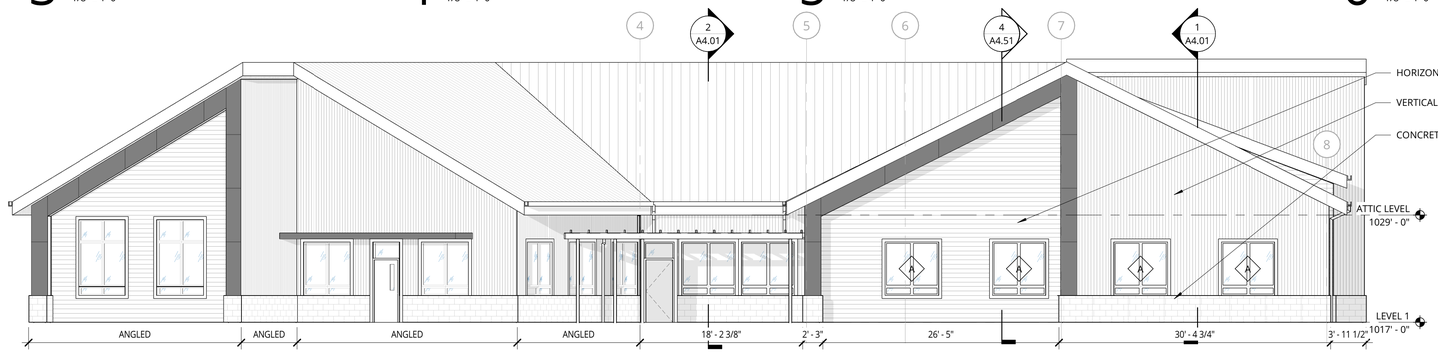
5 SOUTH ELEVATION - 4

1/8" = 1'-0"



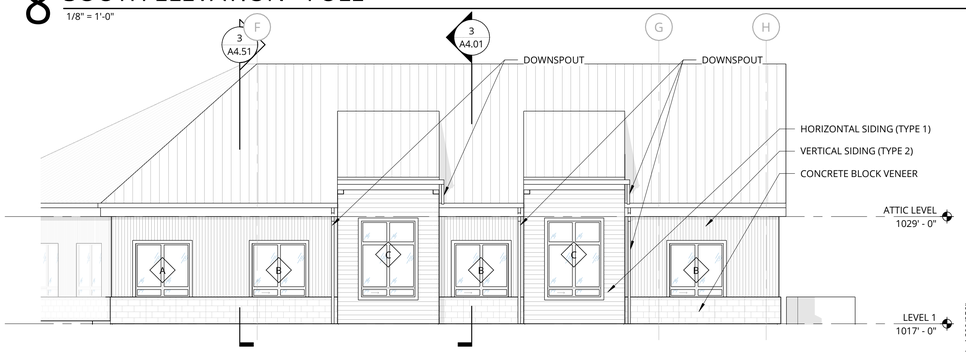
6 SOUTH ELEVATION - 5

1/8" = 1'-0"



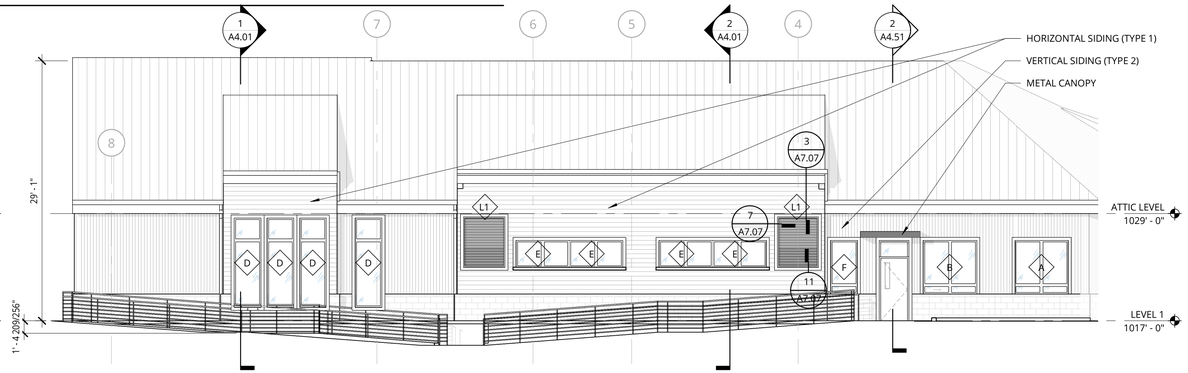
8 SOUTH ELEVATION - FULL

1/8" = 1'-0"



7 WEST

1/8" = 1'-0"



9 NORTH ELEVATION

1/8" = 1'-0"

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

BUILDING ELEVATIONS

90% CONSTRUCTION DOCUMENTS

DATE 4.3.2020

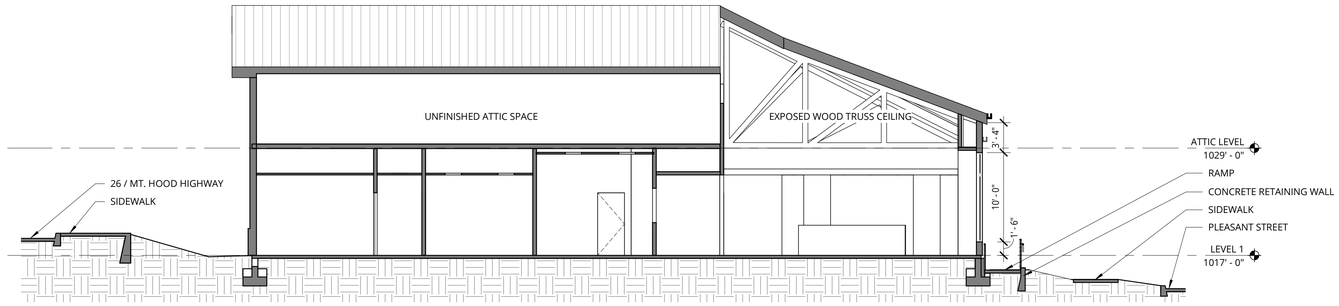
PROJECT NUMBER 192530

SHEET NUMBER A3.11

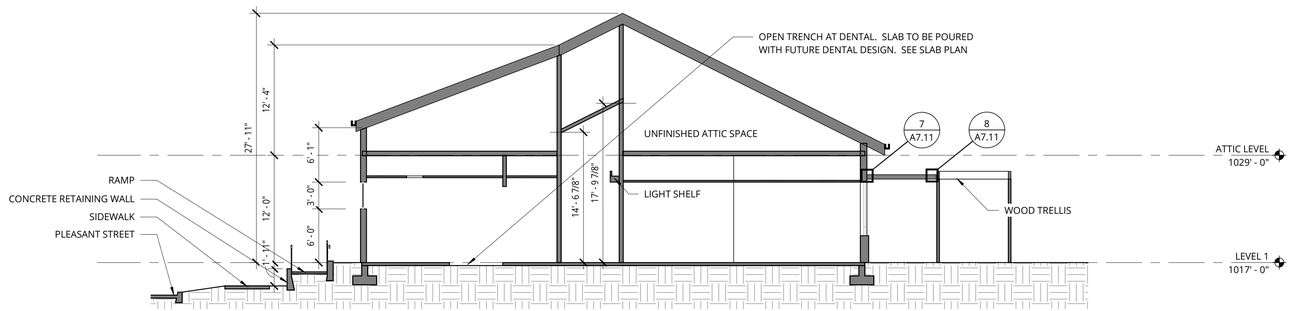
E. Architectural Drawings: Building Sections

GENERAL NOTES - BUILDING SECTIONS

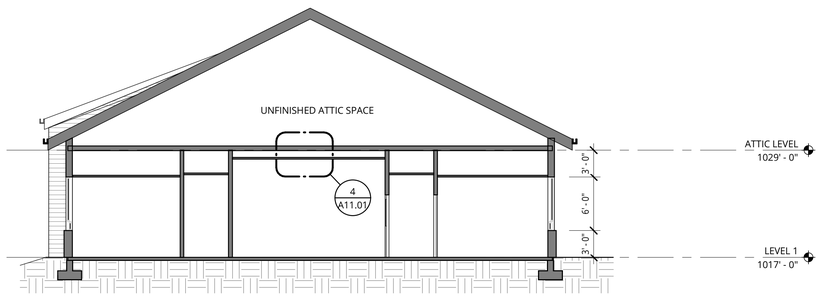
1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. ELEVATIONS NOTED ARE RELATIVE TO SEA LEVEL (OR BUILDING DATUM).
3. SEE SHEET A12.21 FOR WINDOW SCHEDULE.
4. SEE ENLARGED ELEVATIONS AND WALL SECTIONS FOR ADDITIONAL EXTERIOR DETAILS.



1 BUILDING SECTION - N/S 1
1/8" = 1'-0"



2 BUILDING SECTION - N/S 2
1/8" = 1'-0"



3 BUILDING SECTION - E/W
1/8" = 1'-0"

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

BUILDING SECTIONS

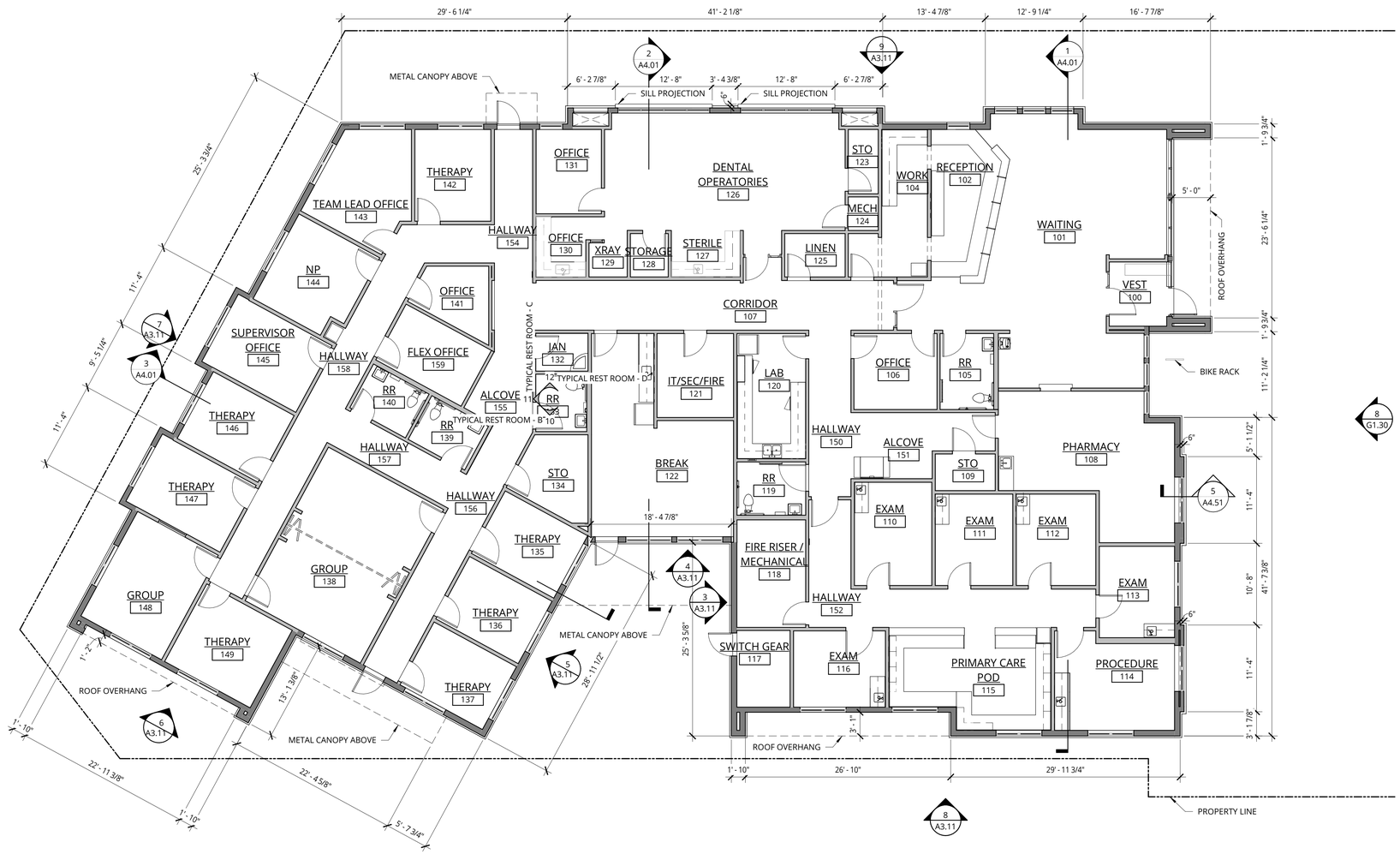
DESIGN DEVELOPMENT

DATE 1.24.2020
PROJECT NUMBER 192530

SHEET NUMBER
A4.01

GENERAL NOTES - FLOOR PLANS

1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. PRIOR TO FRAMING VERIFY THAT FINAL APPLIANCE AND PLUMBING FIXTURE SIZES/CLEARANCES MATCH THOSE USED AS BASIS OF DESIGN SHOWN ON DRAWING A5.41.
3. REFERENCE SLAB PLAN FOR CONCRETE WALL LOCATIONS, UNO. COORDINATE WITH STRUCTURAL DRAWINGS.
4. SEE SHEETS A0.11 & A0.21 FOR WALL ASSEMBLIES.
5. SEE SHEET A0.41 FOR TYPICAL FRAMING AND ACOUSTICAL DETAILS.
6. SEE FIRE/LIFE SAFETY SHEET ON G2.21 FOR LOCATIONS OF FIRE EXTINGUISHER CABINETS.
7. REFER TO ENLARGED AREA PLANS (A5.11 SERIES) FOR DETAILED INFORMATION WITHIN EACH SECTOR
8. REFER TO STRUCTURAL DRAWINGS FOR COLUMNS, SHEAR WALL AND BEAM SIZES.
9. DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE.
10. CORRIDORS TO MAINTAIN 5'-0" FINISH TO FINISH CLEARANCE, MINIMUM.



1 FLOOR PLAN
1/8" = 1'-0"

12.904°
TRUE
PROJECT

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

FLOOR PLAN

90% CONSTRUCTION DOCUMENTS

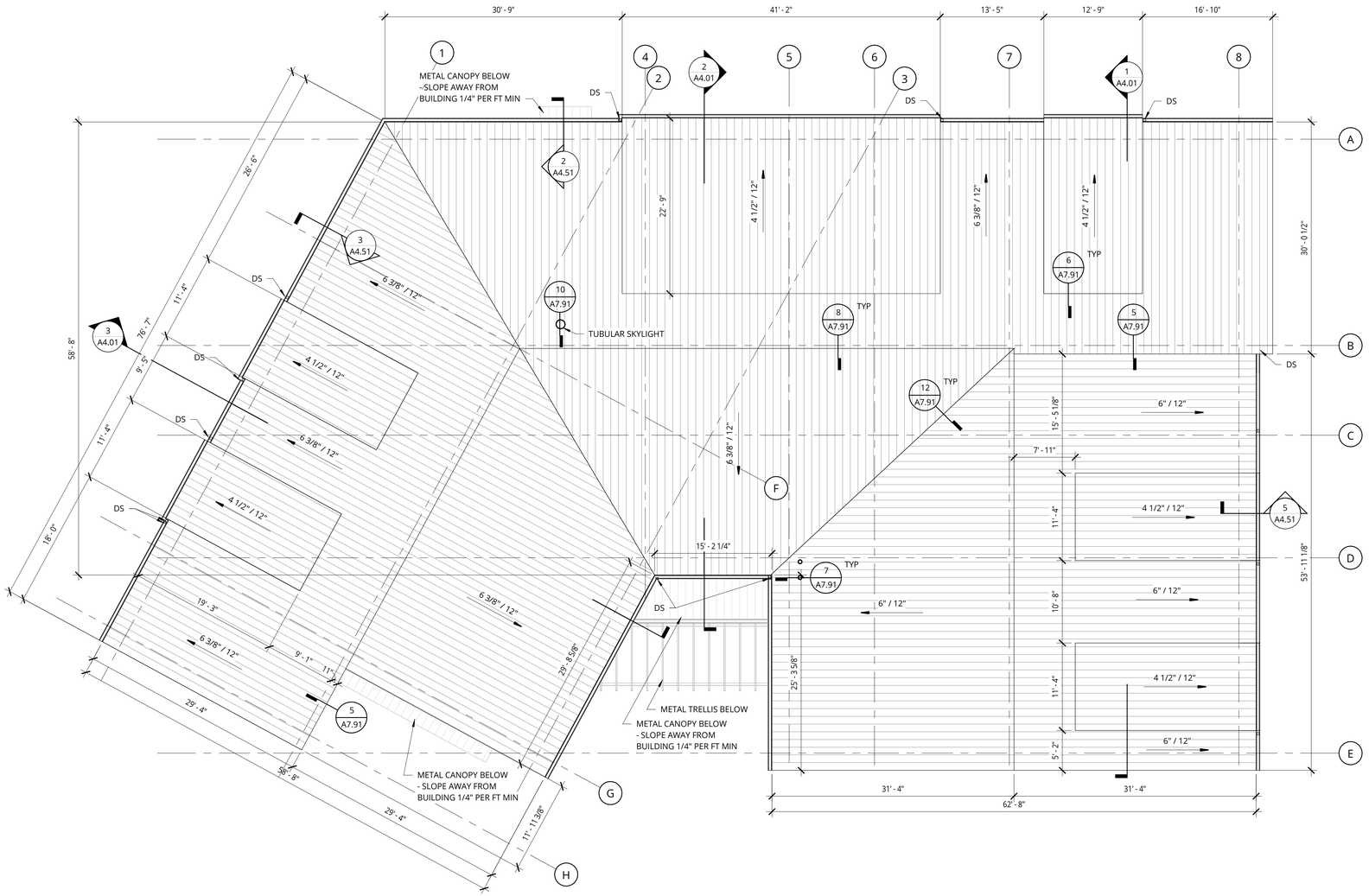
DATE 4.3.2020
PROJECT NUMBER 192530

SHEET NUMBER
G0.34

3/31/2020 4:57:29 PM

GENERAL NOTES - ROOF PLANS

1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. SEE SHEET A0.31 FOR HORIZONTAL ASSEMBLIES.
3. PROVIDE POSITIVE ROOF SLOPE TO DRAIN AT MINIMUM SLOPE OF 1/4" PER FOOT MEASURED ALONG VALLEYS, UNLESS NOTED OTHERWISE.
4. ROOF PENETRATIONS SHOWN ARE SCHEMATIC IN NATURE; COORDINATE ACTUAL SIZE, TYPE AND LOCATION OF EQUIPMENT, CURBS, AND ANY OTHER ROOF PENETRATIONS THAT MAY BE REQUIRED TO SUPPORT, SECURE OR FLASH ROOFTOP EQUIPMENT.
5. COMPLY WITH THE MOST STRINGENT OF SMACNA, NRCA OR MANUFACTURERS' REQUIREMENTS FOR FLASHINGS, COPINGS AND OTHER SHEET METAL CONSTRUCTION.
6. VERIFY ROOFING MANUFACTURERS MINIMUM REQUIREMENTS FOR LAPPING OF ALL MATERIALS. BRING CONFLICTS WITH ARCHITECTURAL DETAILS TO THE ATTENTION OF THE ARCHITECT PRIOR TO INSTALLATION.
7. SEE MEP DRAWINGS FOR ROOFTOP EQUIPMENT AND PENETRATIONS.



1 ROOF PLAN
1/8" = 1'-0"

12.904°
TRUE PROJECT

NOT FOR CONSTRUCTION

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

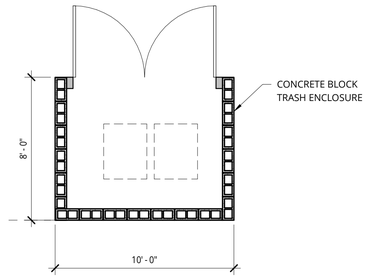
ROOF PLAN

90% CONSTRUCTION DOCUMENTS

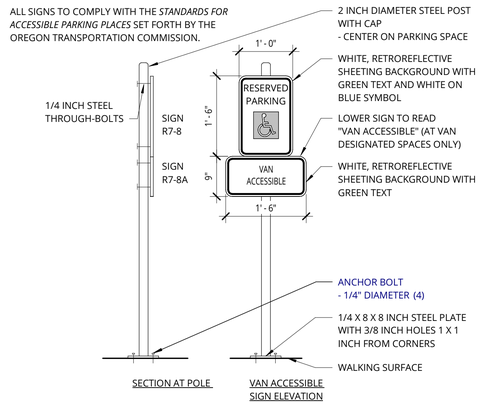
DATE 4.3.2020
PROJECT NUMBER 192530

SHEET NUMBER
A2.03

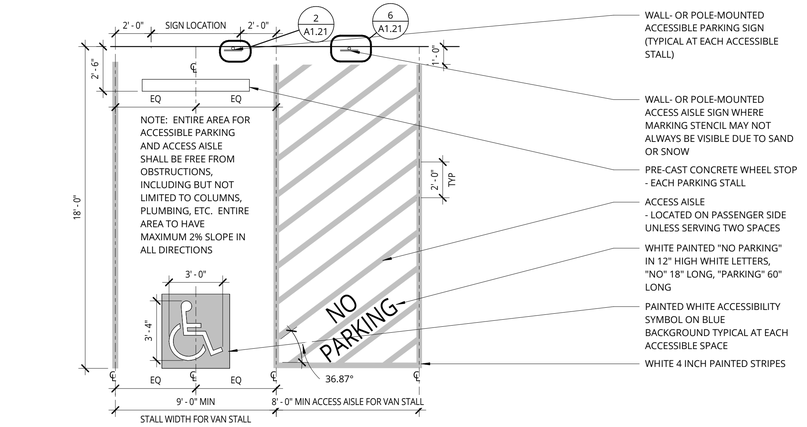
E. Architectural Drawings: Trash Enclosure / Site Details



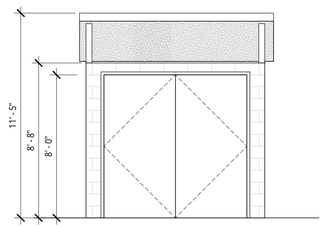
1 TRASH ENCLOSURE
1/4" = 1'-0"



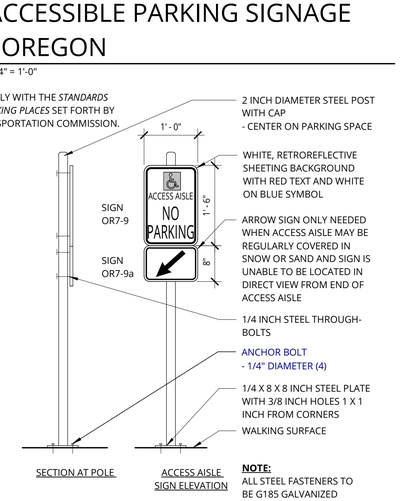
2 ACCESSIBLE PARKING SIGNAGE - OREGON
3/4" = 1'-0"



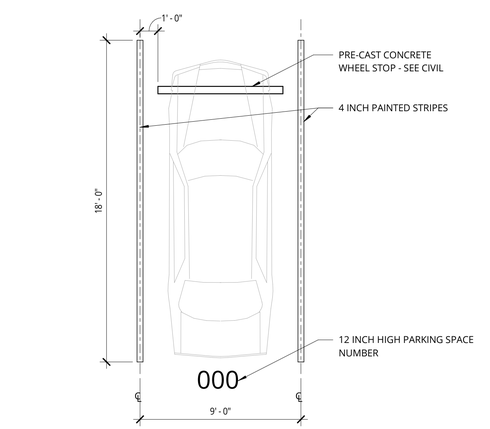
3 ACCESSIBLE PARKING STALL - OREGON
1/4" = 1'-0"

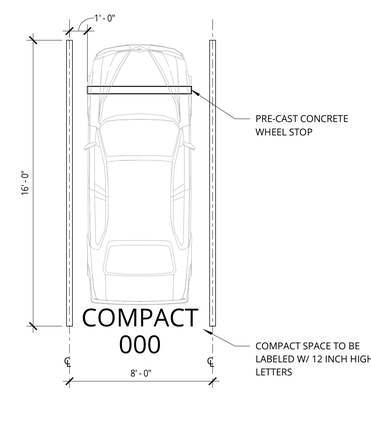


5 TRASH ENCLOSURE FRONT
1/4" = 1'-0"

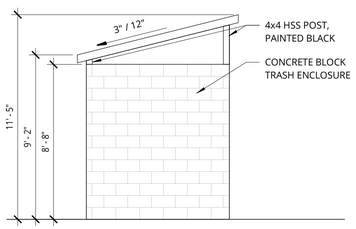


6 ACCESSIBLE ACCESS AISLE SIGNAGE - OREGON
3/4" = 1'-0"

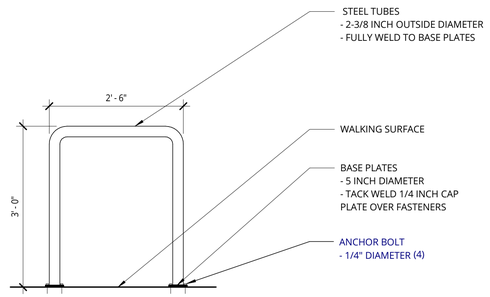




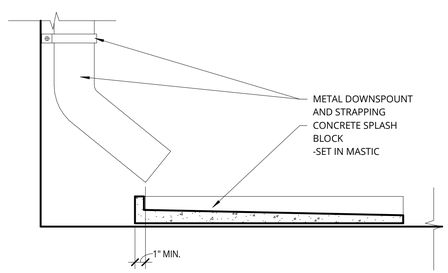
7 STANDARD AND COMPACT PARKING STALL DIMENSIONS - SFO
1/4" = 1'-0"



9 TRASH ENCLOSURE SIDE
1/4" = 1'-0"



11 BIKE RACK
3/4" = 1'-0"



12 SPLASH BLOCK - SECTION
1 1/2" = 1'-0"

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

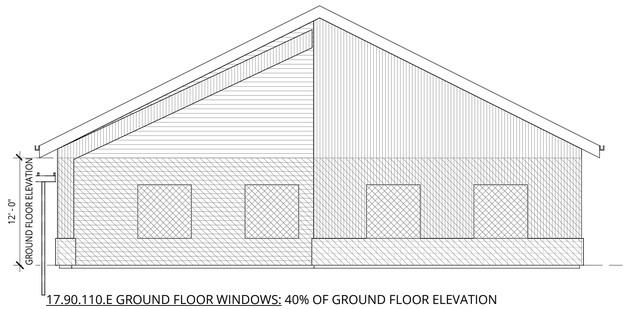
SITE DETAILS

DESIGN DEVELOPMENT

DATE 1.24.2020
PROJECT NUMBER 192530

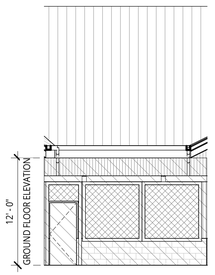
SHEET NUMBER
A1.21

E. Architectural Drawings: Window Area and Base Calculations



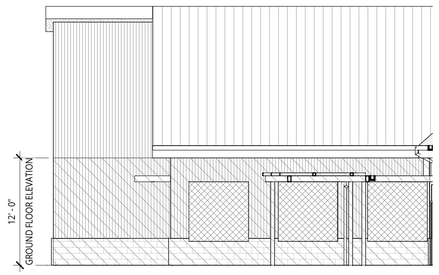
17.90.110.E GROUND FLOOR WINDOWS: 40% OF GROUND FLOOR ELEVATION
REQUIRED ON (2) STREET FRONTAGES
144 SF WINDOW AREA / 703 SF WALL AREA = 21%

1 26 / MT HOOD HWY - EAST
1/8" = 1'-0"



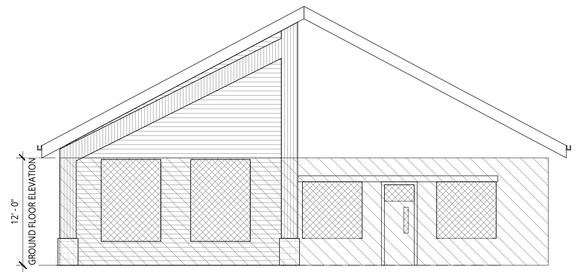
78 SF WINDOW AREA / 218 SF WALL AREA = 36%

2 26 / MT HOOD HWY - CTYD
1/8" = 1'-0"



133 SF WINDOW AREA / 505 SF WALL AREA = 26%

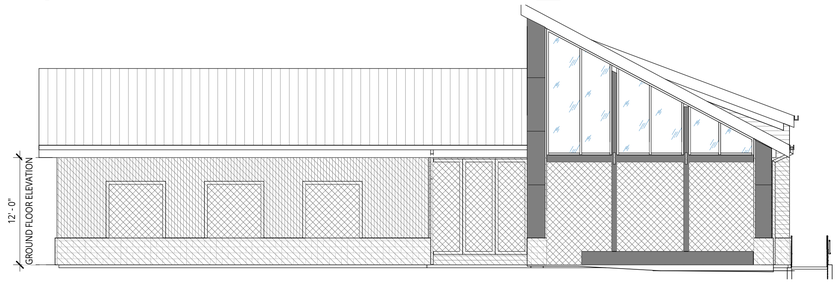
3 26 / MT HOOD HWY - WEST A
1/8" = 1'-0"



214 SF WINDOW AREA / 656 SF WALL AREA = 33%

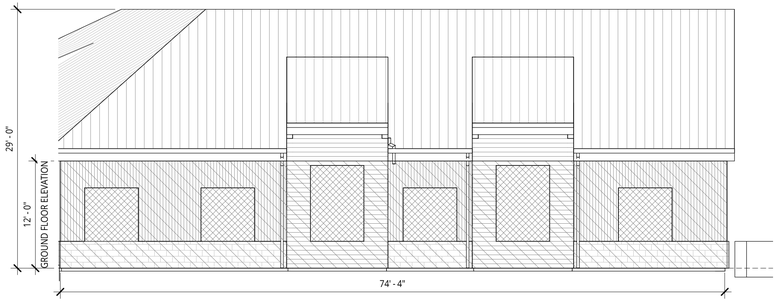
26/MT HOOD HWY TOTAL: 569 SF WINDOW AREA / 2,082 SF WALL AREA = 27%

4 26 / MT HOOD HWY - WEST B
1/8" = 1'-0"



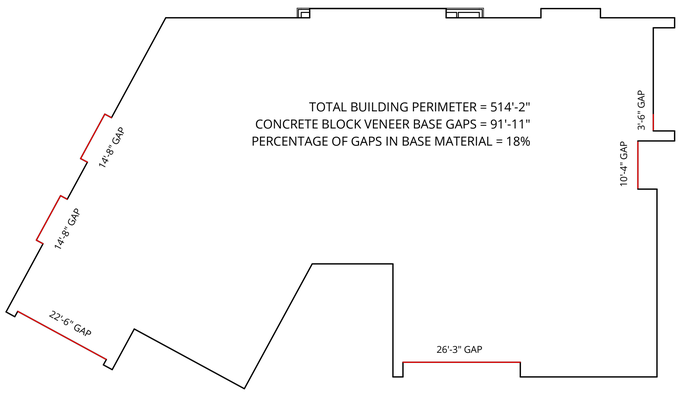
17.90.110.E GROUND FLOOR WINDOWS: 40% OF GROUND FLOOR ELEVATION REQUIRED ON (2) STREET FRONTAGES
424 SF WINDOW AREA / 983 SF WALL AREA = 43%

8 EAST ELEVATION WINDOWS
1/8" = 1'-0"

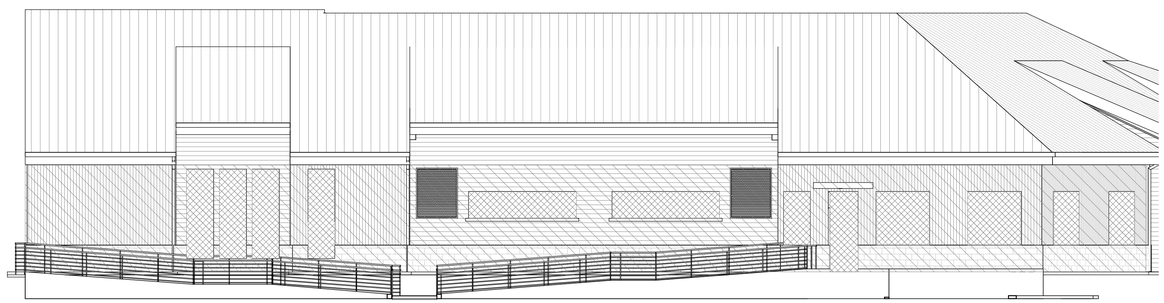


17.90.110.E GROUND FLOOR WINDOWS: 40% OF GROUND FLOOR ELEVATION REQUIRED ON (2) STREET FRONTAGES
246 SF WINDOW AREA / 895 SF WALL AREA = 28%

5 SE TEN EYCK ROAD GROUND FLOOR WINDOWS
1/8" = 1'-0"



7 BASE MATERIAL DIAGRAM
1/16" = 1'-0"



17.90.110.E GROUND FLOOR WINDOWS: 40% OF GROUND FLOOR ELEVATION REQUIRED ON (2) STREET FRONTAGES
345 SF WINDOW AREA / 1515 SF WALL AREA = 23%

6 PLEASANT STREET GROUND FLOOR WINDOWS
1/8" = 1'-0"

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

ZONING ELEVATIONS

DESIGN REVIEW

DATE	PROJECT NUMBER
4.3.2020	192530

SHEET NUMBER
G1.30

F. Exterior Lighting Plan

CODE NOTES - ELECTRICAL

A. THE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES.
B. THE CURRENT ADOPTED EDITION OF THE ELECTRICAL CODE SHALL BE THE STANDARD FOR THE ELECTRICAL INSTALLATION. VERIFY WITH LOCAL OFFICIALS WHEN PERMITS ARE OBTAINED. NOTIFY DESIGN TEAM OF ANY DESCREPANCIES BETWEEN THE PROJECT MANUAL OR DRAWINGS AND THE GOVERNING CODE.
C. INSTALLATION SHALL FOLLOW ALL REQUIREMENTS OF THE ADAAG – AMERICANS WITH DISABILITIES ACT.
D. REFER TO PROJECT MANUAL AND PROJECT CODE REVIEW SHEET FOR LIST OF ALL APPLICABLE CODES.

GENERAL NOTES - ELECTRICAL

A. COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION HAS OCCURRED. ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL, ALL PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT. ANY REWORK OF INSTALLED EQUIPMENT OR SYSTEMS WILL BE AT THE CONTRACTORS EXPENSE.
B. NOTE THAT THE ELECTRICAL DRAWINGS ARE ONLY A PORTION OF THE COMPLETE SET OF PLANS CONTRACT DOCUMENTS. THE COMPLETE SET CONTRACT OF DOCUMENTS SHALL BE USED TO DEFINE THE ELECTRICAL SCOPE OF WORK. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, USING THE ARCHITECTURAL PLANS FOR DIMENSIONS AND DETAILS; EQUIPMENT PLANS FOR ROUGH-IN REQUIREMENTS, AND THE MECHANICAL PLANS FOR EQUIPMENT SIZES AND LOCATIONS.

INSTALLATION NOTES - ELECTRICAL

A. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS PRIOR TO BID.
B. ALL 120V-1 PHASE CIRCUITS EXCEEDING 100 FEET TO CENTER OF LOAD SHALL HAVE CONDUCTORS INCREASED TO ACCOUNT FOR VOLTAGE DROP.
C. RACEWAYS AND BOXES ARE SHOWN DIAGRAMMATICALLY ONLY AND INDICATE THE GENERAL AND APPROXIMATE LOCATION. THE LAYOUT DOES NOT NECESSARILY SHOW THE TOTAL NUMBER OF RACEWAYS OR BOXES FOR THE CIRCUITS REQUIRED, NOR ARE THE LOCATIONS OF INDICATED RUNS INTENDED TO SHOW THE ACTUAL ROUTING OF THE RACEWAYS.
D. ALL LIGHT FIXTURES, SWITCHES, DEVICES, ETC. ARE SHOWN IN PREFERRED LOCATION. E.C. RESPONSIBLE FOR MODIFYING CONDUIT, HANGERS, CIRCUITING, ETC. TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
E. ALL RECEPTACLE CIRCUITS SHALL HAVE DEDICATED NEUTRALS PER CODE.
F. PROVIDE A DEDICATED GREEN INSULATED GROUND CONDUCTORS TO ALL DEVICES. THE CONDUIT SYSTEM SHALL NOT BE USED AS THE ONLY EQUIPMENT GROUNDING METHOD.
G. DO NOT INSTALL DEVICES BACK TO BACK ON OPPOSITE SIDES OF WALL. MAINTAIN MINIMUM OF 8" DISTANCE BETWEEN WHEREVER APPLICABLE.
H. BALANCE THE LOAD ON PANELS AS EVENLY AS POSSIBLE DURING INSTALLATION. CIRCUIT NUMBERING SHOWN ON PLANS MAY BE ADJUSTED.
I. PROVIDE FINAL TYPED PERMANENT PANEL DIRECTORY AT PROJECT COMPLETION.
J. CONTRACTOR SHALL BE RESPONSIBLE FOR OPENINGS IN ALL WALLS CREATED BY THEIR WORK. PENETRATIONS SHALL BE SEALED IN ACCORDANCE WITH THE RATINGS OF THE AFFECTED WALL. REFER TO ARCHITECTURAL CODE PLAN FOR RATED WALLS.

ELECTRICAL ABBREVIATIONS

A	DEVICE MOUNTED +8" ABOVE COUNTER TOP (VERIFY LOCATION)	NIC	NOT IN CONTRACT
		NM	NONMETALLIC
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
ATS	AUTOMATIC TRANSFER SWITCH	OC	ON CENTER
C	CEILING	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CB	CIRCUIT BREAKER		
CT	CURRENT TRANSFORMER	OFOI	OWNER FURNISHED, OWNER INSTALLED
E	EXISTING ITEM TO REMAIN		
EC	ELECTRICAL CONTRACTOR	R	EXISTING ITEM TO BE REMOVED
EM	EMERGENCY LIGHT FIXTURE	RR	EXISTING ITEM TO BE REMOVED AND RELOCATED
ER	NEW LOCATION OF EXISTING ITEM		
F	ROUGH IN FOR FUTURE DEVICE	RN	EXISTING ITEM TO BE REMOVED AND REPLACED WITH NEW
FAAP	FIRE ALARM ANNUNCIATOR PANEL		
FACP	FIRE ALARM CONTROL PANEL	SCCR	SHORT CIRCUIT CURRENT RATING
FSD	FIRE SMOKE DAMPER	T	TAMPER PROOF DEVICE
G	GROUND FAULT CIRCUIT INTERRUPTER	TCC	TEMPERATURE CONTROL CONTRACTOR
GND	GROUND	TV	TELEVISION
KVA	KILO-VOLT-AMPERES	TYP	TYPICAL
KW	KILOWATTS	UPS	UNINTERRUPTIBLE POWER SUPPLY
MC	MECHANICAL CONTRACTOR	V	VOLTS
MCB	MAIN CIRCUIT BREAKER	VA	VOLT-AMPERES
MDP	MAIN DISTRIBUTION PANEL	WG	WIREGUARD COVER
MLO	MAIN LUGS ONLY	WP	WEATHERPROOF DEVICE
N	NEW DEVICE IN EXISTING LOCATION	WR	WEATHER RESISTANT DEVICE
		+24"	INDICATES MOUNTING HEIGHT CENTER LINE OF DEVICE TO FINISHED FLOOR

NOTE: NOT ALL SYMBOLS APPLY TO THIS PROJECT

FIRE DETECTION AND ALARM SYMBOLS

- MANUAL FIRE ALARM PULL STATION
- SMOKE DETECTOR
- SMOKE DETECTOR WITH 520Hz SOUNDER BASE
- SMOKE DETECTOR - WALL MOUNTED
- DUCT SMOKE DETECTOR
- CARBON MONOXIDE DETECTOR
- HEAT DETECTOR
- HORN - WALL MOUNTED
- COMBINATION HORN WITH STROBE - WALL MOUNTED
- COMBINATION HORN WITH STROBE - CEILING MOUNTED
- COMBINATION SPEAKER WITH STROBE - WALL MOUNTED
- COMBINATION SPEAKER WITH STROBE - CEILING MOUNTED
- STROBE - WALL MOUNTED
- STROBE - CEILING MOUNTED
- SPEAKER - WALL MOUNTED
- SPEAKER - CEILING MOUNTED
- FIRE FIGHTER TELEPHONE STATION
- ADDRESSABLE INPUT MODULE
- SPRINKLER WATER FLOW SWITCH - ADDRESSABLE INPUT MODULE
- SPRINKLER VALVE TAMPER SWITCH - ADDRESSABLE INPUT MODULE
- SPRINKLER POST INDICATOR VALVE TAMPER - ADDRESSABLE INPUT MODULE
- ADDRESSABLE OUTPUT MODULE
- FAN SHUT DOWN RELAY - ADDRESSABLE OUTPUT MODULE
- MAGNETIC DOOR HOLD - SURFACE MOUNTED
- MAGNETIC DOOR HOLD - FLOOR MOUNTED
- SMOKE DAMPER
- COMBINATION FIRE/SMOKE DAMPER
- FIRE ALARM ANNUNCIATOR PANEL
- FIRE ALARM CONTROL PANEL + EMERGENCY COMMUNICATIONS PANEL

GENERAL SYMBOLS

- CONDUIT SLEEVE
- CONDUIT UP, REFER TO TAG ON DRAWING FOR SIZE
- CONDUIT DOWN, REFER TO TAG ON DRAWING FOR SIZE
- CIRCUIT HOMERUN, CONCEALED CONDUIT OR CABLE
- CIRCUIT HOMERUN, UNDER FLOOR CONDUIT OR CABLE
- KITCHEN EQUIPMENT TAG NUMBER, REFER TO KITCHEN EQUIPMENT CONNECTION SCHEDULE
- KEYNOTE
- EQUIPMENT IDENTIFICATION TAG. REFER TO EQUIPMENT CONNECTION SCHEDULE
- DETAIL DRAWING REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE / SHEET REFERENCE
- SECTION CUT REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE / SHEET REFERENCE
- INTERIOR ELEVATION DRAWING REFERENCE TAG

POWER SYMBOLS

- SINGLE RECEPTACLE, WALL MOUNT +18", OR AS NOTED
- DUPLEX RECEPTACLE, CEILING MOUNT
- DUPLEX RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- DUPLEX RECEPTACLE, SURFACE RACEWAY, WALL MOUNT +18", OR AS NOTED
- DUPLEX GFCI RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- DUPLEX RECEPTACLE, MOUNTED WITHIN WATER COOLER HOUSING, VERIFY HEIGHT. CONNECT TO GFCI, CIRCUIT BREAKER OR REMOTE WALL DEVICE.
- DUPLEX GFCI RECEPTACLE WITH WEATHER-PROOF IN-USE COVER, TAMPER-RESISTANT, WALL MOUNT +24", OR AS NOTED
- QUADRAPLEX RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- QUADRAPLEX GFCI RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT +18", OR AS NOTED
- DUPLEX RECEPTACLE IN FLOORBOX, TAMPER-RESISTANT. REFER TO SCHEDULE.
- QUADRUPLEX RECEPTACLE IN FLOORBOX, TAMPER-RESISTANT. REFER TO SCHEDULE.
- FLOOR BOX, COMBINATION POWER AND DATA ENCLOSURE. QUANTITY OF CABLES AS NOTED. DEVICES AS NOTED. REFER TO SCHEDULE.
- SPECIAL RECEPTACLE, WALL MOUNT +18", OR AS NOTED, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR RECEPTACLE TYPE
- SPECIAL RECEPTACLE, CEILING MOUNT, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR RECEPTACLE TYPE
- EQUIPMENT CONNECTION, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE
- EQUIPMENT CONNECTION, WALL MOUNT +18", OR AS NOTED, REFER TO ELECTRICAL EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE
- BLANK FACE GFCI DEVICE, WALL MOUNT +48", OR AS NOTED
- MOTORIZED DOOR OPERATOR CONTROL STATION, WALL MOUNT, +48", OR AS NOTED
- DOOR PUSH BUTTON (WEATHERPROOF), +48" OR AS NOTED
- GYM EQUIPMENT CONTROLLER, WALL MOUNT +48", OR AS NOTED
- JUNCTION BOX, WITH PULL STRING, WALL MOUNT, REFER TO PLAN OR DETAIL FOR MOUNTING HEIGHT
- HAND DRYER, WALL MOUNT +48", OR AS NOTED
- GROUND BAR
- UTILITY TRANSFORMER
- UTILITY METER
- SURGE PROTECTIVE DEVICE
- SAFETY DISCONNECT SWITCH
- EMERGENCY PUSH BUTTON
- PANELBOARD - SURFACE MOUNTED
- PANELBOARD - RECESSED IN WALL
- VARIABLE FREQUENCY DRIVE

TELECOMMUNICATIONS INFRASTRUCTURE SYMBOLS

- VOICE / DATA OUTLET: 4" SQUARE JUNCTION BOX, MUD RING, AND 1"C WITH PULL ROPE TO ACCESSIBLE CEILING SPACE OR MDF ROOM
- WIRELESS ACCESS POINT- SEE SCHEDULE FOR EXACT REQUIREMENTS
- CABLE TELEVISION LOCATION - RADIO GRADE CABLING

SEE RISER DIAGRAM AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

TEMPERATURE CONTROLS SYMBOLS - DEVICES PROVIDED BY T.C.C

- THERMOSTAT JUNCTION BOX ROUGH-IN. WALL MOUNTED +48" OR AS NOTED. EXTEND 3/4" CONDUIT TO ACCESSIBLE LOCATION ABOVE CEILING.
- HUMIDISTAT JUNCTION BOX ROUGH-IN. WALL MOUNTED +48" OR AS NOTED. EXTEND 3/4" CONDUIT TO ACCESSIBLE LOCATION ABOVE CEILING.
- CARBON DIOXIDE SENSOR JUNCTION BOX ROUGH-IN. WALL MOUNTED +48" OR AS NOTED. EXTEND 3/4" CONDUIT TO ACCESSIBLE LOCATION ABOVE CEILING.
- TERMPERATURE SENSOR JUNCTION BOX ROUGH-IN. WALL MOUNTED +48" OR AS NOTED. EXTEND 3/4" CONDUIT TO ACCESSIBLE LOCATION ABOVE CEILING.

LIGHTING SYMBOLS

- RECESSED LIGHT FIXTURE, LETTER INDICATES SWITCH LEG (TYPICAL), SHADING INDICATES EMERGENCY LIGHT (TYPICAL)
- ROUND LIGHT FIXTURE - SURFACE MOUNTED
- SQUARE LIGHT FIXTURE - SURFACE MOUNTED
- PENDANT MOUNTED LIGHT FIXTURE
- ROUND APERTURE RECESSED DOWNLIGHT FIXTURE, ARROW INDICATES WALLWASH
- SQUARE APERTURE RECESSED DOWNLIGHT FIXTURE, ARROW INDICATES WALLWASH
- SURFACE MOUNTED STRIP FIXTURE
- LINEAR PENDANT MOUNTED FIXTURE
- INDUSTRIAL STRIP LIGHT FIXTURE
- WALL MOUNTED STRIP LIGHT FIXTURE
- COVE LIGHT FIXTURE
- EMERGENCY LIGHT FIXTURE, WALL MOUNT, +96" OR AS NOTED
- EMERGENCY LIGHT FIXTURE, CEILING MOUNT
- EXIT SIGN, WALL MOUNT +96", SHADED AREAS INDICATE NUMBER OF FACES, ARROWS INDICATE SIGN ARROWS
- EXIT SIGN, CEILING MOUNT, SHADED AREAS INDICATE NUMBER OF FACES, ARROWS INDICATE SIGN ARROWS
- EXTERIOR LIGHT FIXTURE, WALL MOUNT +10', OR AS NOTED
- INTERIOR LIGHT FIXTURE, WALL MOUNT
- EXTERIOR POLE MOUNTED LIGHT FIXTURE, REFER TO LIGHT FIXTURE SCHEDULE
- BOLLARD LIGHT FIXTURE
- EXTERIOR FLOOD LIGHT FIXTURE, REFER TO LIGHT FIXTURE SCHEDULE
- CEILING FAN
- SINGLE POLE SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG
- THREE WAY SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG
- PILOT LIGHT SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG
- DIMMER SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG
- LOW VOLTAGE MULTI-BUTTON SWITCH, WALL MOUNT +48", OR AS NOTED, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE
- OCCUPANCY SENSOR, WALL MOUNT +48", NUMBER INDICATES TYPE, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE
- OCCUPANCY SENSOR, CEILING MOUNT, NUMBER INDICATES TYPE, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE
- DAYLIGHTING SENSOR, CEILING MOUNT, NUMBER INDICATES TYPE, LETTER INDICATES SWITCH LEG, REFER TO LIGHTING CONTROLS SCHEDULE
- LIGHTING CONNECTION, REFER TO LIGHTING FIXTURE SCHEDULE FOR FIXTURE DESCRIPTION
- EMERGENCY TRANSFER DEVICE
- LIGHTING CONTACTOR
- RELAY
- PHOTOCELL
- ROOM/ZONE CONTROLLER, MOUNT ABOVE ACCESSIBLE CEILING

GROUNDING AND BONDING SYMBOLS

- GROUND BAR
- TELECOMMUNICATIONS MAIN GROUND BAR
- TELECOMMUNICATIONS GROUND BAR

SEE RISER DIAGRAM AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

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REVISION	DATE	REASON FOR ISSUE

ELECTRICAL SYMBOL LEGEND AND GENERAL NOTES

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
1.24.2020	192530

SHEET NUMBER
E0.01

LIGHTING FIXTURE SCHEDULE

NOTES:

1. ALL FIXTURES SHALL BE U.L. OR SIMILARLY LISTED.
2. REFER TO ARCHITECTURAL DOCUMENTS FOR EXACT MOUNTING LOCATIONS, DETAILS, AND CONFIGURATIONS OF ALL LUMINAIRES. IF ARCHITECTURAL DRAWINGS DO NOT CLARIFY EXACT MOUNTING LOCATION OR DETAIL, CONTRACTOR SHALL ISSUE AN RFI FOR ARCHITECT TO SPECIFICALLY CLARIFY PRIOR TO FIXTURE ROUGH-IN.
3. VERIFY COMPATIBILITY OF LIGHT FIXTURES WITH CEILING MATERIAL, ADJACENT CONSTRUCTION, AND ADJACENT FINISHES PRIOR TO SHOP DRAWINGS SUBMITTAL AND NOTIFY THE ARCHITECT OF ANY CONFLICTS WITH THE PROPOSED...
4. CONTRACTOR IS RESPONSIBLE FOR ALL MISCELLANEOUS HARDWARE NECESSARY TO INSTALL AND SUPPORT THE LUMINAIRES.
5. ADJUSTABLE INTERIOR AND EXTERIOR LIGHT FIXTURES SHALL BE TARGETED AND ADJUSTED BY THE CONTRACTOR UNDER THE OBSERVATION AND IN COMPLIANCE WITH RECOMMENDATIONS OF THE ARCHITECT. ALL LABOR AND MATERIAL COSTS MADE NECESSARY BY THIS REQUIREMENT SHALL BE INCLUDED.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND FILLING OUT ALL UTILITY REBATE FORMS FOR OWNER.

TYPE	MANUFACTURER	MODEL	DESCRIPTION	VOLTAGE	LOAD-VA	LAMP TYPE	APPROVED EQUALS
D1			6IN LED RECESSED DOWNLIGHT, OPEN, 3500K	120 V	25 VA		AS APPROVED BY ENGINEER
D2			3.5IN LED RECESSED DOWNLIGHT, TRIMLESS, OPEN, 3000K	120 V	25 VA		AS APPROVED BY ENGINEER
D3			SIMILAR TO TYPE D2. RECESSED ADJUSTABLE DOWNLIGHT.	120 V	25 VA		AS APPROVED BY ENGINEER
F1			2X2 RECESSED LED TROFFER, 3500K, STANDARD OUTPUT	120 V	35 VA		AS APPROVED BY ENGINEER
F2			2X2 RECESSED LED TROFFER, 3500K, HIGH OUTPUT	120 V	35 VA		AS APPROVED BY ENGINEER
F4			12FT CONTINUOUS LENGTH, 4IN WIDE APERTURE RECESSED LINEAR LED, STANDARD OPTICS, 3500K	120 V	24 VA		AS APPROVED BY ENGINEER
F5			2X2 RECESSED LED EDGE-LIT TROFFER, 3500K, STANDARD OUTPUT	120 V	35 VA		AS APPROVED BY ENGINEER
L1			4FT LED SURFACE MOUNTED LENSED WRAP, 3500K	120 V	40 VA		AS APPROVED BY ENGINEER
L2			LED UTILITY STRIP FIXTURE. 4' LENGTH, CHAIN MOUNTED. 3500K	120 V	40 VA		AS APPROVED BY ENGINEER
L4			4FT LED COVE LIGHT MOUNTED INSIDE OF COVE SHELF, CONTINUOUSLY, 3000K	120 V	40 VA		AS APPROVED BY ENGINEER
L5			LOW PROFILE LINEAR NICHE DOWNLIGHT. 3000K, 90 CRI	120 V	40 VA		AS APPROVED BY ENGINEER
L6			4FT LED UTILITY STRIP. SURFACE MOUNTED. 3500K	120 V	40 VA		AS APPROVED BY ENGINEER
P1			32IN LED PENDANT, 2700K, CLOTH SHADE	120 V	30 VA		AS APPROVED BY ENGINEER
P2			LED GLASS PENDANT, CABLE HUNG, 3000K	120 V	30 VA		AS APPROVED BY ENGINEER
S1			LED SITE AREA LIGHT, 25FT OVERALL HEIGHT, 5" SQUARE STEEL POLE, 3000K, FORWARD THROW, HOUSE SIDE SHIELD	120 V	0 VA		AS APPROVED BY ENGINEER
S2			6IN ROUND LED LIGHTING BOLLARD, 9" HEIGHT, 3000K	120 V	0 VA		AS APPROVED BY ENGINEER
S3			2IN LED CYLINDER, DOWN DISTRIBUTION, WALL MOUNT, WET LOCATION LISTED, 3000K	120 V	0 VA		AS APPROVED BY ENGINEER
S4			6IN CYLINDER LED DOWNLIGHT, PENDANT THREAD MOUNT, WET LOCATION LISTED, 3000K	120 V	0 VA		AS APPROVED BY ENGINEER
S5			ADJUSTABLE LED FLOOD LIGHT PROJECTOR. MOUNTED ALONG UNDERSIDE OF EXTERIOR SOFFIT. ADJUSTABLE AIM KNUCKLE MOUNT, WIDE FLOOD OPTIC, 3000K, REMOTE POWER SUPPLY	120 V	0 VA		AS APPROVED BY ENGINEER
S6			LINEAR LED TAPE LIGHT. OUTDOOR RATED. 3000K, 200 LUMENS/FT. APPROXIMATELY 12'-9" IN TOTAL LENGTH.	120 V	24 VA		AS APPROVED BY ENGINEER
S7			LED SLIM STEP LIGHT, 3000K	120 V	0 VA		AS APPROVED BY ENGINEER
W1			3FT LED WALL MOUNT VANITY LIGHT, ABOVE RESTROOM MIRROR, 3500K	120 V	35 VA		AS APPROVED BY ENGINEER
W2			4FT VERTICAL LINEAR WALL MOUNT, SOLID FRONT WITH SIDE OPTICS, 3500K	120 V	20 VA		AS APPROVED BY ENGINEER
W3			LED WALL SCONCE, GLASS SHADE, 3000K	120 V	20 VA		AS APPROVED BY ENGINEER
W4			2IN LED ACCENT, FLOOD DISTRIBUTION, HINGE MOUNT ADJUSTABLE AIM, ALTERNATE UP/DOWN, 3000K	120 V	20 VA		AS APPROVED BY ENGINEER
X1			LED EXIT SIGN, UNIVERSAL MOUNTING	120 V	5 VA	RED LED	

EQUIPMENT CONNECTION SCHEDULE

ABBREVIATIONS:

1	NEMA 1 ENCLOSURE
3R	NEMA 3R ENCLOSURE
4	NEMA 4 ENCLOSURE
4X	NEMA 4X ENCLOSURE
BO	PROVIDED BY OTHERS
CB	CIRCUIT BREAKER IN PANEL
CSD	COMBINATION STARTER/DISCONNECT
CP	CORD AND PLUG PROVIDED WITH UNIT
ECB	ENCLOSED CIRCUIT BREAKER
FAR	FIRE ALARM SHUTDOWN RELAY
FDS	FUSED DISCONNECT SWITCH
GF	GROUND FAULT CIRCUIT INTERRUPTION
HOA	HAND-OFF-AUTO
INT	INTEGRAL WITH EQUIPMENT FROM FACTORY
MMS	MANUAL MOTOR STARTER WITH FUSES
NFD	NON-FUSED DISCONNECT SWITCH
RD	RETURN AIR DUCT DETECTOR
RSR	RUN STATUS RELAY , NORMALLY OPEN
SD	SUPPLY AIR DUCT DETECTOR
SSP	START/STOP PUSHBUTTON WITH PILOT
SS	START/STOP PUSHBUTTON
ST	SHUNT TRIP
TOR	TIME DELAY OFF RELAY
TS	TOGGLE SWITCH WITH PLUG FUSE
TS-L	LOCKABLE TOGGLE SWITCH WITH PLUG FUSE
VFD	VARIABLE FREQUENCY DRIVE

TAG	ELECTRICAL CHARACTERISTICS					DISCONNECT				CONTROLS		REMARKS
	VOLTAGE	PHASE	MOTOR HP	KW	MCA	TYPE	SIZE (AMPS)	NEMA RATING	FUSE SIZE (AMPS)	STARTER	DESCRIPTION	
AHU-1	208 V	3			63	INT	-	-	-	-	-	CONNECT TO SINGLE POINT POWER CONNECTION AT MECHANICAL UNIT. COORDINATE WITH APPROVED SHOP DRAWINGS.
B-1	120 V	1	-	-	5.88	TS-L	20	1	20	-	-	PROVIDE WITH LOCKABLE TOGGLE SWITCH COVER PER NEC. PROVIDE EMERGENCY-OFF PUSHBUTTON CONTROLS.
B-2	120 V	1	-	-	5.88	TS-L	20	1	20	-	-	PROVIDE WITH LOCKABLE TOGGLE SWITCH COVER PER NEC. PROVIDE EMERGENCY-OFF PUSHBUTTON CONTROLS.
CAB-1	120 V	1			5	TS-L	20		20			
CP-1	120 V	1		-	2	TS	20	1	20	-	-	-
CU-1	208 V	3	-	-	121.4	FDS	200	3R	150	-	-	UNIT PROVIDED WITH NON-FUSED DISCONNECT.
CU-2	208 V	1			16.5	FDS	30	3R	25	-	-	
EF-1	120 V	1	1/2	-	11.52	TS-L				0	-	
P-1	208 V	3	3	-	12.94	FDS	30	1	-	-	-	CONNECT TO SINGLE POINT POWER CONNECTION AT MECHANICAL UNIT. COORDINATE WITH APPROVED SHOP DRAWINGS.
P-2	208 V	3	3	-	12.94	FDS	30	1	-	-	-	CONNECT TO SINGLE POINT POWER CONNECTION AT MECHANICAL UNIT. COORDINATE WITH APPROVED SHOP DRAWINGS.
WH-1	120 V	1	-	-	5.88	TS-L	20	1	20	-	-	-

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

ELECTRICAL SCHEDULES

50% CONSTRUCTION DOCUMENTS

DATE 3.26.2020

PROJECT NUMBER 192530

SHEET NUMBER E0.02

1/24/2020 4:48:43 PM

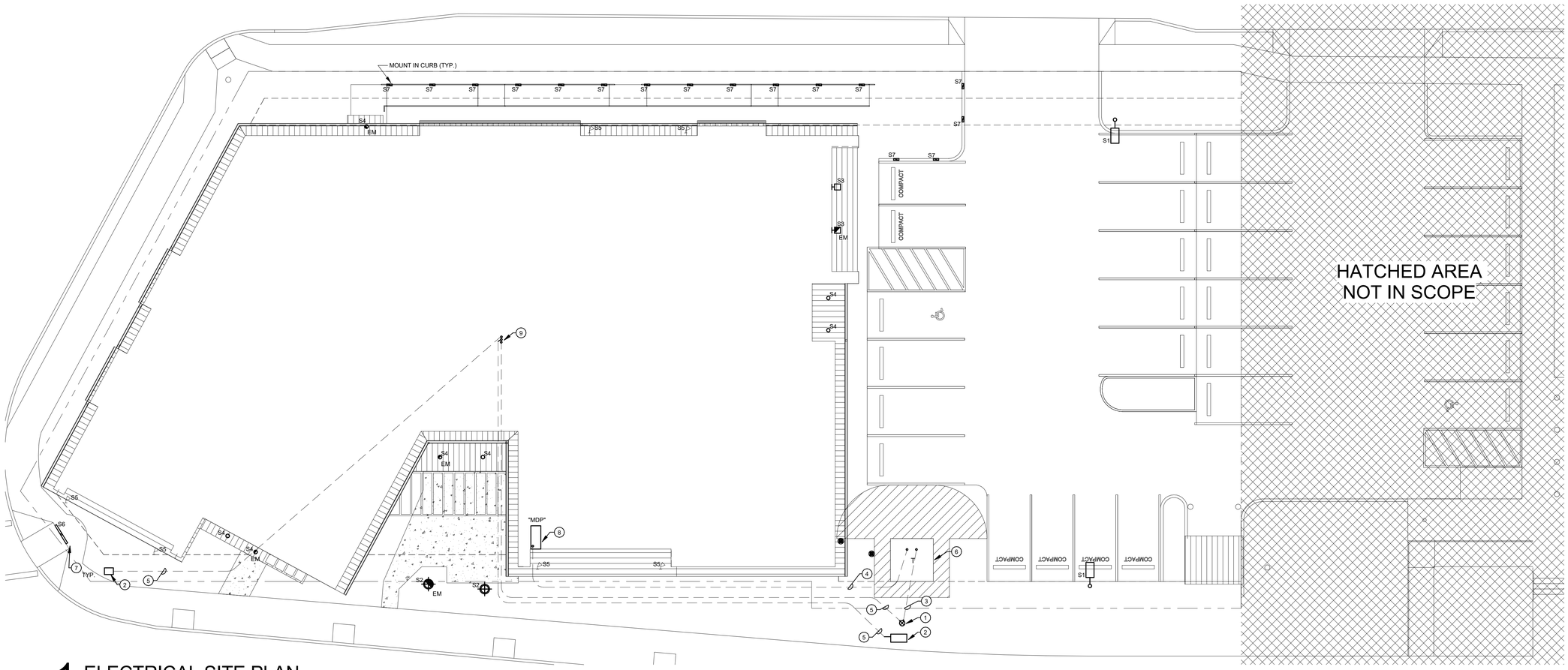
KEYNOTES (#)

1 JOINT UTILITY POLE.
2 TELECOM SERVICE PROVIDER PULL BOX.
3 (1) 4"C (PGE PRIMARY), VERIFY WITH SERVING UTILITY.
4 (2) 4"C (PGE SECONDARY), VERIFY WITH SERVING UTILITY.
5 (1) 4"C (TELECOM), VERIFY WITH OWNER AND SERVING UTILITY.
6 8FT X 8FT CONCRETE TRANSFORMER PAD (PGE TRANSFORMER PROVISIONS), VERIFY WITH SERVING UTILITY.
7 MOUNT AT MONUMENT SIGN.
8 STUB UP AT METERED SERVICE INCOMING SECTION. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
9 STUB UP AT TELECOM MDF ROOM.

SITE PLAN

A. ELECTRICAL SITE UTILITIES AND INFRASTRUCTURE ARE SHOWN SCHEMATIC. UTILITY INFRASTRUCTURE AND MATERIALS INCLUDING CONDUITS, PADS, CONNECTIONS, METERING EQUIPMENT, PULL BOXES, AND OTHER REQUIRED SERVICE PROVISIONS SHALL BE INSTALLED BY THE CONTRACTOR PER UTILITY COMPANY REQUIREMENTS. CONTRACTOR SHALL CONTACT EACH OF THE UTILITY COMPANY REPRESENTATIVES TO OBTAIN UTILITY DESIGN DRAWINGS AND TO SCHEDULE MILESTONE INSPECTIONS.
CONTACT:
XXXXX (PGE) (XXX)XXX-XXXX
XXXXX (CLACKAMS COUNTY) (XXX)XXX-XXXX
XXXXX (FRONTIER) (XXX)XXX-XXXX
XXXXX (WAVE BROADBAND) (XXX)XXX-XXXX

B. CONDUIT ROUTES AND LOCATIONS ON ELECTRICAL SITE PLAN ARE SCHEMATIC. REFER TO CIVIL AND LANDSCAPE DOCUMENTS FOR COORDINATION OF SITE UTILITIES AND DIMENSIONAL LOCATIONS. COORDINATE CONDUIT CROSSINGS WITH FOOTING AND GRADE BEAM LOCATIONS, AND SLEEVE PER STRUCTURAL REQUIREMENTS. MAINTAIN PROPER SEPARATION OF DRY AND WET UTILITIES PER CIVIL REQUIREMENTS. CALL UNDERGROUND LOCATING SERVICES 48 HOURS IN ADVANCE AND PRIOR TO WORK.



1 ELECTRICAL SITE PLAN
1" = 10'-0"

PROJECT

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REVISION	DATE	REASON FOR ISSUE

ELECTRICAL SITE PLAN

DESIGN DEVELOPMENT

DATE 1.24.2020
PROJECT NUMBER 192530

SHEET NUMBER
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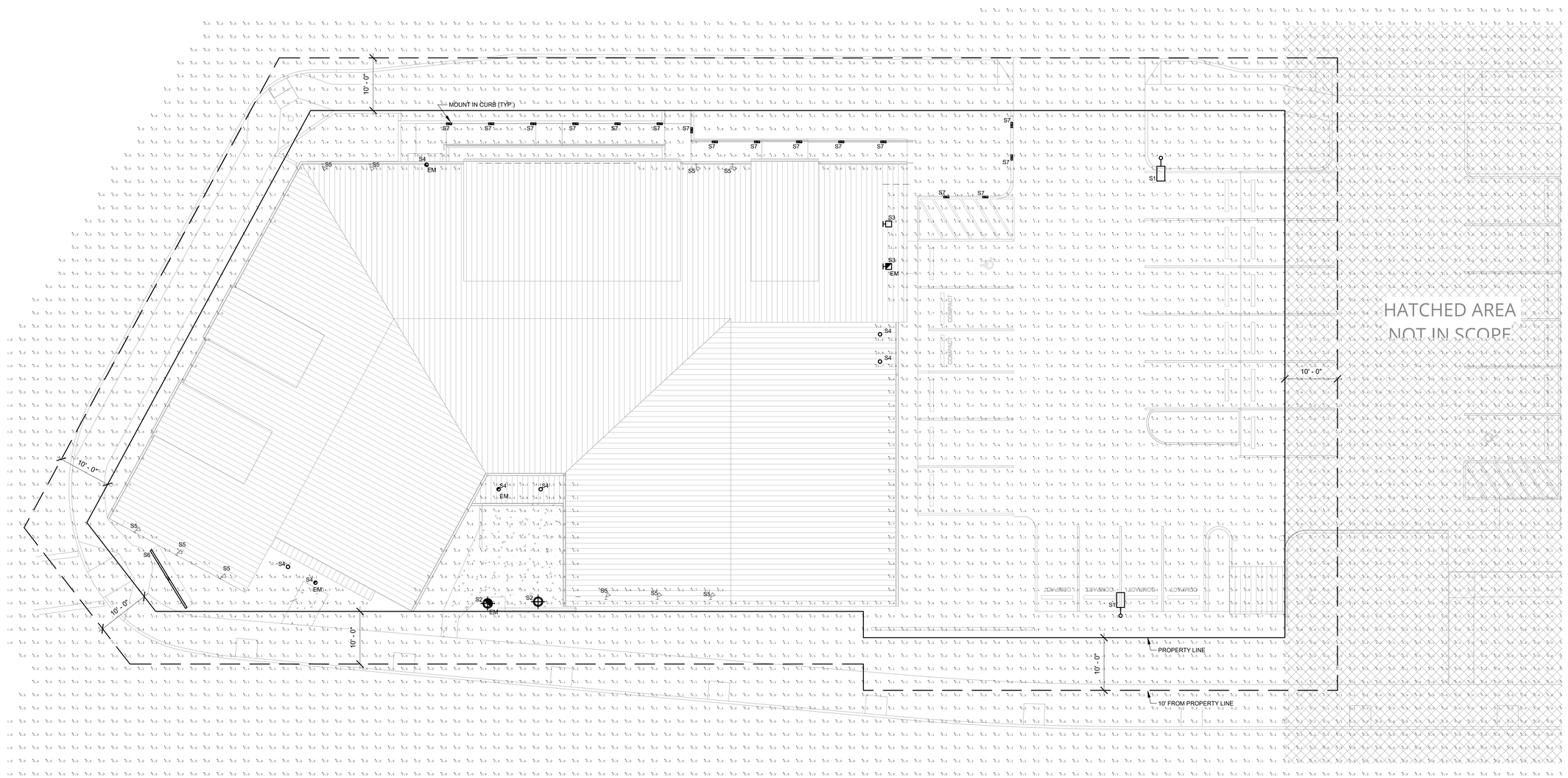
BIM 360://19111 - Sandy Health Clinic/Sandy Clinic-KCL-Elec-17.rvt



1 PHOTOMETRIC SITE PLAN
NTS

PROJECT

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SANDY, OR 97055

CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

ELECTRICAL SITE LIGHTING PLAN

50% CONSTRUCTION DOCUMENTS

DATE	PROJECT NUMBER
3.26.2020	192530

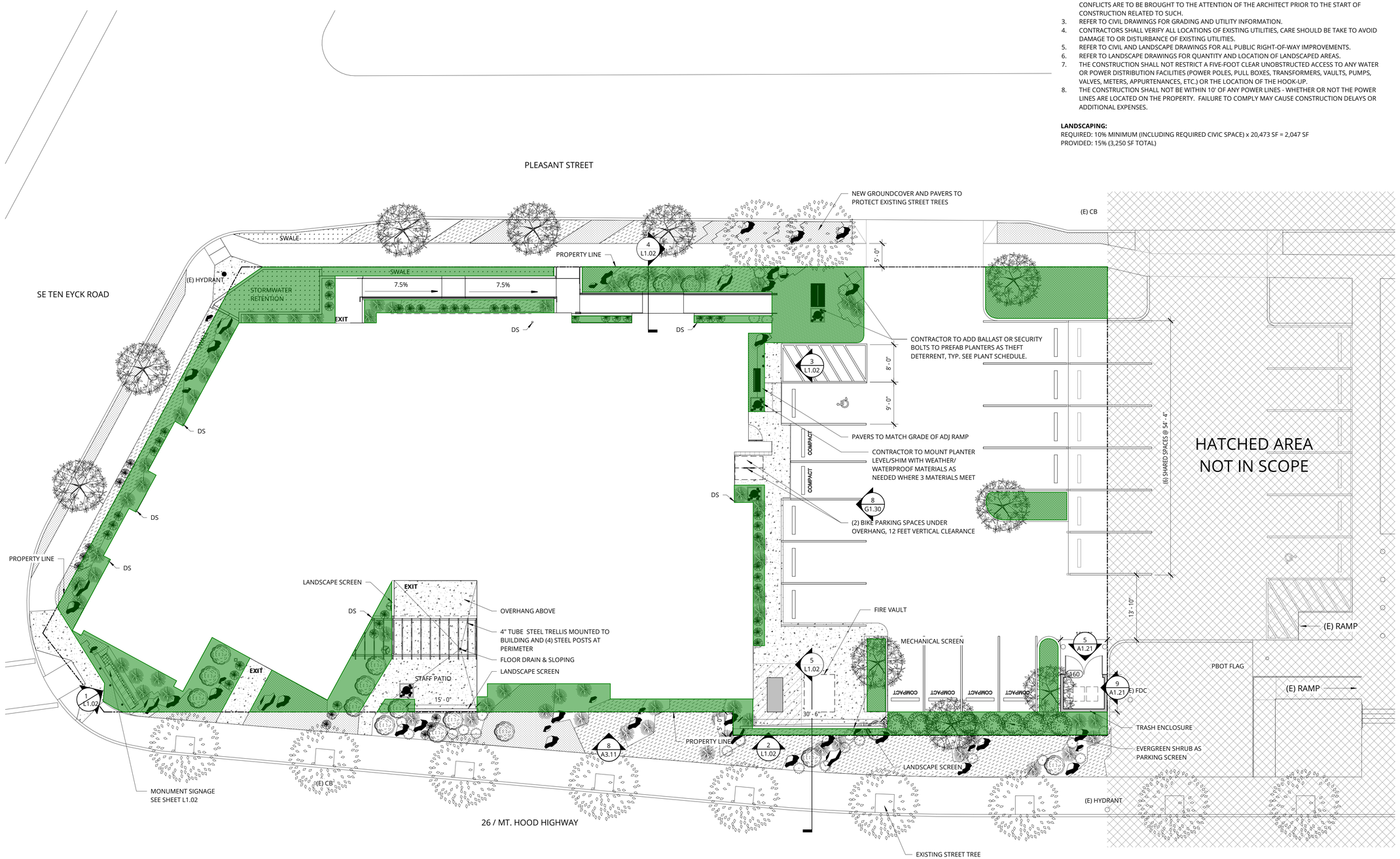
SHEET NUMBER
E1.02

G. LANDSCAPE PLAN

GENERAL NOTES - SITE PLAN

1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION, CONFLICTS ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION RELATED TO SUCH.
3. REFER TO CIVIL DRAWINGS FOR GRADING AND UTILITY INFORMATION.
4. CONTRACTORS SHALL VERIFY ALL LOCATIONS OF EXISTING UTILITIES, CARE SHOULD BE TAKE TO AVOID DAMAGE TO OR DISTURBANCE OF EXISTING UTILITIES.
5. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ALL PUBLIC RIGHT-OF-WAY IMPROVEMENTS.
6. REFER TO LANDSCAPE DRAWINGS FOR QUANTITY AND LOCATION OF LANDSCAPED AREAS.
7. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULL BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR THE LOCATION OF THE HOOK-UP.
8. THE CONSTRUCTION SHALL NOT BE WITHIN 10' OF ANY POWER LINES - WHETHER OR NOT THE POWER LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS OR ADDITIONAL EXPENSES.

LANDSCAPING:
REQUIRED: 10% MINIMUM (INCLUDING REQUIRED CIVIC SPACE) x 20,473 SF = 2,047 SF
PROVIDED: 15% (3,250 SF TOTAL)



PROJECT

1 SITE PLAN - LANDSCAPE

1" = 10'-0"

NOT FOR CONSTRUCTION

Ankrom Moisan

38 NORTHWEST DAVIS, SUITE 300
PORTLAND, OR 97209
503.245.7100

1505 5TH AVE, SUITE 300
SEATTLE, WA 98101
206.576.1600

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SAN FRANCISCO, CA 94103
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SANDY HEALTH CENTER
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

LANDSCAPE PLAN

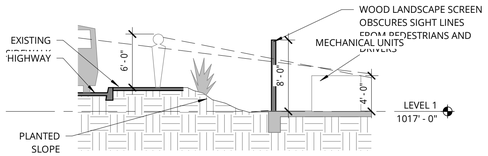
DESIGN REVIEW

DATE	PROJECT NUMBER
4.3.2020	192530

SHEET NUMBER
L1.01

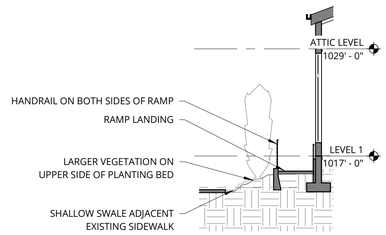
1/24/2020 3:38:23 PM

G. Landscape Plan: Supplemental Information



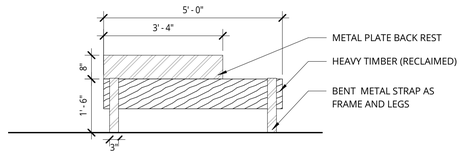
5 SIGHTLINES & LANDSCAPE SCREEN

1/8" = 1'-0"



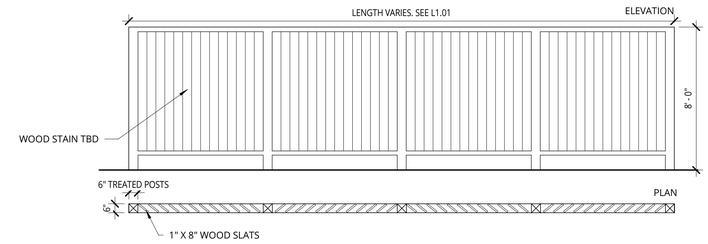
4 RAMP SECTION

1/8" = 1'-0"



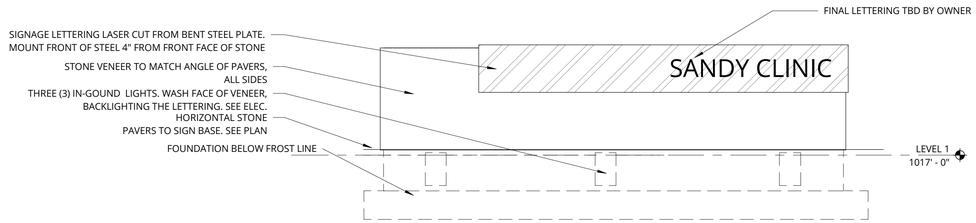
3 DESIGN BUILD HEAVY TIMBER BENCHES

1/2" = 1'-0"



2 TYPICAL LANDSCAPE SCREEN

1/4" = 1'-0"



1 MONUMENT SIGNAGE

1/2" = 1'-0"

C:\Users\melindam\Documents\192530-17-Sandy Clinic_Central_melindam.rvt

NOT FOR CONSTRUCTION

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SANDY HEALTH CLINIC

39831 HIGHWAY 26
SANDY, OR 97055

CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

LANDSCAPE DETAILS

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
1.24.2020	192530

SHEET NUMBER

L1.02

G. Landscape Plan: Supplemental Information

GENERAL PLANTING NOTES:

A. DO NOT WILLFULLY PROCEED WITH PLANTING OPERATIONS WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING THE DESIGN PROCESS. BRING SUCH CONDITIONS IMMEDIATELY TO ATTENTION OF OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. ASSUME FULL RESPONSIBILITY FOR COSTS INCURRED AND REQUIRED MODIFICATIONS DUE TO LACK OF PROVIDING SUCH NOTIFI CATION.

B. ENSURE THAT FINISH GRADE ELEVATIONS OF PLANTING AREAS ARE SET AT THE PROPER ELEVATIONS RELATIVE TO PAVING FINISH SURFACE ELEVATIONS, UTILITY COVERS AND CURBS. SHRUB PLANTING AREAS AT 2" BELOW AND LAWN 1" BELOW ADJACENT GRADE. NOTIFY OWNER OF ANY DISCREPANCIES.

C. ASSURE POSITIVE DRAINAGE IN ALL PLANTING AREAS TO DRAIN AWAY FROM BUILDING, 2% MINIMUM.

D. PLANT MATERIAL, I.E. TREES, SHRUBS VINES, ESPALIERS AND GROUNDCOVERS, MUST BE APPROVED BY OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION. PLANT MATERIAL INSTALLED WITHOUT OWNER'S AUTHORIZED REPRESENTATIVE'S APPROVAL MAY BE SUBJECT TO REMOVAL AND REPLACEMENT WITH RELATED COSTS BORNE BY CONTRACTOR.

E. FINAL LOCATIONS OF PLANT MATERIALS ARE SUBJECT TO APPROVAL OF THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION. PERFORM THE FOLLOWING BEFORE BEGINNING PLANTING PIT EXCAVATION:
E.A. SHRUBS - PLACE ACTUAL PLANT CONTAINERS ON-SITE IN "FINAL" LOCATIONS.
E.B. TREES - PAINT OR STAKE CENTER OF TREE.

F. PLANTING SHALL NOT BE PERFORMED UNTIL PRE-PLANTING SOIL AMENDMENTS ARE COMPLETE AND APPROVED BY THE OWNER'S REPRESENTATIVE.

G. TOPSOIL SHALL BE UTILIZED IN ALL PLANTING AREAS TO THE MAXIMUM EXTENT FEASIBLE. TOPSOIL REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.

H. SOIL AMENDMENTS SHALL BE PROVIDED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE FERTILITY ANALYSIS PROVIDED BY AND APPROVED SOIL TESTING LAB. SOILS SHALL BE THOROUGHLY LOOSENED TO A DEPTH OF NOT LESS THAN 8 INCHES AND SOIL AMENDMENT SHALL BE THOROUGHLY INCORPORATED INTO THE SOIL OF ALL LANDSCAPE AREAS TO A DEPTH OF AT LEAST 6 INCHES BY TILLING, DISKING OR OTHER SUITABLE PROCESSES.

I. IF CONFLICTS ARISE BETWEEN ACTUAL SIZE OF PLANTING AREAS ON-SITE AND THOSE AREAS INDICATED ON DRAWINGS, CONTACT OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. FAILURE TO MAKE SUCH CONFLICTS KNOWN TO OWNER'S AUTHORIZED REPRESENTATIVE IN A TIMELY FASHION MAY RESULT IN CONTRACTOR'S LIABILITY TO RELOCATE PLANT MATERIALS OR AT WORST CASE, BECOME UNABLE TO CHARGE OWNER FOR PLANT MATERIAL ALREADY PLANTED.

J. SHRUB AND GROUNDCOVER AREAS TO RECEIVE A 3-INCH DEEP LAYER MULCH TO BE SUBMITTED FOR APPROVAL FROM LANDSCAPE ARCHITECT.

K. IRRIGATION: ALL LANDSCAPE AREAS WITHIN THE SITE INCLUDING TURF, SHRUB BEDS AND TREE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM. THE IRRIGATION SYSTEM SHALL BE ADJUSTED TO EMIT THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL.

L. PROVIDE ROOT CONTROL BARRIERS FOR ALL TREES PLANTED WITHIN 5' OF A HARDSCAPE EDGE SUCH AS PAVING, WALLS, STEPS, ETC. REFER TO PLANTING DETAILS FOR ADDITIONAL INFORMATION.

M. INSTALL PLANT MATERIAL WITH ITS BEST SIDE FACING PREDOMINATE VIEW OF PUBLIC.

N. PROVIDE THE PROPER SETBACK BETWEEN UTILITIES AND TREES - CONTACT CITY INSPECTOR FOR REQUIRED SETBACKS IN THE CASE THAT THE DRAWINGS ARE NOT CLEAR.

O. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY UNDER SEPARATE PERMIT. SHOWN FOR REFERENCE ONLY. REFER TO APPROVED RIGHT OF WAY DRAWINGS PRIOR TO CONSTRUCTION.

P. REFERENCE CIVIL AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL SITEWORK INFORMATION. .

Q. ALL WORK IN AREAS OF TREE PRESERVATION TO BE DONE USING HAND TOOLS WITH CARE TAKEN TO AVOID DAMAGE TO EXISTING TREE ROOTS, OR UNDER DIRECT SUPERVISION OF A PROJECT ARBORIST.

R. DO NOT MULCH AGAINST TREE TRUNK.

S. PLANT PER PLAN BUT NO CLOSER THAN 5 FEET TO TRUNK. ADJUST LOCATION OF NEW PLANTS AS NEEDED TO AVOID TREE ROOTS IF ENCOUNTERED DURING HAND DIGGING.

T. USE TEMPORARY DRIP IRRIGATION TO WATER PLANTS UNTIL ESTABLISHED, SEE IRRIGATION PLAN FOR MORE INFORMATION.

U. UNUSED.

V. PER VMC 20.925.115, PRIOR TO OCCUPANCY, A LICENSED LANDSCAPE ARCHITECT SHALL CERTIFY THAT ALL REQUIRED LANDSCAPING HAS BEEN PLANTED PER THE APPROVED PLANS.

PREPARATION, INSTALLATION AND MAINTENANCE OF NEW TREES

1. ALL TREES SHALL BE SECURELY STAKED OR GUYED.
2. ALL PLANT MATERIAL SHALL BE FREE OF ANY DEFECTS, OF NORMAL HEALTH, HEIGHT, LEAF DENSITY AND SPREAD APPROPRIATE TO THE SPECIES AS DEFINED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS. ALL TREES SHALL BE BALL AND BURLAP OR EQUIVALENT.
3. ALL LANDSCAPING SHALL BE MAINTAINED FREE FROM DISEASE, PESTS, WEEDS AND LITTER.

MAINTENANCE NOTES FOR EXISTING TREES

1. WASH OFF FOLIAGE WHICH BECOMES SOILED DURING CONSTRUCTION.
2. WATER TREES AND OTHER VEGETATION WHICH ARE TO REMAIN AS NECESSARY TO MAINTAIN THEIR HEATH DURING THE COURSE OF THE WORK. RATE AND FREQUENCY OF APPLICATION TO BE DETERMINED BY PROJECT ARBORIST.
3. ALL PRUNING SHALL BE PERFORMED BY A CURRENT ARBORIST LICENSED WITHIN THE STATE/COUNTY/CITY WHERE THE WORK IS TO BE COMPLETED.

STORMWATER PLANTING NOTES

1. STORMWATER FACILITIES TO BE PLANTED & CONSTRUCTED PER CITY OF SANDY.
2. PLANT QUANTITIES MEET REQUIREMENTS OF CITY OF SANDY.
3. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT THE REQUIRED CITY/COUNTY STORMWATER FACILITY INSPECTIONS HAVE BEEN PERFORMED AND APPROVED PRIOR TO PLACEMENT OF THE ENGINEERED SOIL.
4. REFER TO CIVIL ENGINEERS PLANS FOR SOIL (FG) FINISHED GRADE ELEVATION AND DEPTH PRIOR TO INSTALLING THE APPROVED TOPSOIL, IRRIGATION AND PLANTING ABOVE DRAIN ROCK AND PIPING.

LANDSCAPE CALCULATION NOTES

LANDSCAPE CALCULATIONS
DESCRIPTION

SIGHT DISTANCE TRIANGLE: ALL SHRUBS WITHIN THE SIGHT DISTANCE TRAINGLES SHALL BE MAINTAINED SO THAT FOLIAGE HEIGHT ABOVE PAVEMENT DOES NOT EXCEED 2.5 FT. STREET TREES WITHIN SIGHT DISTANCE TRIANGLE SHALL BE LIMBED UP TO A HEIGHT OF 10 FT. CONSISTENT WITH ALL A300 STANDARDS TO PROVIDE SIGHT DISTANCE VISIBILITY.

5 FOOT L1 BUFFER REQUIRED: 2" CALIPER TREES, 1 PER 30 LINEAR FEET, TYP

10 FOOT L2 BUFFER REQUIRED: 2" CALIPER TREE, 1 PER 30 LINEAR FEET, 3` CONTINUOUS HEDGE - 3 GALLON CONTAINER WITH 18" MINIMUM SPREAD, TYP

STREET TREES: 2" CALIPER AT 30` ON CENTER, TYP

FIELD ADJUST EXISTING PLANTING TO ACCOMODATE NEW WORK

INFILL PLANTING, FIELD ADJUST TO AVOID EXISTING TREE ROOTS

PARKING LOT PLANTING REQUIREMENTS: A MINIMUM OF 10% OF THE PARKING LOT IS TO BE LANDSCAPED, INCLUDING 1 TREE PER 10 PARKING STALLS AND 1 SHRUB FOR 30 SF OF THE REQUIRED LANDSCAPE AREA, TYP

PLANT SCHEDULE

TREES	BOTANICAL/COMMON NAMES	CONT	CAL	SIZE	QTY
	NYSSA SYLVATICA 'HAYMAN'S RED'/ RED RAGE TUPELO	B&B	2" CAL		9
	ILEX CRENATA 'STEEDS' UPRIGHT HOLLY			6'H/7 GAL	18

SHRUBS	BOTANICAL/COMMON NAMES	SIZE	HT.	QTY
	OSMANTHUS XFORTUNEI 'SAN JOSE' SWEET TEA OLIVE	3 GAL		10

ORNAMENTAL GRASSES	BOTANICAL/COMMON NAMES	SIZE	QTY
	OPHIOPOGON PLANISCAPUS 'NIGRESCENS' / MONDO GRASS	3 GAL	66
	DELPHINIUM ELATUM/ MAGIC FOUNTAIN MIX	3 GAL	28
	CAREX MORROWII 'AUREA-VARIEGATA'/ VARIEGATED JAPANESE SEDGE	3 GAL	55

VINES	BOTANICAL/COMMON NAMES	SIZE	QTY
	CLEMATIS ARMANDII 'APPLE BLOSSOM/ WHITE EVERGREEN CLEMATIS	1 GAL	2

STORMWATER/ SWALE PLANTING MIX	BOTANICAL/COMMON NAMES			SF
	STORMWATER			220 sf
	CAREX OBNUPTA / SLOUGH SEDGE	1 GAL	50% @ 12" oc	
	JUNCUS EFFUSUS / SOFT RUSH	1 GAL	50% @ 12" oc	

PAVERS AND STONE		AREA/QTY
	RECTANGULAR TUMBLED STONE PAVERS, RUNNING PATTERN ORIENTATION AT ANGLE INDICATED. NATIVE ROCK TO MATCH BOULDERS - ARCHITECT TO APPROVE SAMPLE	525 sf
	MD (12" - 24") AND LG (24" - 36") BOULDERS, NATIVE ROCK MATERIAL- ARCHITECT TO APPROVE SAMPLE	AS NOTED ON L1.01

MULCH 4" DARK BROWN BARK MULCH BY INSTALLER, LOCAL SUPPLIER, NO DYES - FOR ALL BEDS AT PLANT INSTALLATION

GROUND COVERS	BOTANICAL/COMMON NAMES	CONT.	SPACING	AREA
	POTENTILLA N. 'NANA'/CINQUEFOIL	1 gal	18" o.c.	2600 sf
	EUONYMUS 'COLORATUS' / PURPLEWINTERCREEPER	1 gal	18" o.c.	1500 sf

FURNITURE

PLANTERS QTY 4 powder-coated aluminum planters,27" x 27" x 28"-color TBD, 1 gal evergreen shrub in center (selected by installer), seasonal annuals by owner. BOD: Ore, Inc Cube https://ore.design/products/cube/

BENCHES QTY 2 single-sided heavy-timber benches with steel back rest and legs, scaled dimensions as shown, Contractor design/build
QTY: 1 double -sided heavy-timber benches with steel back rest and legs, scaled dimensions as shown,Contractor design/build

NOT FOR CONSTRUCTION

Ankrom Moisan TM
38 NORTHWEST DAVIS, SUITE 300
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SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

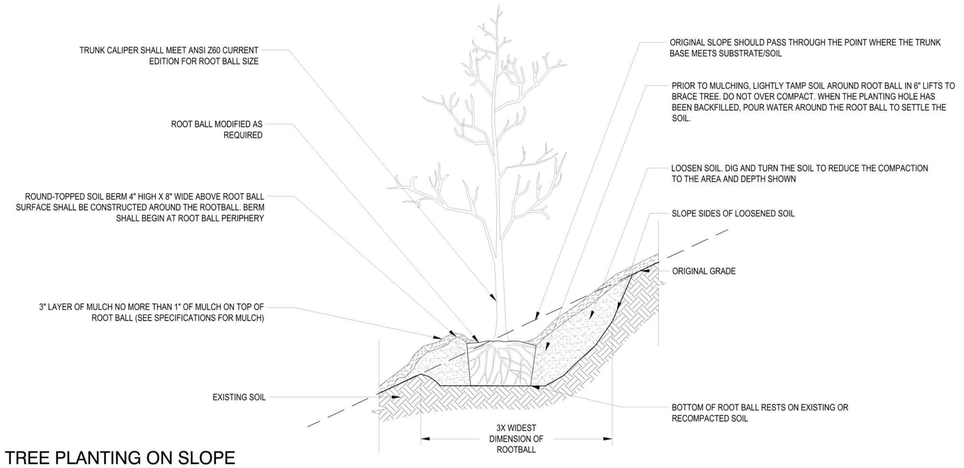
LANDSCAPE NOTES + PLANT SCHEDULE

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
1.24.2020	192530

SHEET NUMBER
L4.00

G. Landscape Plan: Supplemental Information



10 TREE PLANTING ON SLOPE

3/4" = 1'-0" 329343-04

TREE BACKFILL AMENDED AS FOLLOWS:

- 3 PARTS OF EXISTING TOPSOIL
- 1 PART COMPOST
- AS SPECIFIED SEE CHART

CALIPER SIZE	PERMAMATRIX POUNDS REQUIRED (DRY)
1.0"	5.00
1.5"	7.50
2.0"	10.00
2.5"	20.00
3.0"	30.00
3.5"	50.00

SHRUB, GRASSES AND GROUNDCOVER BACKFILL AMENDED AS FOLLOWS:

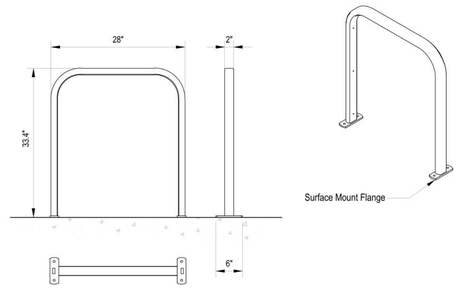
- 3 PARTS OF EXISTING TOPSOIL
- 1 PART COMPOST
- AS SPECIFIED SEE CHART

CONTAINER SIZE	PERMAMATRIX POUNDS REQUIRED (DRY)
PLUG	.05
4-INCH	.20
1 GAL.	.50
2 GAL.	.75
3 GAL.	1.25
6 GAL.	1.50
15 GAL.	5.00

PERMAMATRIX AVAILABLE LOCALLY FROM SUNMARK ENVIRONMENTAL 503.241.7333

4 PLANTING BACKFILL SOIL AMENDMENT

1" = 1'-0" 3291-08



PRODUCT: STAPLE BIKE RACK | MANUFACTURER: HUNTCO
MATERIAL: MILD STEEL, 5/8" X 2 1/2" STEEL FLAT BAR.
FINISH: THERMOPLASTIC BLACK.

NOTES:
BIKE RACK TO MEET CITY OF VANCOUVER STANDARDS, TYP

7 BIKE RACK - SURFACE MOUNT

3/4" = 1'-0" P-CO-18058-32

NOTE:
DO NOT USE PLANT TABLETS IN STORMWATER WATER QUALITY FACILITIES

11 PLANTING ON SLOPES #1/#2

NTS 3293-08

NOTE:

S = SPACING ON CENTER (O.C.) AS SHOWN ON PLANS

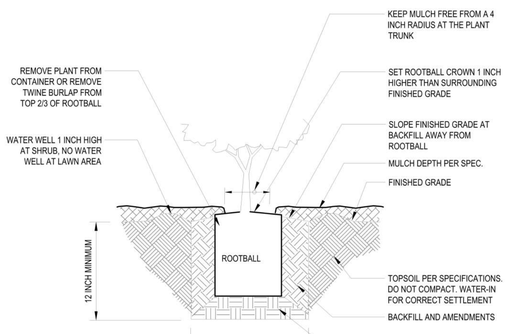
8 GROUNDCOVER SPACING

1/2" = 1'-0" 329333.83-01

ELEVATION

5 PROTECTION FENCING - PER ARBORIST

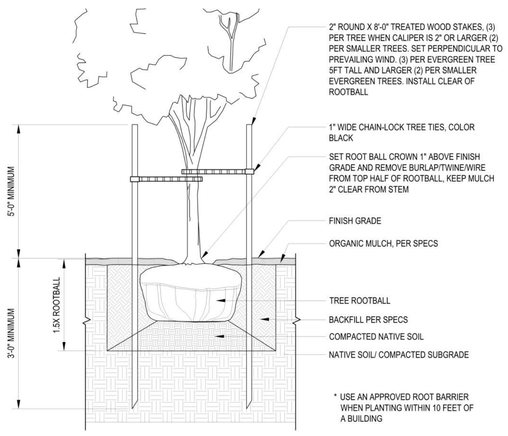
1/4" = 1'-0" P-CO-18058-36



NOTE: CHECK ROOTBALL FOR PRESENCE OF ROOT FLARE AT BASE OF TRUNK. REMOVE EXCESS SOIL OVER ROOT FLARE AND ADJUST DEPTH OF PLANTING HOLE TO ACCOMODATE REDUCED ROOTBALL DEPTH IF NEEDED. ROOT FLARE MUST BE VISIBLE ABOVE MULCH/SOIL/ROOTBALL.

12 SHRUB PLANTING

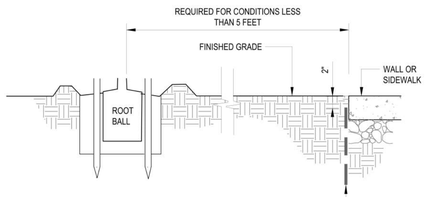
1" = 1'-0" 329333-01



* USE AN APPROVED ROOT BARRIER WHEN PLANTING WITHIN 10 FEET OF A BUILDING

9 TREE PLANTING ON GRADE

NTS 329343-01



LINEAL INSTALLED ROOT BARRIER BY NDS EP SERIES 24 INCHES DEEP OR APPROVED EQUAL. INSTALL ALONG SIDEWALK FOR TREES PLANTED 5 FEET OR CLOSER TO HARDSCAPE (MEASURED FROM BASE OF TRUNK). EXTEND 5 FEET BEYOND TRUNK IN EACH DIRECTION, UNLESS NOTED OTHERWISE ON PLANS. IF LENGTHS ARE NOT SPECIFIED REFER TO MANUFACTURER'S RECOMMENDATIONS

6 TREE ROOT BARRIER - LINEAR

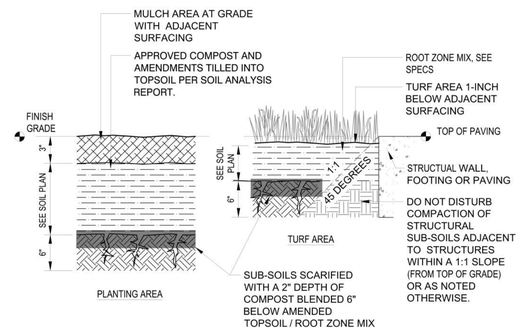
1" = 1'-0" 329452-02

PREPARATION, INSTALLATION AND MAINTENANCE OF NEW TREES

1. TOPSOIL SHALL BE UTILIZED IN ALL PLANTING AREAS TO THE MAXIMUM EXTENT FEASIBLE. TOPSOIL REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.
2. SOIL AMENDMENTS SHALL BE PROVIDED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE FERTILITY ANALYSIS PROVIDED BY AND APPROVED SOIL TESTING LAB. SOILS SHALL BE THOROUGHLY LOOSENED TO A DEPTH OF NOT LESS THAN EIGHT (8) INCHES AND SOIL AMENDMENT SHALL BE THOROUGHLY INCORPORATED INTO THE SOIL OF ALL LANDSCAPE AREAS TO A DEPTH OF AT LEAST SIX (6) INCHES BY TILLING, DISKING OR OTHER SUITABLE.
3. BARK MULCH SHALL BE PLACED AT A MINIMUM OF A 2 INCH DEPTH WITHIN ALL PLANTING AREAS.
4. ALL TREES SHALL BE SECURELY STAKED OR GUYED.
5. ALL PLANT MATERIAL SHALL BE FREE OF ANY DEFECTS, OF NORMAL HEALTH, HEIGHT, LEAF DENSITY AND SPREAD APPROPRIATE TO THE SPECIES AS DEFINED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS. ALL TREES SHALL BE BALL AND BURLAP OR EQUIVALENT.
6. IRRIGATION: ALL LANDSCAPE AREAS WITHIN THE SITE INCLUDING TURF, SHRUB BEDS AND TREE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM. THE IRRIGATION SYSTEM SHALL BE ADJUSTED TO MEET THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL.
7. ALL LANDSCAPING SHALL BE MAINTAINED FREE FROM DISEASE, PESTS, WEEDS AND LITTER.

MAINTENANCE NOTES FOR EXISTING TREES

1. WASH OFF FOLIAGE WHICH BECOMES SOILED DURING CONSTRUCTION.
2. WATER TREES AND OTHER VEGETATION WHICH ARE TO REMAIN AS NECESSARY TO MAINTAIN THEIR HEATH DURING THE COURSE OF THE WORK. RATE AND FREQUENCY OF APPLICATION TO BE DETERMINED BY PROJECT ARBORIST.
3. ALL PRUNING SHALL BE PERFORMED BY A CURRENT ARBORIST LICENSED WITHIN THE STATE/COUNTY/CITY WHERE THE WORK IS TO BE COMPLETED.



PLANTING AND LAWN AREA NOTES:

1. SOILS DISTURBED OR COMPACTED DURING CONSTRUCTION SHALL BE AMENDED AS DESCRIBED PER SOIL ANALYSIS REPORT.
2. COMPACTED SUBSOILS SHALL BE SCARIFIED (TILLED) EXCEPT WHERE DAMAGE TO TREE ROOTS, STRUCTURES OR AS DETERMINED BY LANDSCAPE ARCHITECT OR ARBORIST.

3 SOIL PREPARATION

1 1/2" = 1'-0" P-CO-18058-38

NOT FOR CONSTRUCTION

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CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

PLANTING DETAILS

DESIGN DEVELOPMENT

DATE 1.24.2020
PROJECT NUMBER 192530

SHEET NUMBER
L6.01

EXHIBIT D

S1 Fixture

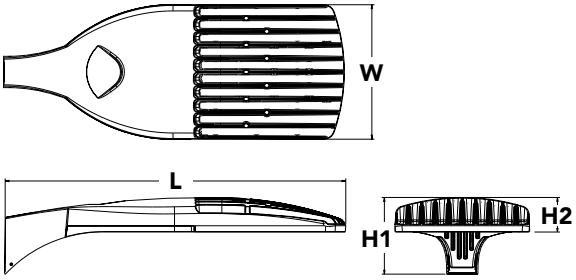
H. Sandy Health Clinic - Exterior Light Fixture Cut-Sheets

D-Series Size 1

LED Area Luminaire

Specifications

EPA:	1.01 ft² (0.09 m²)
Length:	33″ (83.8 cm)
Width:	13″ (33.0 cm)
Height H1:	7-1/2″ (19.0 cm)
Height H2:	3-1/2″
Weight (max):	27 lbs (12.2 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX1 LED	**Forward optics** P1 P4 P7 P2 P5 P8 P3 P6 P9 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[2] LCCO Left corner cutoff[2] RCCO Right corner cutoff[2]	MVOLT[3] 120[4] 208[4] 240[4] 277[4] 347[4] 480[4]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[5] RPUMBA Round pole universal mounting adaptor[5] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[6]

Control options

Shipped installed

NLTAIR2	nLight AIR generation 2 enabled[7]
PIRHN	Network, high/low motion/ambient sensor[8]
PER	NEMA twist-lock receptacle only (controls ordered separate)[9]
PER5	Five-pin receptacle only (controls ordered separate)[9,10]
PER7	Seven-pin receptacle only (controls ordered separate)[9,10]
DMG	0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)[11]
DS	Dual switching[12,13,14]
PIR	High/low, motion/ambient sensor, 8-15′ mounting height, ambient sensor enabled at 5fc[15,16]
PIRH	High/low, motion/ambient sensor, 15-30′ mounting height, ambient sensor enabled at 5fc[15,16]
PIR1FC3V	High/low, motion/ambient sensor, 8-15′ mounting height, ambient sensor enabled at 1fc[15,16]
PIRH1FC3V	Bi-level, motion/ambient sensor, 15-30′ mounting height, ambient sensor enabled at 1fc[15,16]
FAO	Field adjustable output[14]

Other options

Shipped installed

HS	House-side shield[17]
SF	Single fuse (120, 277, 347V)[4]
DF	Double fuse (208, 240, 480V)[4]
L90	Left rotated optics[1]
R90	Right rotated optics[1]

Shipped separately

BS	Bird spikes[18]
EGS	External glare shield

Finish *(required)*

DDBXD	Dark bronze
DBLXD	Black
DNAXD	Natural aluminum
DWHXD	White
DDBTXD	Textured dark bronze
DBLBXD	Textured black
DNATXD	Textured natural aluminum
DWHGXD	Textured white

Ordering Information

Accessories

Ordered and shipped separately.

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [19]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [19]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [19]
DSHORT SBK U	Shorting cap [19]
DSX1HS 30C U	House-side shield for P1, P2, P3, P4 and P5[17]
DSX1HS 40C U	House-side shield for P6 and P7[17]
DSX1HS 60C U	House-side shield for P8, P9, P10, P11 and P12[17]
PUMBA DDBXD U*	Square and round pole universal mounting bracket (specify finish)[20]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [6]
DSX1EGS (FINISH) U	External glare shield

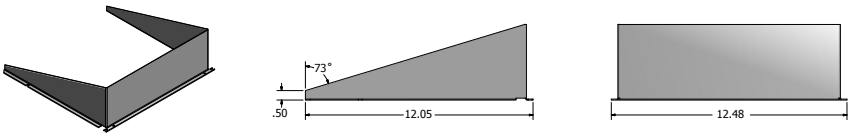
For more control options, visit DTL and ROAM online.

NOTES

1 P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
2 Not available with HS.
3 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
4 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
5 Universal mounting brackets intended for retrofit on existing, pre-drilled poles only. 1.5 G vibration load rating per ANCI C136.31.
6 Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
7 Must be ordered with PIRHN. Sensor cover available only in dark bronze, black, white and natural aluminum colors.
8 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
9 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
10 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Node with integral dimming.
11 DMG not available with PIRHN, PER5, PER7, PIR, PIRH, PIR1FC3V or PIRH1FC3V.
12 Provides 50/50fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
13 Requires (2) separately switched circuits with isolated neutral. See Outdoor Control Technical Guide for details.
14 Reference Motion Sensor table on page 4.
15 Reference controls options table on page 4 to see functionality.
16 Not available with other dimming controls options
17 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
18 Must be ordered with fixture for factory pre-drilling.
19 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
20 For retrofit use only.

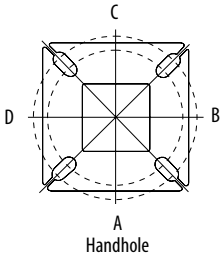
Options

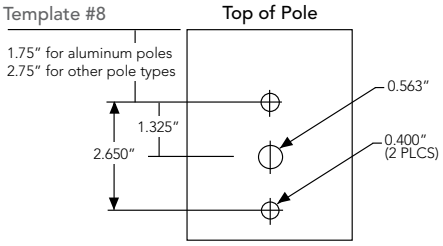
EGS - External Glare Shield



Drilling

HANDHOLE ORIENTATION





Tenon Mounting Slipfitter **

Tenon O.D.	Mounting	Single Unit	2 @ 180	2 @ 90	3 @120	3 @ 90	4 @ 90
2-3/8"	SPA/RPA	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
	SPUMBA	AS3-5 190	AS3-5 280	AS4-5 290	AS3-5 320	AS4-5 390	AS4-5 490
	RUPUMBA	AS3-5 190	AS3-5 280		AS3-5 320		
2-7/8"	SPA/RPA	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
	SPUMBA	AST25-190	AST25-280		AST25-320		
	RUPUMBA	AST25-190	AST25-280		AST25-320		
4"	SPA/RPA	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490
	SPUMBA	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490
	RUPUMBA	AST35-190	AST35-280		AST35-320		

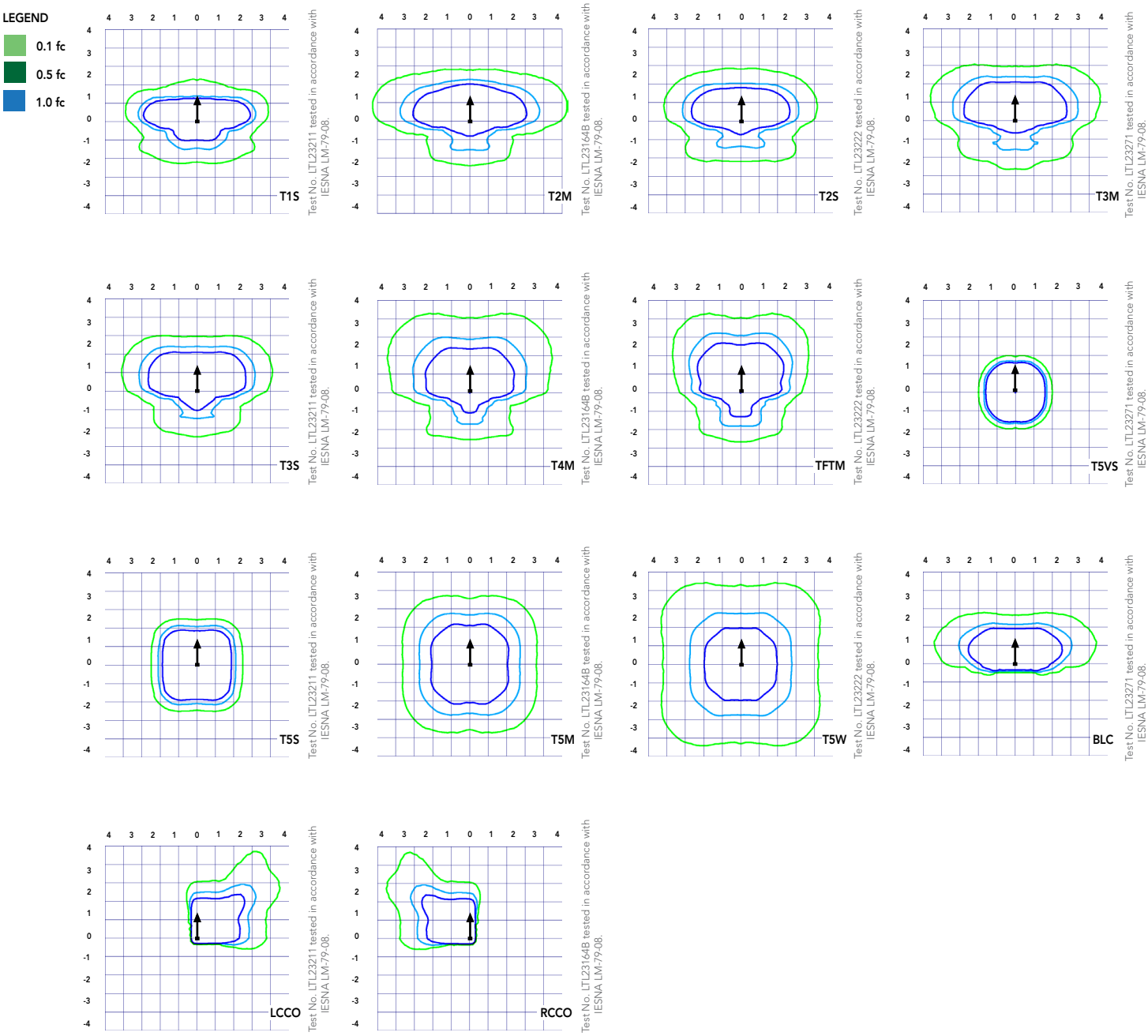
Mounting Option	Drilling Template	Single	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
Head Location		Side B	Side B & D	Side B & C	Side B, C & D	Round Pole Only	Side A, B, C & D
Drill Nomenclature	#8	DM19AS	DM28AS	DM29AS	DM39AS	DM32AS	DM49AS

	Drilling Template	Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"	3.5"	4"
RPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 1 homepage.

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').



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Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°F**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	Lumen Maintenance Factor
0	1.00
25,000	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Phototcell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min
*for use when motion sensor is used as dusk to dawn control.						

Electrical Load

	Performance Package	LED Count	Drive Current	Wattage	Current (A) 120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	30	530	54	0.45	0.26	0.23	0.19	0.10	0.12
	P2	30	700	70	0.59	0.34	0.30	0.25	0.20	0.16
	P3	30	1050	102	0.86	0.50	0.44	0.38	0.30	0.22
	P4	30	1250	125	1.06	0.60	0.52	0.46	0.37	0.27
	P5	30	1400	138	1.16	0.67	0.58	0.51	0.40	0.29
	P6	40	1250	163	1.36	0.78	0.68	0.59	0.47	0.34
	P7	40	1400	183	1.53	0.88	0.76	0.66	0.53	0.38
	P8	60	1050	207	1.74	0.98	0.87	0.76	0.64	0.49
	P9	60	1250	241	2.01	1.16	1.01	0.89	0.70	0.51
Rotated Optics (Requires L90 or R90)	P10	60	530	106	0.90	0.52	0.47	0.43	0.33	0.27
	P11	60	700	137	1.15	0.67	0.60	0.53	0.42	0.32
	P12	60	1050	207	1.74	0.99	0.87	0.76	0.60	0.46
	P13	60	1250	231	1.93	1.12	0.97	0.86	0.67	0.49

Controls Options				
Nomenclature	**Descripton**	**Functionality**	**Primary control device**	**Notes**
FAO	Field adjustable output device installed inside the lumiaire; wired to the driver dimming leads.	Allows the lumiaire to be manually dimmed, effectively trimming the light output.	FAO device	Cannot be used with other controls options that need the 0-10V leads
DS	Drivers wired independantly for 50/50 luminaire operation	The luminaire is wired to two separate circuits, allowing for 50/50 operation.	Independently wired drivers	Requires two seperately switched circuits. Consider nLight AIR as a more cost effective alternative.
PER5 or PER7	Twist-lock photocell recepticle	Compatible with standard twist-lock photocells for dusk to dawn operation, or advanced control nodes that provide 0-10V dimming signals.	Twist-lock photocells such as DLL Elite or advanced control nodes such as ROAM.	Pins 4 & 5 to dimming leads on driver, Pins 6 & 7 are capped inside luminaire
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBGR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
NLTAIR2 PIRHN	nLight AIR enabled luminaire for motion sensing, photocell and wireless communication.	Motion and ambient light sensing with group response. Scheduled dimming with motion sensor over-ride when wirelessly connected to the nLight Eclypse.	nLight Air rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CIAIRity Pro app.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts Contact factory for performance data on any configurations not shown here.

Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	**P1**	54W	T1S	6,457	2	0	2	120	6,956	2	0	2	129	7,044	2	0	2	130
				T2S	6,450	2	0	2	119	6,949	2	0	2	129	7,037	2	0	2	130
				T2M	6,483	1	0	1	120	6,984	2	0	2	129	7,073	2	0	2	131
				T3S	6,279	2	0	2	116	6,764	2	0	2	125	6,850	2	0	2	127
				T3M	6,468	1	0	2	120	6,967	1	0	2	129	7,056	1	0	2	131
				T4M	6,327	1	0	2	117	6,816	1	0	2	126	6,902	1	0	2	128
				TFTM	6,464	1	0	2	120	6,963	1	0	2	129	7,051	1	0	2	131
				T5VS	6,722	2	0	0	124	7,242	3	0	0	134	7,334	3	0	0	136
				T5S	6,728	2	0	1	125	7,248	2	0	1	134	7,340	2	0	1	136
				T5M	6,711	3	0	1	124	7,229	3	0	1	134	7,321	3	0	2	136
				T5W	6,667	3	0	2	123	7,182	3	0	2	133	7,273	3	0	2	135
				BLC	5,299	1	0	1	98	5,709	1	0	2	106	5,781	1	0	2	107
				LCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
				RCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
30	700	**P2**	70W	T1S	8,249	2	0	2	118	8,886	2	0	2	127	8,999	2	0	2	129
				T2S	8,240	2	0	2	118	8,877	2	0	2	127	8,989	2	0	2	128
				T2M	8,283	2	0	2	118	8,923	2	0	2	127	9,036	2	0	2	129
				T3S	8,021	2	0	2	115	8,641	2	0	2	123	8,751	2	0	2	125
				T3M	8,263	2	0	2	118	8,901	2	0	2	127	9,014	2	0	2	129
				T4M	8,083	2	0	2	115	8,708	2	0	2	124	8,818	2	0	2	126
				TFTM	8,257	2	0	2	118	8,896	2	0	2	127	9,008	2	0	2	129
				T5VS	8,588	3	0	0	123	9,252	3	0	0	132	9,369	3	0	0	134
				T5S	8,595	3	0	1	123	9,259	3	0	1	132	9,376	3	0	1	134
				T5M	8,573	3	0	2	122	9,236	3	0	2	132	9,353	3	0	2	134
				T5W	8,517	3	0	2	122	9,175	4	0	2	131	9,291	4	0	2	133
				BLC	6,770	1	0	2	97	7,293	1	0	2	104	7,386	1	0	2	106
				LCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79
				RCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79
30	1050	**P3**	102W	T1S	11,661	2	0	2	114	12,562	3	0	3	123	12,721	3	0	3	125
				T2S	11,648	2	0	2	114	12,548	3	0	3	123	12,707	3	0	3	125
				T2M	11,708	2	0	2	115	12,613	2	0	2	124	12,773	2	0	2	125
				T3S	11,339	2	0	2	111	12,215	3	0	3	120	12,370	3	0	3	121
				T3M	11,680	2	0	2	115	12,582	2	0	2	123	12,742	2	0	2	125
				T4M	11,426	2	0	3	112	12,309	2	0	3	121	12,465	2	0	3	122
				TFTM	11,673	2	0	2	114	12,575	2	0	3	123	12,734	2	0	3	125
				T5VS	12,140	3	0	1	119	13,078	3	0	1	128	13,244	3	0	1	130
				T5S	12,150	3	0	1	119	13,089	3	0	1	128	13,254	3	0	1	130
				T5M	12,119	4	0	2	119	13,056	4	0	2	128	13,221	4	0	2	130
				T5W	12,040	4	0	3	118	12,970	4	0	3	127	13,134	4	0	3	129
				BLC	9,570	1	0	2	94	10,310	1	0	2	101	10,440	1	0	2	102
				LCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
				RCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
30	1250	**P4**	125W	T1S	13,435	3	0	3	107	14,473	3	0	3	116	14,657	3	0	3	117
				T2S	13,421	3	0	3	107	14,458	3	0	3	116	14,641	3	0	3	117
				T2M	13,490	2	0	2	108	14,532	3	0	3	116	14,716	3	0	3	118
				T3S	13,064	3	0	3	105	14,074	3	0	3	113	14,252	3	0	3	114
				T3M	13,457	2	0	2	108	14,497	2	0	2	116	14,681	2	0	2	117
				T4M	13,165	2	0	3	105	14,182	2	0	3	113	14,362	2	0	3	115
				TFTM	13,449	2	0	3	108	14,488	2	0	3	116	14,672	2	0	3	117
				T5VS	13,987	4	0	1	112	15,068	4	0	1	121	15,259	4	0	1	122
				T5S	13,999	3	0	1	112	15,080	3	0	1	121	15,271	3	0	1	122
				T5M	13,963	4	0	2	112	15,042	4	0	2	120	15,233	4	0	2	122
				T5W	13,872	4	0	3	111	14,944	4	0	3	120	15,133	4	0	3	121
				BLC	11,027	1	0	2	88	11,879	1	0	2	95	12,029	1	0	2	96
				LCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72
				RCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72
30	1400	**P5**	138W	T1S	14,679	3	0	3	106	15,814	3	0	3	115	16,014	3	0	3	116
				T2S	14,664	3	0	3	106	15,797	3	0	3	114	15,997	3	0	3	116
				T2M	14,739	3	0	3	107	15,878	3	0	3	115	16,079	3	0	3	117
				T3S	14,274	3	0	3	103	15,377	3	0	3	111	15,572	3	0	3	113
				T3M	14,704	2	0	3	107	15,840	3	0	3	115	16,040	3	0	3	116
				T4M	14,384	2	0	3	104	15,496	3	0	3	112	15,692	3	0	3	114
				TFTM	14,695	2	0	3	106	15,830	3	0	3	115	16,030	3	0	3	116
				T5VS	15,283	4	0	1	111	16,464	4	0	1	119	16,672	4	0	1	121
				T5S	15,295	3	0	1	111	16,477	4	0	1	119	16,686	4	0	1	121
				T5M	15,257	4	0	2	111	16,435	4	0	2	119	16,644	4	0	2	121
				T5W	15,157	4	0	3	110	16,328	4	0	3	118	16,534	4	0	3	120
				BLC	12,048	1	0	2	87	12,979	1	0	2	94	13,143	1	0	2	95
				LCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71
				RCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	1250	**P6**	163W	T1S	17,654	3	0	3	108	19,018	3	0	3	117	19,259	3	0	3	118
				T2S	17,635	3	0	3	108	18,998	3	0	3	117	19,238	3	0	3	118
				T2M	17,726	3	0	3	109	19,096	3	0	3	117	19,337	3	0	3	119
				T3S	17,167	3	0	3	105	18,493	3	0	3	113	18,727	3	0	3	115
				T3M	17,683	3	0	3	108	19,049	3	0	3	117	19,290	3	0	3	118
				T4M	17,299	3	0	3	106	18,635	3	0	4	114	18,871	3	0	4	116
				TFTM	17,672	3	0	3	108	19,038	3	0	4	117	19,279	3	0	4	118
				T5VS	18,379	4	0	1	113	19,800	4	0	1	121	20,050	4	0	1	123
				T5S	18,394	4	0	2	113	19,816	4	0	2	122	20,066	4	0	2	123
				T5M	18,348	4	0	2	113	19,766	4	0	2	121	20,016	4	0	2	123
				T5W	18,228	5	0	3	112	19,636	5	0	3	120	19,885	5	0	3	122
				BLC	14,489	2	0	2	89	15,609	2	0	3	96	15,806	2	0	3	97
				LCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				RCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
40	1400	**P7**	183W	T1S	19,227	3	0	3	105	20,712	3	0	3	113	20,975	3	0	3	115
				T2S	19,206	3	0	3	105	20,690	3	0	3	113	20,952	3	0	3	114
				T2M	19,305	3	0	3	105	20,797	3	0	3	114	21,060	3	0	3	115
				T3S	18,696	3	0	3	102	20,141	3	0	3	110	20,396	3	0	4	111
				T3M	19,258	3	0	3	105	20,746	3	0	3	113	21,009	3	0	3	115
				T4M	18,840	3	0	4	103	20,296	3	0	4	111	20,553	3	0	4	112
				TFTM	19,246	3	0	4	105	20,734	3	0	4	113	20,996	3	0	4	115
				T5VS	20,017	4	0	1	109	21,564	4	0	1	118	21,837	4	0	1	119
				T5S	20,033	4	0	2	109	21,581	4	0	2	118	21,854	4	0	2	119
				T5M	19,983	4	0	2	109	21,527	5	0	3	118	21,799	5	0	3	119
				T5W	19,852	5	0	3	108	21,386	5	0	3	117	21,656	5	0	3	118
				BLC	15,780	2	0	3	86	16,999	2	0	3	93	17,214	2	0	3	94
				LCCO	11,742	2	0	3	64	12,649	2	0	3	69	12,809	2	0	3	70
				RCCO	11,742	2	0	3	64	12,649	2	0	3	69	12,809	2	0	3	70
60	1050	**P8**	207W	T1S	22,490	3	0	3	109	24,228	3	0	3	117	24,535	3	0	3	119
				T2S	22,466	3	0	4	109	24,202	3	0	4	117	24,509	3	0	4	118
				T2M	22,582	3	0	3	109	24,327	3	0	3	118	24,635	3	0	3	119
				T3S	21,870	3	0	4	106	23,560	3	0	4	114	23,858	3	0	4	115
				T3M	22,527	3	0	4	109	24,268	3	0	4	117	24,575	3	0	4	119
				T4M	22,038	3	0	4	106	23,741	3	0	4	115	24,041	3	0	4	116
				TFTM	22,513	3	0	4	109	24,253	3	0	4	117	24,560	3	0	4	119
				T5VS	23,415	5	0	1	113	25,224	5	0	1	122	25,543	5	0	1	123
				T5S	23,434	4	0	2	113	25,244	4	0	2	122	25,564	4	0	2	123
				T5M	23,374	5	0	3	113	25,181	5	0	3	122	25,499	5	0	3	123
				T5W	23,221	5	0	4	112	25,016	5	0	4	121	25,332	5	0	4	122
				BLC	18,458	2	0	3	89	19,885	2	0	3	96	20,136	2	0	3	97
				LCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				RCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
60	1250	**P9**	241W	T1S	25,575	3	0	3	106	27,551	3	0	3	114	27,900	3	0	3	116
				T2S	25,548	3	0	4	106	27,522	3	0	4	114	27,871	3	0	4	116
				T2M	25,680	3	0	3	107	27,664	3	0	3	115	28,014	3	0	3	116
				T3S	24,870	3	0	4	103	26,791	3	0	4	111	27,130	3	0	4	113
				T3M	25,617	3	0	4	106	27,597	3	0	4	115	27,946	3	0	4	116
				T4M	25,061	3	0	4	104	26,997	3	0	4	112	27,339	3	0	4	113
				TFTM	25,602	3	0	4	106	27,580	3	0	4	114	27,929	3	0	4	116
				T5VS	26,626	5	0	1	110	28,684	5	0	1	119	29,047	5	0	1	121
				T5S	26,648	4	0	2	111	28,707	5	0	2	119	29,070	5	0	2	121
				T5M	26,581	5	0	3	110	28,635	5	0	3	119	28,997	5	0	3	120
				T5W	26,406	5	0	4	110	28,447	5	0	4	118	28,807	5	0	4	120
				BLC	20,990	2	0	3	87	22,612	2	0	3	94	22,898	2	0	3	95
				LCCO	15,619	2	0	4	65	16,825	2	0	4	70	17,038	2	0	4	71
				RCCO	15,619	2	0	4	65	16,825	2	0	4	70	17,038	2	0	4	71

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
60	530	**P10**	106W	T1S	13,042	3	0	3	123	14,050	3	0	3	133	14,228	3	0	3	134
				T2S	12,967	4	0	4	122	13,969	4	0	4	132	14,146	4	0	4	133
				T2M	13,201	3	0	3	125	14,221	3	0	3	134	14,401	3	0	3	136
				T3S	12,766	4	0	4	120	13,752	4	0	4	130	13,926	4	0	4	131
				T3M	13,193	4	0	4	124	14,213	4	0	4	134	14,393	4	0	4	136
				T4M	12,944	4	0	4	122	13,945	4	0	4	132	14,121	4	0	4	133
				TFTM	13,279	4	0	4	125	14,305	4	0	4	135	14,486	4	0	4	137
				T5VS	13,372	3	0	1	126	14,405	4	0	1	136	14,588	4	0	1	138
				T5S	13,260	3	0	1	125	14,284	3	0	1	135	14,465	3	0	1	136
				T5M	13,256	4	0	2	125	14,281	4	0	2	135	14,462	4	0	2	136
				T5W	13,137	4	0	3	124	14,153	4	0	3	134	14,332	4	0	3	135
				BLC	10,906	3	0	3	103	11,749	3	0	3	111	11,898	3	0	3	112
				LCCO	7,789	1	0	3	73	8,391	1	0	3	79	8,497	1	0	3	80
				RCCO	7,779	4	0	4	73	8,380	4	0	4	79	8,486	4	0	4	80
60	700	**P11**	137W	T1S	16,556	3	0	3	121	17,835	3	0	3	130	18,061	4	0	4	132
				T2S	16,461	4	0	4	120	17,733	4	0	4	129	17,957	4	0	4	131
				T2M	16,758	4	0	4	122	18,053	4	0	4	132	18,281	4	0	4	133
				T3S	16,205	4	0	4	118	17,457	4	0	4	127	17,678	4	0	4	129
				T3M	16,748	4	0	4	122	18,042	4	0	4	132	18,271	4	0	4	133
				T4M	16,432	4	0	4	120	17,702	4	0	4	129	17,926	4	0	4	131
				TFTM	16,857	4	0	4	123	18,159	4	0	4	133	18,389	4	0	4	134
				T5VS	16,975	4	0	1	124	18,287	4	0	1	133	18,518	4	0	1	135
				T5S	16,832	4	0	1	123	18,133	4	0	2	132	18,362	4	0	2	134
				T5M	16,828	4	0	2	123	18,128	4	0	2	132	18,358	4	0	2	134
				T5W	16,677	4	0	3	122	17,966	5	0	3	131	18,193	5	0	3	133
				BLC	13,845	3	0	3	101	14,915	3	0	3	109	15,103	3	0	3	110
				LCCO	9,888	1	0	3	72	10,652	2	0	3	78	10,787	2	0	3	79
				RCCO	9,875	4	0	4	72	10,638	4	0	4	78	10,773	4	0	4	79
60	1050	**P12**	207W	T1S	22,996	4	0	4	111	24,773	4	0	4	120	25,087	4	0	4	121
				T2S	22,864	4	0	4	110	24,631	5	0	5	119	24,943	5	0	5	120
				T2M	23,277	4	0	4	112	25,075	4	0	4	121	25,393	4	0	4	123
				T3S	22,509	4	0	4	109	24,248	5	0	5	117	24,555	5	0	5	119
				T3M	23,263	4	0	4	112	25,061	4	0	4	121	25,378	4	0	4	123
				T4M	22,824	5	0	5	110	24,588	5	0	5	119	24,899	5	0	5	120
				TFTM	23,414	5	0	5	113	25,223	5	0	5	122	25,543	5	0	5	123
				T5VS	23,579	5	0	1	114	25,401	5	0	1	123	25,722	5	0	1	124
				T5S	23,380	4	0	2	113	25,187	4	0	2	122	25,506	4	0	2	123
				T5M	23,374	5	0	3	113	25,181	5	0	3	122	25,499	5	0	3	123
				T5W	23,165	5	0	4	112	24,955	5	0	4	121	25,271	5	0	4	122
				BLC	19,231	4	0	4	93	20,717	4	0	4	100	20,979	4	0	4	101
				LCCO	13,734	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				RCCO	13,716	4	0	4	66	14,776	4	0	4	71	14,963	4	0	4	72
60	1250	**P13**	231W	T1S	25,400	4	0	4	110	27,363	4	0	4	118	27,709	4	0	4	120
				T2S	25,254	5	0	5	109	27,205	5	0	5	118	27,550	5	0	5	119
				T2M	25,710	4	0	4	111	27,696	4	0	4	120	28,047	4	0	4	121
				T3S	24,862	5	0	5	108	26,783	5	0	5	116	27,122	5	0	5	117
				T3M	25,695	5	0	5	111	27,680	5	0	5	120	28,031	5	0	5	121
				T4M	25,210	5	0	5	109	27,158	5	0	5	118	27,502	5	0	5	119
				TFTM	25,861	5	0	5	112	27,860	5	0	5	121	28,212	5	0	5	122
				T5VS	26,043	5	0	1	113	28,056	5	0	1	121	28,411	5	0	1	123
				T5S	25,824	4	0	2	112	27,819	5	0	2	120	28,172	5	0	2	122
				T5M	25,818	5	0	3	112	27,813	5	0	3	120	28,165	5	0	3	122
				T5W	25,586	5	0	4	111	27,563	5	0	4	119	27,912	5	0	4	121
				BLC	21,241	4	0	4	92	22,882	4	0	4	99	23,172	4	0	4	100
				LCCO	15,170	2	0	4	66	16,342	2	0	4	71	16,549	2	0	4	72
				RCCO	15,150	5	0	5	66	16,321	5	0	5	71	16,527	5	0	5	72

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 1 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 3000 K, 4000 K and 5000 K (70 CRI) configurations. The D-Series Size 1 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS
The DSX1 LED area luminaire has a number of control options. Dusk to dawn controls can be utilized via optional NEMA twist-lock photocell receptacles. Integrated motion sensors with on-board photocells feature field-adjustable programing and are suitable for mounting heights up to 30 feet.

nLIGHT AIR CONTROLS
The DSX1 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use CLAIRITY app, nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 1 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 1 utilizes the AERIS™ series pole drilling pattern (template #8). NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40ºC minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product.
Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

S2 Fixture

H. Sandy Health Clinic - Exterior Light Fixture Cut-Sheets

BEGA

Type:

Project:

Modified:

Application
LED bollard with shielded 180° light distribution. This luminaire is designed to provide one sided illumination of ground surfaces. Provided with mounting system that allows the luminaire to be adjusted independent of anchor bolt orientation.

Materials
Luminaire housing and base constructed of die-cast and extruded marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy
Borosilicate glass lens
Reflector made of pure anodized aluminum
High temperature silicone gasket
Mechanically captive stainless steel fastener

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65
Weight: 9.7 lbs

Electrical

Operating voltage	120-277V AC
Minimum start temperature	-20° C
LED module wattage	7.2 W
System wattage	10.0 W
Controllability	0-10V dimmable
Color rendering index	Ra > 80
Luminaire lumens	411 lumens (3000K)
Lifetime at Ta = 15° C	77,000 h (L70)
Lifetime at Ta = 55° C	53,000 h (L70)

LED color temperature

☐ 4000K - Product number + **K4**
☐ 3500K - Product number + **K35**
☐ 3000K - Product number + **K3**
☐ 2700K - Product number + **K27**

BEGA can supply you with suitable LED replacement modules for up to 20 years after the purchase of LED luminaires - see website for details

Finish
All BEGA standard finishes are matte, textured polyester powder coat with minimum 3 mil thickness.

Available colors ☐ Black (BLK) ☐ White (WHT) ☐ RAL:
☐ Bronze (BRZ) ☐ Silver (SLV) ☐ CUS:

LED bollard · 180° distribution

	LED	A	B	Anchorage
77752	7.2 W	6 ½	8 ⅝	**79817**

BEGA 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 info@bega-us.com

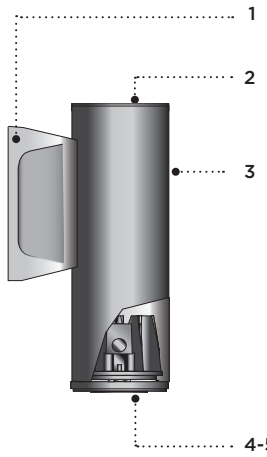
LUMINIS®

SY300 SERIES
SYRIOS - LED
3" WALL UP OR DOWN LIGHT

TYPE: _____ QUANTITY: _____ PROJECT: _____

CATALOG NUMBER:								
	FIXTURE	SUFFIX	REFLECTOR	VOLTAGE	FINISH	OPTION	OPTION	OPTION

ADA Compliant



1- Cast aluminum driver housing, includes galvanized steel wall mount pressure plate.
2- Cast aluminum top cover.
3- Extruded aluminum cylindrical housing.
4- Fully sealed cast aluminum light assembly.
5- Sealed cast aluminum lens frame.
6- Clear tempered glass lens.
7- Faceted specular aluminum reflector.

All stainless steel hardware.

MATERIALS
Syrios LED is made of corrosion resistant 356 aluminum alloy with a copper (CU) content of less than 0.1%.
The main housing is made of seamless extruded aluminum, with an integrally sealed LED light module designed for optimal heat dissipation, and lighting performance.
Syrios LED SY300 series is standard with 29º optic. See options section for alternate selection.

ELECTRICAL
DRIVER Standard driver is 0-10V dimming-ready (dims to 10%) with: 120-277 multi-volt compatibility (50-60Hz), operating temperature range of -30ºC/-22ºF to 55ºC/131ºF, output over voltage protection, output over current protection and output short circuit protection with auto-recovery.

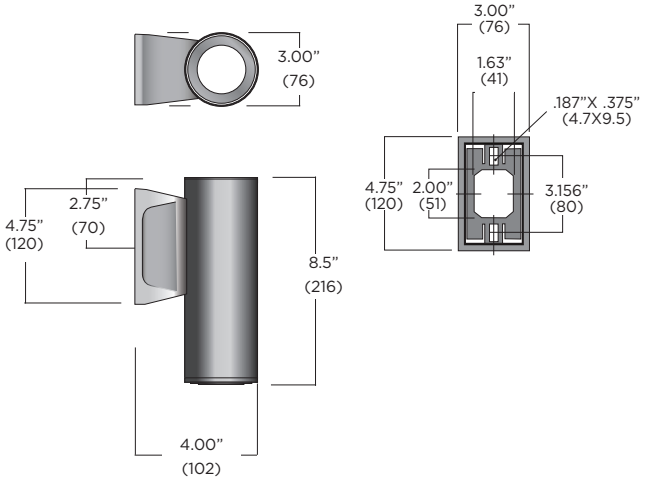
LED Standard 4000K /80CRI. Optional 2700K, 3000K & 3500K. Optional Amber LED for turtle sensitive areas. Wavelengths: 584.5nm to 597nm.

LIFE
60,000hrs $L_{70}B_{50}$ (based on IESNA TM-21 Test Method and LM-80 data).
Up to 95,000hrs $L_{70}B_{50}$ (calculated projection from LM-80 data).

FINISH
Five-stage preparation process including preheating of cast aluminum parts for air extraction, and an environmentally friendly alloy sealant. Polyester powder coating is applied through an electrostatic process and oven cured for long term finish.

MOUNTING
Maximum weight: 2.5lbs (1.1kg)
The mounting plate is designed to fit on a 2X4" (51x102) rectangular electrical box using 3.156" (80) C/C mounting holes.
Optional trimming plate for octagonal jbox (option MT4).

CERTIFICATION
Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Rated IP66. CE Certification on request.



June 2019 Rev.0

LUMINIS | Toll free: 866.586.4647 Fax: 514.683.8872 Email: info@luminis.com
260 Labrosse, Pointe-Claire (QC) Canada H9R 5L5

LUMINIS.COM

LUMINAIRE SELECTION

MODEL#

☐ SY300

LED LIGHT SELECTION

SUFFIX	INPUT WATTS	DELIVERED LUMENS	CRI	CCT ºK
☐ L1L10	13W	924	80	4000
AMBER LED IDA - Dark Sky Approved				
☐ L1L1K2A	7W	124	AMBER	
VERY NARROW DISTRIBUTION				
☐ L1L5NR	10W	539	80	4000

REFLECTORS*

- ☐ **R30** Flood optics 29º (standard)
- ☐ **R40** Wide flood optics 42º

*Depending on direction fixture is installed add U (for uplight) or D (for downlight) to suffix for all reflectors listed above. (i.e. R40U is 42º uplight)

- ☐ **R9** Very narrow optics 9º Field angle 21º (12,018 candela)

VOLTAGE

- ☐ 120V
- ☐ 277V

FINISH

STANDARD COLORS

- ☐ WHT Snow white
- ☐ BKT Jet black
- ☐ BZT Bronze
- ☐ MST Matte silver
- ☐ GRT Titanium gray
- ☐ DGT Gun metal
- ☐ CHT Champagne

(Refer to color chart)

OPTIONAL COLORS

- ☐ CS Custom color
- ☐ RAL RAL# color

NATATORIUM SUITED COLORS

- ☐ NWHT White
- ☐ NBKT Black

OPTIONS

ELECTRICAL

- ☐ **FS** Fuse
- ☐ **REML2-50** 7W remote emergency battery backup for LED, 90 min. Remote mount 50ft - 12" (305) square enclosure with access cover[1]

MOUNTING

- ☐ **SWK** Adaptor box for surface 3/4" conduit feed
- ☐ **MT4** Trimming plate for octagonal box

ACCESSORIES

- ☐ **SL** Solite lens
- ☐ **LSL** Linear spread lens
- ☐ **SNT** 1.5" (38) snoot[2]
- ☐ **HL** Hexcell louver

LIGHT & OPTICS

Alternate CCT ºK LED (LCF: Lumen conversion factor)

- ☐ **K27** 2700K CCT 80 CRI (LCF: 0.91)[3] IDA - Dark Sky Approved
- ☐ **K3** 3000K CCT 80 CRI (LCF: 0.94) IDA - Dark Sky Approved
- ☐ **K35** 3500K CCT 80 CRI (LCF: 0.983)[3]

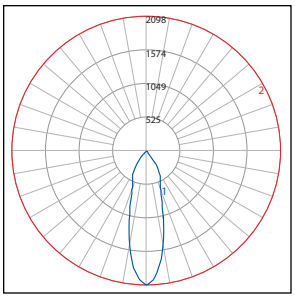
NOTE: Other CCT & higher CRI available, please consult factory.

NOTES

1- The remote enclosure must be interior.
2- To prevent reflections, interior painted black when a light color finish is selected (ex. WHT, MST, GRT and CHT).
3- Please consult factory when selecting K27 or K35 in conjuction with R9 (very narrow optics).

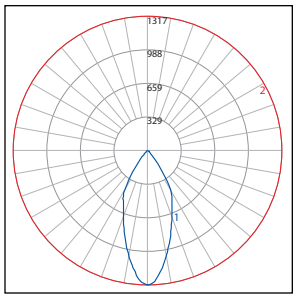
LUMINIS | Toll free: 866.586.4647 Fax: 514.683.8872 Email: info@luminis.com
260 Labrosse, Pointe-Claire (QC) Canada H9R 5L5

TYPICAL PHOTOMETRY SUMMARY



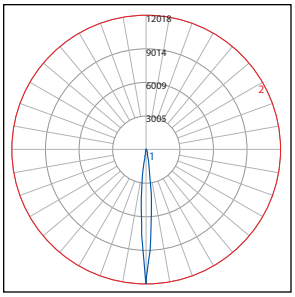
Descriptive Information

SY300-L1L10-R30
Total Lms: 924 Lumens
Total Input Watts: 13 W
Efficacy: 74 Lumens/Watt
BUG: B1-U0-G0
CCT/CRI: 4000K/80
Maximum Candela: 2098 @ 0 deg



Descriptive Information

SY300-L1L10-R40
Total Lms: 846 Lumens
Total Input Watts: 13 W
Efficacy: 68 Lumens/Watt
BUG: B1-U0-G0
CCT/CRI: 4000K/80
Maximum Candela: 1317 @ 0 deg



Descriptive Information

SY300-L1L5NR-R9
Total Lms: 539 Lumens
Total Input Watts: 10 W
Efficacy: 53 Lumens/Watt
BUG: B1-U0-G0
CCT/CRI: 4000K/80
Maximum Candela: 12018 @ 0 deg

Please visit our web site www.luminis.com for complete I.E.S. formatted download data.

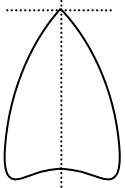
LUMINIS | Toll free: 866.586.4647 Fax: 514.683.8872
260 Labrosse, Pointe-Claire (QC) Canada H9R 5L5

gotham®

H. Sandy Health Clinic - Exterior Light Fixture Cut-Sheets

S4 Fixture

Luminaire Ty
Catalog Number (autopopulated):



Gotham Architectural Downlighting
LED Downlights

6" Evo®
Cylinder

Solid-State Lighting

ENERGY STAR

A+ CAPABLE

FEATURES

OPTICAL SYSTEM
- Self-flanged semi-specular, matte-diffuse or finishing trim
- Patented Bounding Ray™ optical design (U.S. Patent No. 5,800,050)
- 45° cutoff to source and source image
- Top-down flash characteristic
- Polycarbonate lens integral to light engine

MECHANICAL SYSTEM
- Heavy-gauge aluminum construction
- Ceiling mount and wall mount for direct installation to 4" octagonal or square junction box
- Pendant mount entry for 3/8" National Pipe Thread stem; wires supplied by others
- Unique mounting mechanism at top of cylinders for easy one-person installation
- EDXB driver includes 3-foot DMX signal cable when ordered with FCM or WM mounting option. Fixture includes 10-foot DMX signal cable when ordered with PM or ACC mounting option.
- ACC180 provided with 15' 5-wire cord for power and 0-10V dimming

ELECTRICAL SYSTEM
- Fully serviceable and upgradeable LED light engine
- 70% lumen maintenance at 60,000 hours
- Tested according LM-79 and LM-80 standards
- 2.5 SDCM; 85 CRI typical, 90+ CRI optional
- Overload and short circuit protected
- Dimming wires supplied by others

LISTINGS
- Fixtures are CSA certified to meet US and Canadian standards; wet location, covered ceiling. ENERGY STAR® certified product.

WARRANTY
- 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end user environment and application. All values are design or typical values, measured under laboratory conditions at 25° C.

ORDERING INFORMATION

A+ Capable options indicated by this color background.

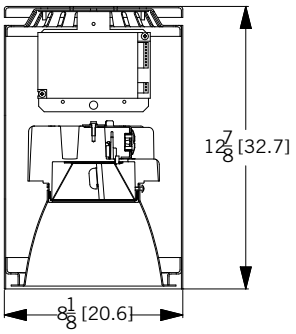
EXAMPLE: EVO CYL 35/10 6AR MWD LSS MVOLT EZ1 FCM DWHG

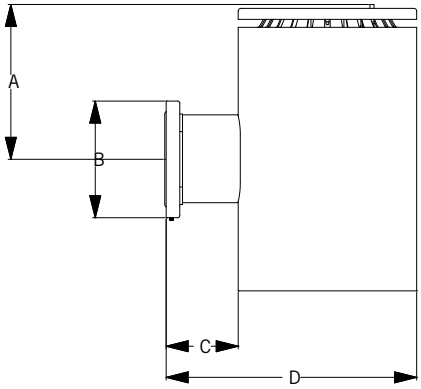
Series	Type	Color temperature	Nominal lumen values	Aperture/ Trim color	Trim type	Distribution[2]	Finish
EVO	**CYL**	**27/** 2700 K **30/** 3000 K **35/** 3500 K **40/** 4000 K **50/** 5000 K	**10** 1000 lumens **15** 1500 lumens **20** 2000 lumens **25** 2500 lumens **30** 3000 lumens **35** 3500 lumens **40** 4000 lumens **45** 4500 lumens	**6AR** Clear **6PR** Pewter **6WTR** Wheat **6GR** Gold **6WR**[1] White **6BR**[1] Black **6WRAMF**[1] White anti-microbial	(blank) Downlight **W** Wallwash	**VND** Very narrow (0.5 s/mh) **ND** Narrow (0.7 s/mh) **MD** Medium (0.9 s/mh) **MWD** Medium wide (1.0 s/mh) **WD** Wide (1.2 s/mh)	**LSS** Semi-specular **LD** Matte-diffuse **LS** Specular

Voltage	Driver[3]		Mounting	Options		Architectural Colors - Powder Paint[11]	
MVOLT	**GZ10**	0-10V driver dims to 10%	**FCM** Ceiling mount	**SF**	Single fuse. Specify voltage.	**DWHG**	Matte white (standard)
120	**GZ1**	0-10V driver dims to 1%	**WM**[7] Wall mount	**CRI90**	High CRI (90+)	**DDB**	Dark bronze
277	**EZ10**	eldoLED 0-10V ECOdrive. Linear dimming to 10% min.	**PM** Pendant 3/8" thread mount	**NPP16D**[9]	nLight® network power/relay pack with 0-10V dimming for non-eldoLED drivers (GZ10, GZ1).	**DBL**	Black
	EZ1	eldoLED 0-10V ECOdrive. Linear dimming to 1% min.	**ACC**[8] 10ft aircraft cable and cord mount	**NPP16DER**[9]	nLight® network power/relay pack with 0-10V dimming for non-eldoLED drivers (GZ10, GZ1). ER controls fixtures on emergency circuit.	**DWH**	Gloss white
	EZB	eldoLED 0-10V SOLOdrive. Logarithmic dimming to <1%.	**ACC180**[8] 15ft aircraft cable and cord mount	**NPS80EZ**[9,10]	Sensor Switch® nLight® dimming pack controls 0-10V eldoLED drivers (EZ_).	**DMB**	Medium bronze
	EDAB[4]	eldoLED SOLOdrive DALI. Logarithmic dimming to <1%.		**NPS80EZER**[9,10]	Sensor Switch® nLight® dimming pack controls 0-10V eldoLED drivers. ER controls fixtures on emergency circuit operation (EZ_).	**DNA**	Natural aluminum
	EDXB[4]	eldoLED POWERdrive DMX with RDM (remote device management). Square Law dimming to <1%. Includes termination resistor. Refer to DMXR Manual.				**DSS**	Sandstone
	EXA1[5]	XPoint Wireless, eldoLED 0-10V ECOdrive. Linear dimming to 1%. Refer to XPoint tech sheet.				**DGC**	Charcoal grey
	EXAB[5]	XPoint Wireless, eldoLED 0-10V SOLOdrive. Logarithmic dimming to <1%. Refer to XPoint tech sheet.				**DTG**	Tennis green
	ECOS2[4,6]	Lutron® Hi-Lume® 2-wire forward-phase driver. 120V only. Minimum dimming level 1%. Minimum lumen 1000/Maximum lumen 3000.				**DBR**	Bright red
	ECOS3[4]	Lutron® Hi-Lume® 3-wire or EcoSystem® dimming driver. Minimum dimming level 1%. Minimum lumen 1000/ Maximum lumen 4500.				**DSB**	Steel blue

DIMENSIONAL DATA

All dimensions are inches (centimeters) unless otherwise noted.





Reflector aperture: 6-1/4 (15.9)
Housing diameter: 8-1/8 (20.3)

Wall mount dimensions
A = 7-3/4 (19.7)
B = 5-5/16 (13.5)
C = 3-1/4 (8.3)
D = 10-7/8 (27.6)

ELECTRICAL

WATTAGE CONSUMPTION MATRIX			
LUMENS	**LM ACTUAL**	**WATTAGE**	**LUMENS per WATT**
1000	1,059	11.8	90.1
1500	1,572	18.5	85.0
2000	2,058	23.2	88.9
2500	2,612	29.5	88.5
3000	3,077	36.6	84.1
3500	3,591	42.1	85.3
4000	4,046	48.1	84.2
4500	4,555	46.9	97.1

ACCESSORIES

ACCESSORIES order as separate catalog numbers (shipped separately)

CYS[12]	3/8" stem and canopy with 5° "hang straight" swivel	**CRSX**[12]	3/8" stem and canopy with 45° swivel. Use this nomenclature when ordering EDXB driver
CRS[12]	3/8" stem and canopy with 45° swivel	**SDT 347/120 75VA**[13]	347V Step-down transformer
CYSX[12]	3/8" stem and canopy with 5° "hang straight" swivel. Use this nomenclature when ordering EDXB driver		

NOTES

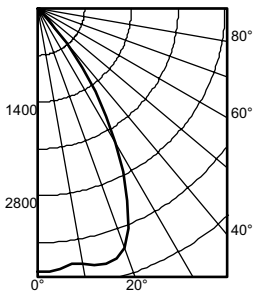
ORDERING NOTES

1. Not available with finishes.
2. Not available with wallwash trim type.
3. Refer to TECH-240 for compatible dimmers.
4. Not available with nLight® and XPoint options.
5. XPoint® CMRB ships separately.
6. Specify voltage 120V.
7. Access panel (supplied by others) recommended for use with nLight® and XPoint®.
8. White cord with white housings. All others black cord.
9. Specify voltage. For use with generator supply EM power. Will require an emergency hot feed and normal hot feed.
10. Interface remote mounted.
11. Additional architectural colors available; see www.lithonia.com/archcolors.
12. Color and length of stem must be specified (from 6" to 240" in even increments in maximum sections of 48"). Ex.: CYS06 DWHG. Ceiling attachment for interior use. Consult factory for exterior use. Wire not included.
13. Transformer must be field-installed to an accessible remote-mounted junction box.

Distribution Curve	Distribution Data	Output Data	Coefficient of Utilization	Illuminance: Single Luminaire 30" Above Floor

EVO 35/40 6AR LS

INPUT WATTS: 48.1, DELIVERED LUMENS: 4046, LM/W=84.1 , 1.03 S/MH, TEST NO. LTL27768



	Ave	Lumens
0	3935	
5	3901	371
15	3944	1106
25	3172	1427
35	1508	926
45	221	203
55	6	10
65	2	2
75	1	1
85	0	0
90	0	

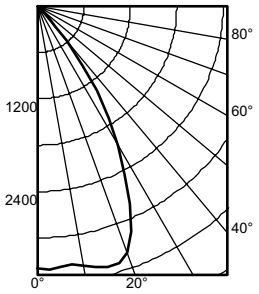
Zone	Lumens	% Lamp
0° - 30°	2904.3	71.8
0° - 40°	3830.0	94.7
0° - 60°	4043.4	99.9
0° - 90°	4046.3	100.0
90° - 180°	0.0	0.0
0° - 180°	4046.3	*100.0
*Efficiency		

pf	80%			20%			50%		
pc	70%								
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	109	106	104	105	103	101
2	103	99	96	101	98	95	98	95	93
3	96	91	87	95	90	87	92	88	85
4	90	84	80	89	84	80	87	82	79
5	84	78	74	83	78	74	81	77	73
6	79	73	69	78	73	68	77	72	68
7	74	68	64	73	68	64	72	67	63
8	70	64	60	69	63	60	68	63	59
9	66	60	56	65	60	56	64	59	56
10	62	56	52	62	56	52	61	56	52

Mounting Height	Inital FC Center Beam	50% beam - 54.4° Diameter	50% beam - 54.4° FC	10% beam - 78.1° Diameter	10% beam - 78.1° FC
8.0	130.1	5.7	65.1	8.9	13.0
10.0	70.0	7.7	35.0	12.2	7.0
12.0	43.6	9.8	21.8	15.4	4.4
14.0	29.8	11.8	14.9	18.7	3.0
16.0	21.6	13.9	10.8	21.9	2.2

EVO 35/35 6AR LS

INPUT WATTS: 42.1, DELIVERED LUMENS: 3591, LM/W=85.3, 1.05 S/MH, TEST NO. LTL27767



	Ave	Lumens
0	3400	
5	3390	324
15	3497	981
25	2830	1274
35	1335	820
45	193	177
55	5	9
65	2	2
75	1	1
85	1	1
90	1	

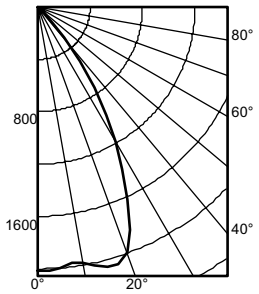
Zone	Lumens	% Lamp
0° - 30°	2579.3	71.8
0° - 40°	3399.8	94.7
0° - 60°	3586.3	99.9
0° - 90°	3590.5	100.0
90° - 180°	0.0	0.0
0° - 180°	3590.5	*100.0
*Efficiency		

pf	80%			20%			50%		
pc	70%								
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	109	106	104	105	103	101
2	103	99	96	101	98	95	98	95	93
3	96	91	87	95	90	87	92	88	85
4	90	84	80	89	84	80	87	82	79
5	84	78	74	83	78	74	81	77	73
6	79	73	69	78	72	68	77	72	68
7	74	68	64	73	68	64	72	67	63
8	70	64	60	69	63	59	68	63	59
9	66	60	56	65	60	56	64	59	55
10	62	56	52	62	56	52	61	56	52

Mounting Height	Inital FC Center Beam	50% beam - 55.2° Diameter	50% beam - 55.2° FC	10% beam - 78.2° Diameter	10% beam - 78.2° FC
8.0	112.4	5.7	56.2	8.9	11.2
10.0	60.4	7.8	30.2	12.2	6.0
12.0	37.7	9.9	18.8	15.4	3.8
14.0	25.7	12.0	12.9	18.7	2.6
16.0	18.7	14.1	9.3	21.9	1.9

EVO 35/20 6AR LS

INPUT WATTS: 23.2, DELIVERED LUMENS: 2058, LM/W=88.7, 1.02 S/MH, TEST NO. LTL27777



	Ave	Lumens
0	2018	
5	1997	190
15	2053	576
25	1618	733
35	749	459
45	105	94
55	3	5
65	1	1
75	0	0
85	0	0
90	0	

Zone	Lumens	% Lamp
0° - 30°	1498.5	72.8
0° - 40°	1958.0	95.1
0° - 60°	2056.6	99.9
0° - 90°	2058.3	100.0
90° - 180°	0.0	0.0
0° - 180°	2058.3	*100.0
*Efficiency		

pf	80%			20%			50%		
pc	70%								
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	111	108	106	109	107	105	105	103	101
2	103	99	96	102	98	95	98	95	93
3	96	92	88	95	91	87	92	89	86
4	90	85	81	89	84	80	87	83	79
5	84	79	74	83	78	74	82	77	73
6	79	73	69	78	73	69	77	72	68
7	74	68	64	74	68	64	72	67	64
8	70	64	60	69	64	60	68	63	60
9	66	60	56	66	60	56	65	60	56
10	62	57	53	62	56	53	61	56	53

Mounting Height	Inital FC Center Beam	50% beam - 54.2° Diameter	50% beam - 54.2° FC	10% beam - 77.3° Diameter	10% beam - 77.3° FC
8.0	66.7	5.6	33.4	8.8	6.7
10.0	35.9	7.7	17.9	12.0	3.6
12.0	22.4	9.7	11.2	15.2	2.2
14.0	15.3	11.8	7.6	18.4	1.5
16.0	11.1	13.8	5.5	21.6	1.1

LUMEN OUTPUT MULTIPLIER - CRI	
CRI	**FACTOR**
80 CRI	1
90 CRI	0.79

LUMEN OUTPUT MULTIPLIER - CCT	
CRI	**FACTOR**
5000 K	1.101
4000 K	1.035
3500 K	1
3000 K	0.973
2700 K	0.938

LUMEN OUTPUT MULTIPLIER - TRIM FINISH						
FINISH	**CLEAR (AR)**	**PEWTER (PR)**	**WHEAT (WTR)**	**GOLD (GR)**	**WHITE (WR/WRAMF)**	**BLACK (BR)**
Specular (LS)	1.00	0.88	0.83	0.95	N/A	N/A
Semi-specular (LSS)	0.95	0.84	0.79	0.90	N/A	N/A
Matte-diffuse (LD)	0.85	0.73	0.69	0.80	N/A	N/A
Paint	N/A	N/A	N/A	N/A	0.87	0.73

PHOTOMETRY NOTES

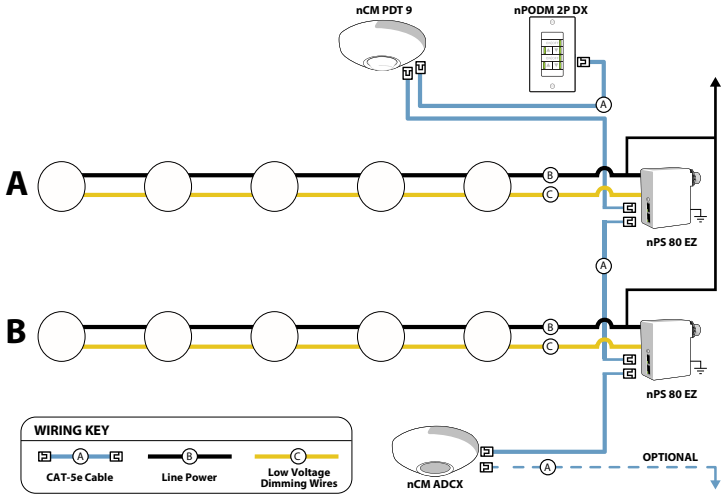
- Tested in accordance with IESNA LM-79-08.
- Tested to current IES and NEMA standards under stabilized laboratory conditions.
- CRI: 85 typical.

CONTROLS

Choose Wall Controls.
nLIGHT o ers multiple styles of wall controls – each with varying features and user experience.

Push-Button WallPod
Traditional tactile buttons and LED user feedback

Graphic WallPod
Full color touch screen provides a sophisticated look and feel



EXAMPLE
Group Fixture Control*
*Application diagram applies for fixtures with eldoLED drivers only.

nPS 80 EZ Dimming/Control Pack (qty 2 required)
nPODM 2P DX Dual On/Off/Dim Push-Button WallPod
nCM ADCX Daylight Sensor with Automatic Dimming Control
nCM PDT 9 Dual Technology Occupancy Sensor

Description: This design provides a dual on/off/dim wall station that enables manual control of the fixtures in Row A and Row B separately. Additionally, a daylight harvesting sensor is provided so the lights in row B can be configured to dim automatically when daylight is available. An occupancy sensor turns off all lights when the space is vacant.

nLight® Control Accessories:
Order as separate catalog number. Visit www.sensorswitch.com/nLight for complete listing of nLight controls.

WallPod stations	Model number
On/Off	nPODM [color]
On/Off & Raise/Lower	nPODM DX [color]
Graphic Touchscreen	nPOD GFX [color]
Photocell controls	**Model number**
Dimming	nCM ADCX

Occupancy sensors	Model number
Small motion 360°, ceiling (PIR / dual tech)	nCM 9 / nCM PDT 9
Large motion 360°, ceiling (PIR / dual tech)	nCM 10 / nCM PDT 10
Wide view (PIR / dual tech)	nWV 16 / nWV PDT 16
Wall Switch w/ Raise/Lower (PIR / dual tech)	nWSX LV DX / nWSX PDT LV DX
Cat-5 cables (plenum rated)	**Model number**
10', CAT5 10FT	CAT5 10FT J1
15', CAT5 15FT	CAT5 15FT J1

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® control networks when ordered with drivers marked by a shaded background*
- This luminaire is part of an A+ Certified solution for nLight control networks, providing advanced control functionality at the luminaire level, when selection includes driver and control options marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

TARGETTI

BULLETTO

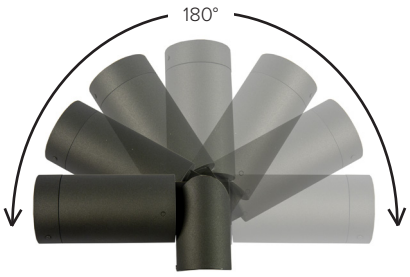
Compact Adjustable Flood Light Projector

Concept: Compact projector flood light for high intensity applications.
Materials: Aluminum body and joints for maximum heat dissapation powder coated in Ferrite Grey or Bronze finish. Modular body for toolless maintenance. Lens cover assymbly for simple toolless field interchangability of accessories.
Optics: NSP, SP, FL, MW, and WF use high efficiency LED Chip on Board. Equipped with collimating optic with angle specific holigraphic spread lens filters.
Mounting: Adjustable up to 180° on the vertical plane with aim locking set screw. Brass strain release gland with ½" NPT thread nipple that can be screwed directly to recieving mounting.
Installation: Pre-cabled with 10' Belden direct burial 18ga 3 Conductor Cable for Connection to remote power supply.
Finish: Ferrite Grey / Bronze
Power Supply: Remote Class 2, 120V-277VAC power supply required, see page 2 for options.
Wattage: 10W (NSP) / 12W (SP/FL/MF/WF)
Color Temperature: 2700°K / 3000°K / 3500°K / 4000°K
CRI: Ra84

Delivered Lumens:		**3000°K**
Narrow Spot 10°	=	473Lm IMax: 24,196cd/klm
Spot 15°	=	858Lm IMax: 7,292cd/klm
Flood 25°	=	812Lm IMax: 2,883cd/klm
Medium Wide Flood 30°	=	819Lm IMax: 1,916cd/klm
Wide Flood 43°	=	801Lm IMax: 1,009cd/klm

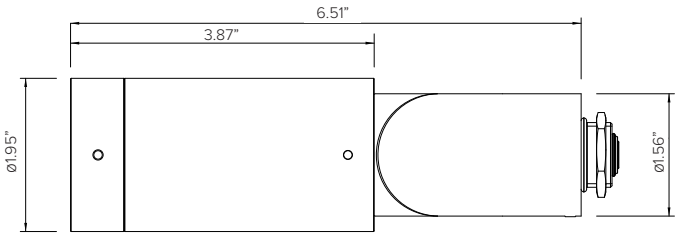
Lumen Maintenance (L70): 50,000hrs
Calculation for LED fixtures are based on measurements that comply with IES LM-80.
CRI: Ra84
Voltage: 24V DC
IK Rating: IK10
IP Rating: IP66
Certifications: cULus Class 2 Wet Location Listed
Tested in accordance with LM-79-08
[A] Title 24 commercial installation compliant.
Warranty: 5 year limited warranty

CALIFORNIA T24 COMPLIANT [A] IP66 c UL us Class 2



PRODUCT CODE	DRIVER	FINISH	OUTPUT	OPTICS	COLOR TEMP	+	POWER SUPPLY
BLT — BULLETTO	**RP** — Remote Power	**FE** — Ferrite Grey	**L1** — 10W	**NS** — Narrow Spot 10°	**27** — 2700K		*See page 4*
		BZ — Bronze	**L2** — 12W	**SP** — Spot 15°	**30** — 3000K		
				FL — Flood 25°	**35** — 3500K		
				MF — Medium Wide Flood 30°	**40** — 4000K		
				WF — Wide Flood 43°			

Views



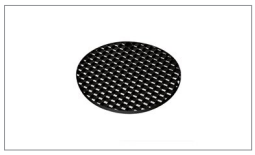
TARGETTI

BULLETTO

INTERNAL OPTICAL ACCESSORIES:	
Maximum of two optical accessories per fixture.	
1E3798	Chromatic filter Red. Dimensions Ø50mm
1E3799	Chromatic filter Green. Dimensions Ø50mm
1E3800	Chromatic filter Blue. Dimensions Ø50mm
1E3801	Chromatic filter Yellow. Dimensions Ø50mm
1E3802	Chromatic filter Magenta. Dimensions Ø50mm
1E3790	'Blade of Light' linear spread lens filter. Dimensions Ø50mm
1E3792	Honeycomb filter. Dimensions Ø50mm


Chromatic FiltBLTrs


1E3790


1E3792

EXTERNAL OPTICAL ACCESSORIES:		
●	●	*Description*
1E3788	**1E3806**	Asymmetric screen. Powder coated finish.


Asymmetric Screen

INSTALLATION ACCESSORIES:		
Maximum of one installation accessory per fixture.		
●	●	*Description*
1E3786	**1E3804**	Plate for fitting rotation. Powder coated stainless steel.
1E3785	**1E3803**	Earthspike. Powder coated stainless steel.
1BLTSMCVRFE	**1BLTSMCVRBZ**	Low Profile surface canopy. Powder coated aluminum with ½" NPT to mount over 4" Dia. X .5" H pancake j-box.


Plate for Rotation


Earthspike


Surface Mount Canopy

TARGETTI

BULLETTO

Tree Mounting Accessories

TREE STRAP (REQUIRED) - CHOOSE 1	
Durable 1.5 inch wide Nylon webbing Strap is flexible with High Strength Aircraft Aluminum V-ring Buckle in Gunmetal finish and lock in loop to prevent slipping. The strap is made to coordinate with up to 6 fixtures and 1 wiring connection box.	
TTS0101	Tree strap for trees 39" in circumference or smaller. Olive Green nylon strap with Gunmetal cinch buckle.
TTS0102	Tree strap for trees 39" in circumference or smaller. Coyote Brown nylon strap with Gunmetal cinch buckle.
TTS0103	Tree strap for trees 39" in circumference or smaller. Graphite Grey nylon strap with Gunmetal cinch buckle.

Shown with Tree Strap and Fixture Bracket

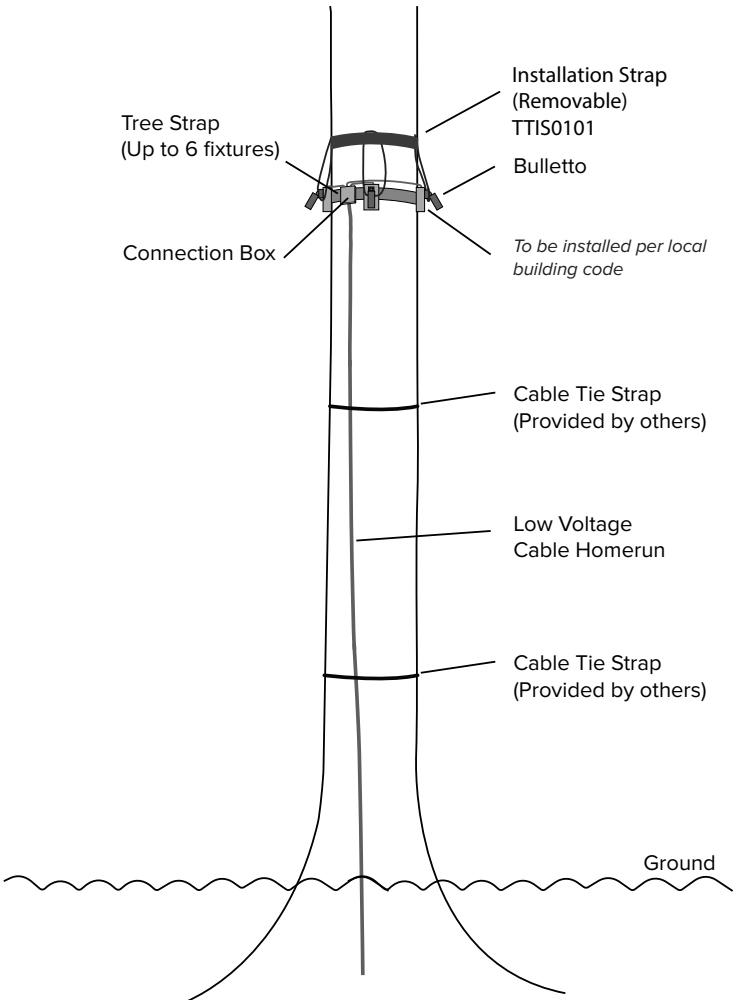
INSTALLATION STRAP (OPTIONAL)	
Durable 1.5 inch wide Nylon webbing Strap is flexible with Metal Cinch Buckle and lock in loop to prevent slipping. The installation strap comes with 4 each 12 inch Rubber Loops used to hold up to 6 fixtures in place while positioning and tightening the Tree Strap in position during Installation or Maintenance and then removed for operation. ***For use with 2 or more fixtures.***	
TTIS0101	Installation strap flexible nylon webbing strap with metal cinch buckle and lock in loop. Includes 4 each 150mm rubber loops to hold up to 6 fixtures in place while positioning.

FIXTURE BRACKETS (REQUIRED) - CHOOSE 1		
Buckle style Brackets for securing onto Tree Straps.		
●	●	*Description*
TTBLT0101	**TTBLT0102**	Bracket with stainless steel mounting screws.

TREE STRAP CONNECTION BOX (OPTIONAL)	
Tree strap connection boxes are used to connect all multiple low voltage cables for one continuous cable connection down the tree, additional cable provided by others.	
TTCB0103	Tree Strap Connection Box. Grey ABS plastic with internal terminal block for wire connections and 3 each ½" knockouts for connections to 1 or 4 fixtures. Dimensions: 3¼" x 2½" x 1¾".
TTCB0104	Tree Strap Connection Box. Grey ABS plastic with internal terminal block for wire connections and 4 each ½" knockouts for connections to 5 or 6 fixtures. Dimensions: 4½" x 2½" x 1¾".

MESH WIRE PROTECTION COVER (OPTIONAL)	
A braided polyethylene terepthalate (PET) monofilament yarn resistant to chemical degradation, UV radiation, and abrasion.	
TTSJS01	Carbon Grey 3/8" SJO Cord Sleeve (Sold per foot)
TTSJS02	Brown 3/8" SJO Cord Sleeve (Sold per foot)
TTSJS03	Forest Green 3/8" SJO Cord Sleeve (Sold per foot)

Wiring Configuration



Adjust the strap every 6 months in order to prevent tree damage.

TARGETTI

BULLETTO

Power Supply (REQUIRED)	Type	Wattage	Input/Output Voltage	Dimmable	IP Rating	Output	Dimensions
DEL60PWM	ELECTRONIC PWM DRIVER STANDALONE, **UL LISTED ENCLOSURE PROVIDED BY OTHERS**	60W	120-277V / 24V	0-10V/PWM 10%	IP67	UR CLASS 2	5.9" X 2.09" X 1.38"
DEL90PWM	ELECTRONIC PWM DRIVER STANDALONE, **UL LISTED ENCLOSURE PROVIDED BY OTHERS**	90W	120-277V / 24V	0-10V/PWM 10%	IP67	UR CLASS 2	6.73" X 2.48" X 1.48"
DEDD10010	ELECTRONIC 0-10V DRIVER STANDALONE, **UL LISTED ENCLOSURE PROVIDED BY OTHERS**	100W	120-277V / 24V	0-10V DIMMING 0.1%	IP20	UR CLASS 2	6.02" x 1.97" x 0.91"
DELV40124D	ELECTRONIC LOW VOLTAGE TRANSFORMER	40W	120-277V / 24V	PHASE (120V ONLY) /0-10V DIMMING < 1%	IP66 / NEMA4 ENCLOSURE	UL CLASS 2	11" x 4" x 2.21"[1]
DELV60124D	ELECTRONIC LOW VOLTAGE TRANSFORMER	60W	120-277V / 24V	PHASE (120V ONLY) /0-10V DIMMING < 1%	IP66 / NEMA4 ENCLOSURE	UL CLASS 2	11" x 4" x 2.21"[1]
DELV96124D	ELECTRONIC LOW VOLTAGE TRANSFORMER	96W	120-277V / 24V	PHASE (120V ONLY) /0-10V DIMMING < 1%	IP67 / NEMA4 ENCLOSURE	UL CLASS 2	11" x 4" x 2.21"[1]
DELX601241CPWM	ELECTRONIC PWM DRIVER	60W	120-277V / 24V	0-10V/PWM 10%	IP67 / NEMA3R ENCLOSURE	UL CLASS 2	10" x 10" x 4"[1]
DELX901241CPWM	ELECTRONIC PWM DRIVER	90W	120-277V / 24V	0-10V/PWM 10%	IP67 / NEMA3R ENCLOSURE	UL CLASS 2	10" x 10" x 4"[1]
DELX1802242CPWM	ELECTRONIC PWM DRIVER	2X90W	120-277V / 24V	0-10V/PWM 10%	IP67 / NEMA3R ENCLOSURE	UL CLASS 2	12" x 12" x 4"[1]
DELX2703243CPWM	ELECTRONIC PWM DRIVER	3X90W	120-277V / 24V	0-10V/PWM 10%	IP67 / NEMA3R ENCLOSURE	UL CLASS 2	12" x 12" x 4"[1]
PS060	LUTRON HI-LUME PREMIER 0.1% CONSTANT VOLTAGE DRIVER WITH UL LISTED ENCLOSURE	96W	UNIVERSAL 120-277 VAC	HI-LUM DIMMABLE 0.1%	IP20/NOM CERTIFIED	UL CLASS 2	10.5" x 5.5" x 2"[1]
QOMELED1002410BK	QTRAN QOM-eLED CONSTANT VOLTAGE DRIVER WITH UL LISTED ENCLOSURE	100W	100-277V / 24V	0-10V	IP67	UR CLASS 2	15.4" X 9.22" X 4.90"
QOMELED2002410BK	QTRAN QOM-eLED CONSTANT VOLTAGE DRIVER WITH UL LISTED ENCLOSURE	2X100W	100-200V / 24V	0-10V	IP67	UR CLASS 2	15.4" X 9.22" X 4.90"
QOMDRIVE10024VBKDMX	QTRAN QOM-DRIVE-PS CONSTANT VOLTAGE DRIVER WITH UL LISTED ENCLOSURE	100W	100-277V / 24V	DMX CONTROL 4 CHANNEL	IP67	UR CLASS 2	15.4" X 9.22" X 4.90"
QOMDRIVE20024VBKDMX	QTRAN QOM-DRIVE-PS CONSTANT VOLTAGE DRIVER WITH UL LISTED ENCLOSURE	2X100W	100-200V / 24V	DMX CONTROL 4 CHANNEL	IP67	UR CLASS 2	15.4" X 9.22" X 4.90"

[1] Dimensions include enclosure with mounting bracket.
*** Constant voltage drivers 50/60HZ, voltage regulated with short circuit protection. Operating temperature -40 C- 80° C**
*** Installation of power supply must be compliant to Class 2 installation standards. Refer to NEC and local building code requirements.**
*** Consult factory for additional driver options (ie: DMX, DALI, wattage, size, shape, Lutron, ELDO, or others).**

MAX FIXTURES PER DRIVER

Fixture Wattage	Driver Wattage							
	40W	60W	96W	90W	2X90W	3X90W	100W	2X100
10W	3	4	7	7	14	21	8	16
12W	2	4	6	6	12	18	6	13

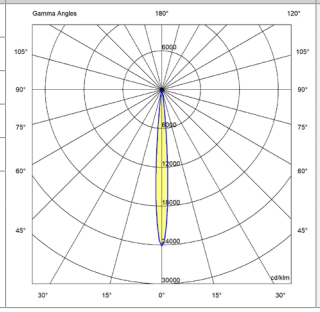
TARGETTI

BULLETTO

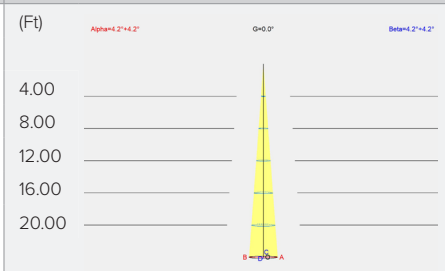
Photometry

Narrow Spot	
Fixture Power	10W
Fixture Output	473Lm
Kelvin Temp	3000°K
Beam Spread	NS 10°
IMax	24,196cd/klm
Efficacy	47 Lm/W

Polar Graph



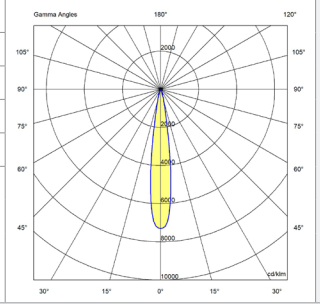
Cone of Light



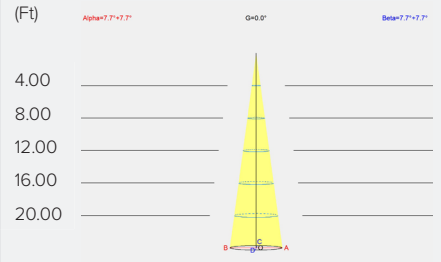
(Ft)	Max ftcd	Med ftcd
4.00	945	612
8.00	236	153
12.00	105	68
16.00	59	38
20.00	38	24

Spot	
Fixture Power	12W
Fixture Output	858Lm
Kelvin Temp	3000°K
Beam Spread	SP 15°
IMax	7,292cd/klm
Efficacy	72 Lm/W

Polar Graph



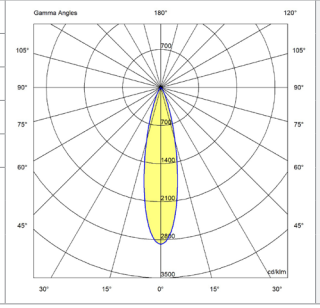
Cone of Light



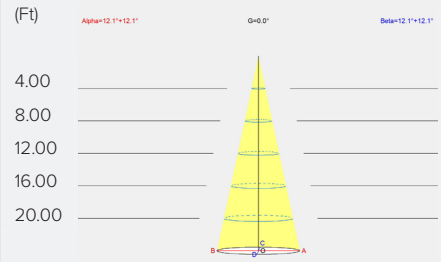
(Ft)	Max ftcd	Med ftcd
4.00	523	349
8.00	131	87
12.00	58	39
16.00	33	22
20.00	21	14

Flood	
Fixture Power	12W
Fixture Output	812Lm
Kelvin Temp	3000°K
Beam Spread	FL 25°
IMax	2,883cd/klm
Efficacy	68 Lm/W

Polar Graph



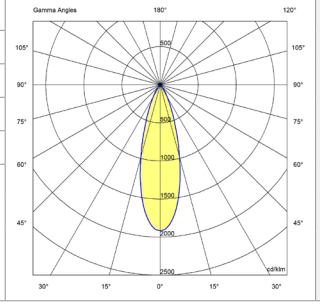
Cone of Light



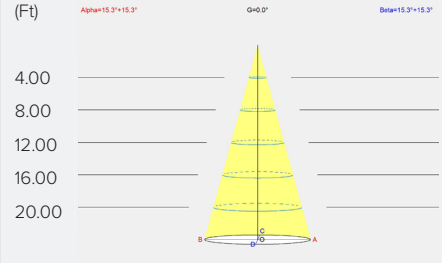
(Ft)	Max ftcd	Med ftcd
4.00	207	129
8.00	52	32
12.00	23	14
16.00	13	8
20.00	8	5

Medium Wide Flood	
Fixture Power	12W
Fixture Output	819Lm
Kelvin Temp	3000°K
Beam Spread	MF 30°
IMax	1,916cd/klm
Efficacy	68 Lm/W

Polar Graph



Cone of Light



(Ft)	Max ftcd	Med ftcd
4.00	138	84
8.00	34	21
12.00	15	9
16.00	9	5
20.00	6	3

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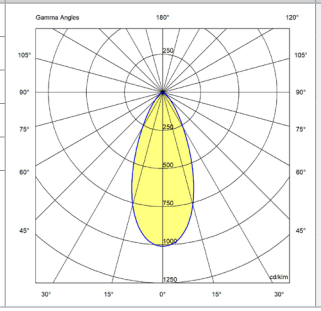
BULLETTO

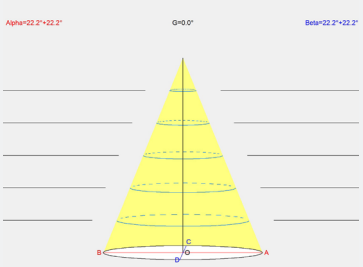
Photometry Cont.

Wide Flood	
Fixture Power	12W
Fixture Output	801Lm
Kelvin Temp	3000°K
Beam Spread	WF 43°
IMax	1009cd/klm
Efficacy	67 Lm/W

Polar Graph



Cone of Light



(Ft)	Max	Med
	ftcd	ftcd
4.00	72	42
8.00	18	10
12.00	8	5
16.00	5	3
20.00	3	2

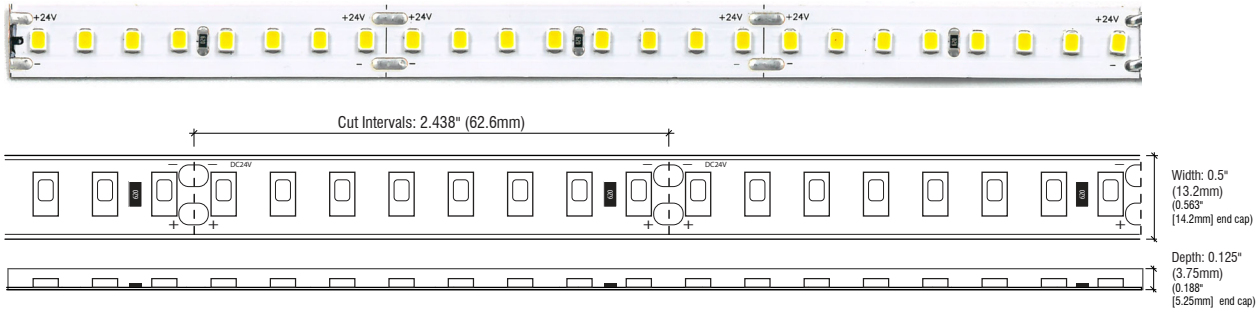
PERFORMANCE 500 (OUTDOOR)

PQ-SERIES | RUBBER COATED | LINEAR LED LIGHTING

Fixture Type: _____

Project: _____

Location: _____



MODEL:	PQ27K-WR-24V	PQ3K-WR-24V	PQ35K-WR-24V	PQ41K-WR-24V	PQ5K-WR-24V
Kelvin	2700K	3000K	3500K	4100K	5000K
Lumens	508 lm/ft	530 lm/ft	551 lm/ft	572 lm/ft	594 lm/ft
Rating	IP67	IP67	IP67	IP67	IP67

PRODUCT FEATURES

- 90+ CRI
- Dimmable
- 50,000 hour life
- 5-year warranty
- UL-listed for indoor and outdoor use
- 3M™ Industrial adhesive backing
- For use with 24V power supplies

KELVIN COLOR TEMPERATURE SCALE

SPECIFICATIONS

Series	PQ - Performance 500 (Outdoor)
Input Voltage	24V DC / Constant Voltage
Watts per Foot	2.6W/ft @ Maximum Run Length
Beam Spread	120°
Max Run Length	Unlimited, power every 25ft
Production Intervals	2.438" (62.6mm)
End Cap Dimensions	0.563" (14.2mm) × 0.188" (5.25mm)
Tape Dimensions	0.5" (13.2mm) × 0.125" (3.75mm)
CRI	90+
Diode	2835
Dimming Options	PWM, Triac, 0-10V, DMX, Hi-lume
Temp Range	-40°F (-40°C) to 149°F (65°C)

TOTAL WATTAGE USED AT EACH LENGTH

1ft	2ft	3ft	4ft	5ft	6ft	7ft	8ft	9ft	10ft	11ft	12ft	13ft
4.1	7.4	11.3	15.3	19.0	22.5	25.8	28.6	32.3	35.5	37.8	41.0	42.7
14ft	**15ft**	**16ft**	**17ft**	**18ft**	**19ft**	**20ft**	**21ft**	**22ft**	**23ft**	**24ft**	**25ft**	**26ft**
45.0	48.2	50.3	52.4	54.8	56.5	58.8	60.7	61.7	62.5	63.1	63.8	*n/a*

Conforms to ANSI/UL Standard 2108
Certified to CAN/CSA Standard C22.2 No. 250.0

Supports TITLE 24 JA8-2016 Compliance | RoHS COMPLIANT | c UL us LISTED | 24V DC | WET LOCATION RATED

TARGETTI

S7 Fixture

H. Sandy Health Clinic - Exterior Light Fixture Cut-Sheets

ZEDGE LINE

Professional Small Scale LED Steplight

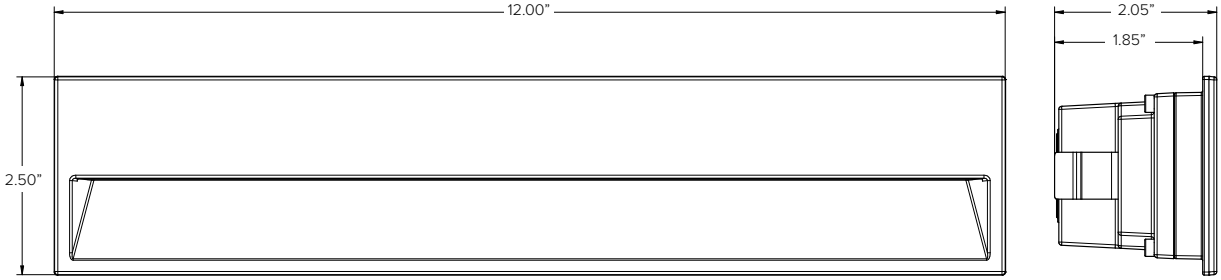
Concept: Recessed wall mounted LED fixture.
Materials: Die-cast anodized aluminum body and external frame; powder coated frame.
Source: LED High Efficiency Board.
Optic: Polycarbonate opal screen. Floor Washer frame allows for uniform optical distribution on the floor and excellent visual comfort.
Mounting: To be completed with a special nylon outer casing fitted for parallel connection.
Driver: Integrated 4/1 driver (Non-dimmable / 0-10V / Reverse Phase / Forward Phase). Dimmable to 1%.
Finish: Ferrite Grey
Wattage: 9W
Color Temperature: 2700ºK / 3000ºK / 3500ºK / 4000ºK
CRI: Ra84

Delivered Lumens:	**2700ºK**	**3000ºK**	**3500ºK**	**4000ºK**
	230Lm	245Lm	251Lm	257Lm

Lumen Maintenance (L70): 50,000hrs
Calculation for LED fixtures are based on measurements that comply with IES LM-80.
Voltage: Universal Voltage 120-277V AC 50/60Hz
IK Rating: IK10
IP Rating: IP66
Certifications: cULus Listed Wet Location
Tested in accordance with LM-79-08
[A] Title 24 commercial installation compliant.
[B] Consult factory for marine grade cataphoresis treatment.
Warranty: 5 year limited warranty
Designed in collaboration with Gensler as Product Design Consultant

PRODUCT CODE	DRIVER	FACEPLATE	FINISH	WATTAGE	COLOR TEMP	+	INSTALLATION
ZEL – ZEDGE LINE	**41** – 4/1 Dimming (Non-Dimming / 0-10V / Reverse Phase / Forward Phase)	**FW**– Floor Washer	**FE** — Ferrite Grey	**L2** — 9W	**27** — 2700K **30** — 3000K **35** — 3500K **40** — 4000K		*See page 2*

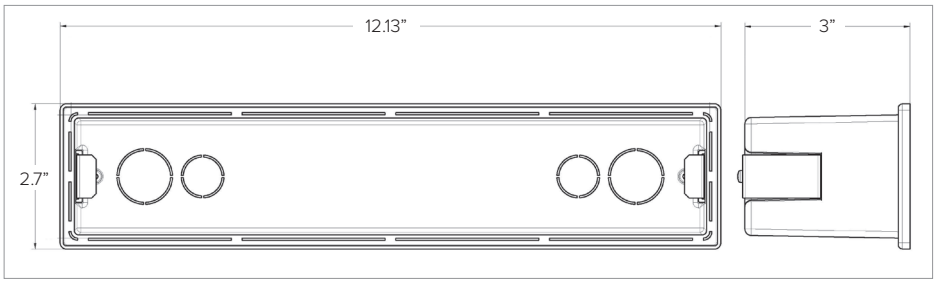
Views



TARGETTI

ZEDGE LINE

INSTALLATION (REQUIRED)	
1E3447	Nylon outer casing fitted for parallel connection with feed through-wiring. ¾" and ½" knock-outs made for EMT connectors and conduit entry. Suitable for concrete pour, drywall, or stucco applications. Dimensions: 12.13"W x 2.7"H x 3"D

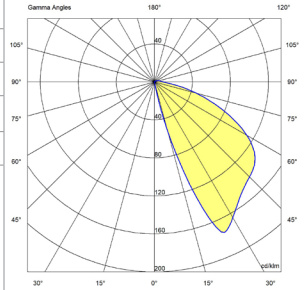


1E3447

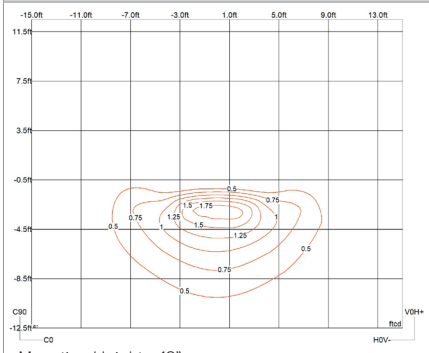
Photometry

ZEDGE LINE - FLOOR WASHER				
Fixture Power	9W	9W	9W	9W
Fixture Output	230Lm	245Lm	251Lm	257Lm
Kelvin Temp	2700ºK	3000ºK	3500ºK	4000ºK
Beam Spread	Floor Washer			
IMax	173.75cd/klm			
Efficacy	26 Lm/W	27 Lm/W	28 Lm/W	29 Lm/W

POLAR GRAPH

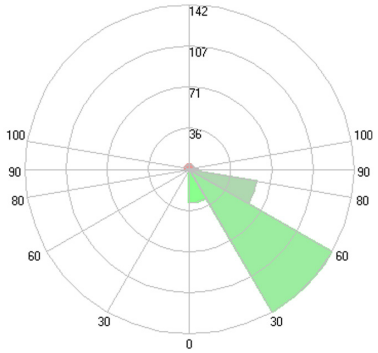


ISOLUX DIAGRAM



Mounting Height = 18"

LCS GRAPH



B0-U1-G0

EXHIBIT E

E. Architectural Drawings: Rendering from Hwy 26 and Ten Eyck Looking East


E. Architectural Drawings:
Rendering Hwy 26
Elevation Looking North


E. Architectural Drawings:
Rendering Main Entry East
Elevation, Looking West

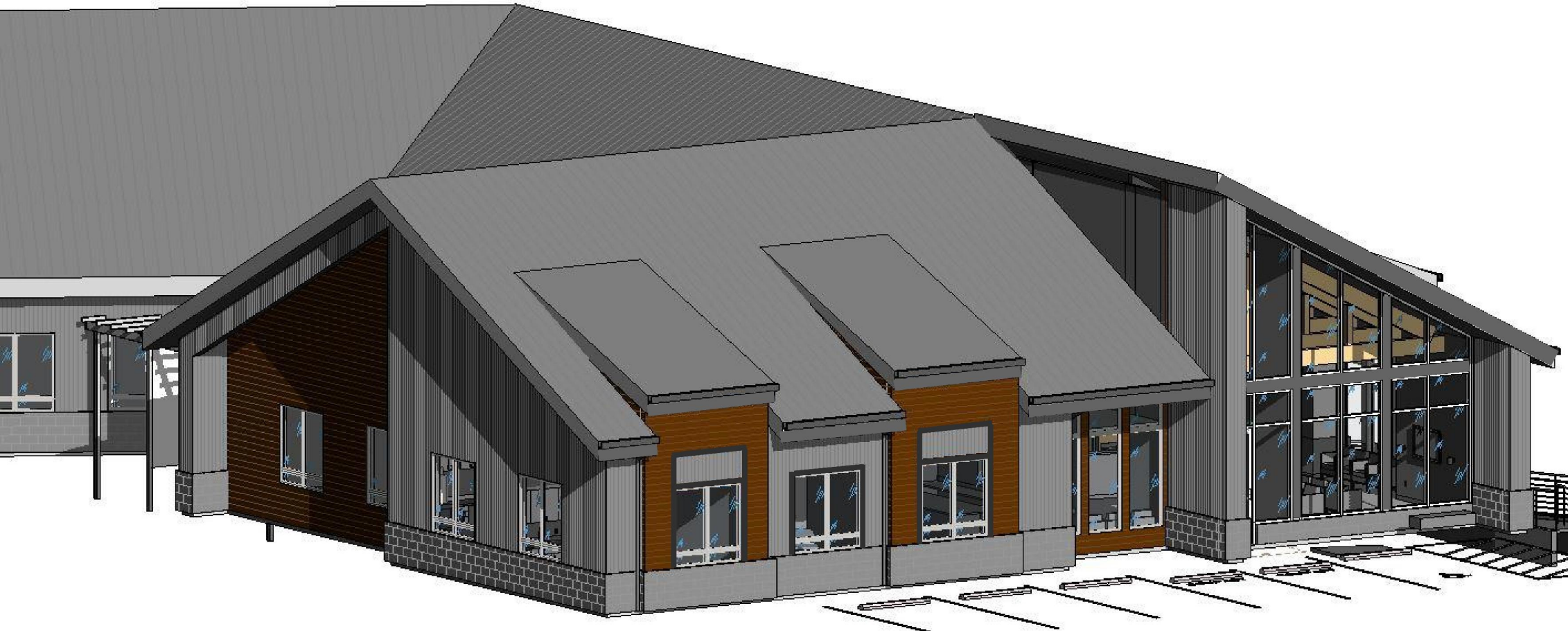
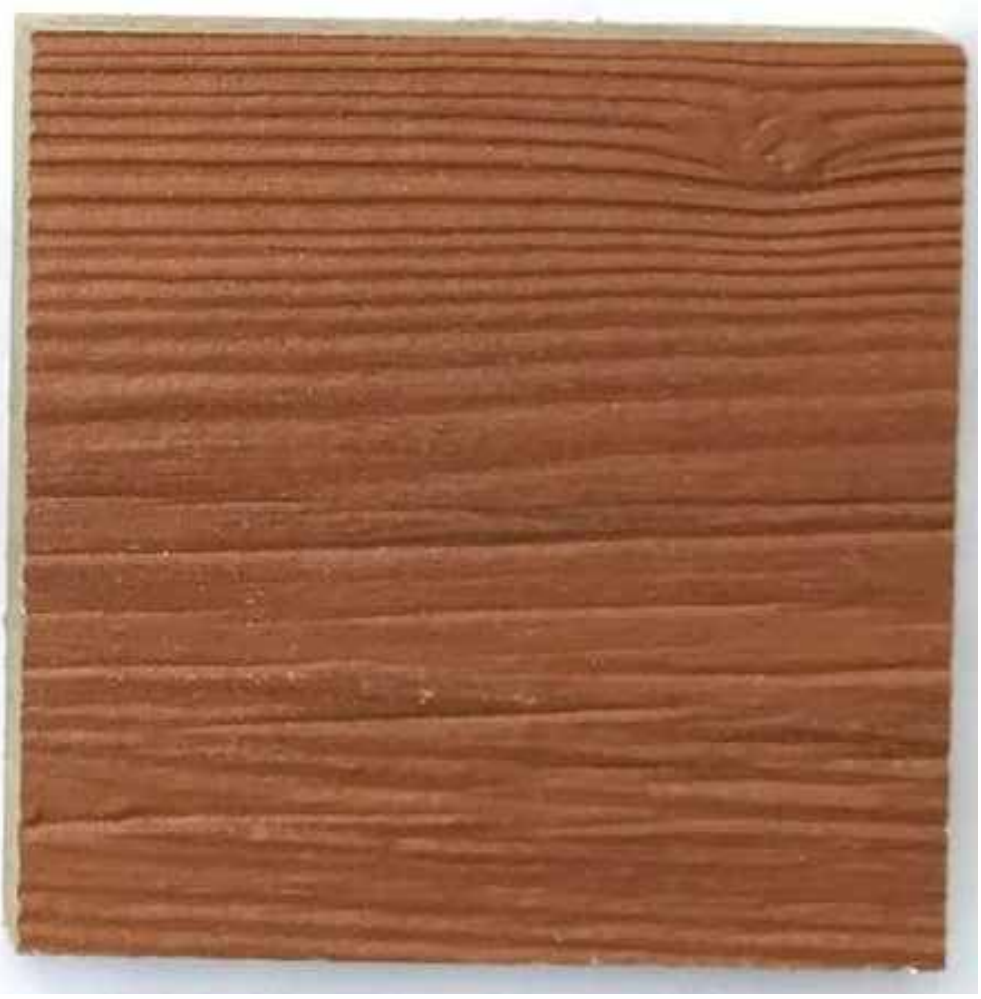


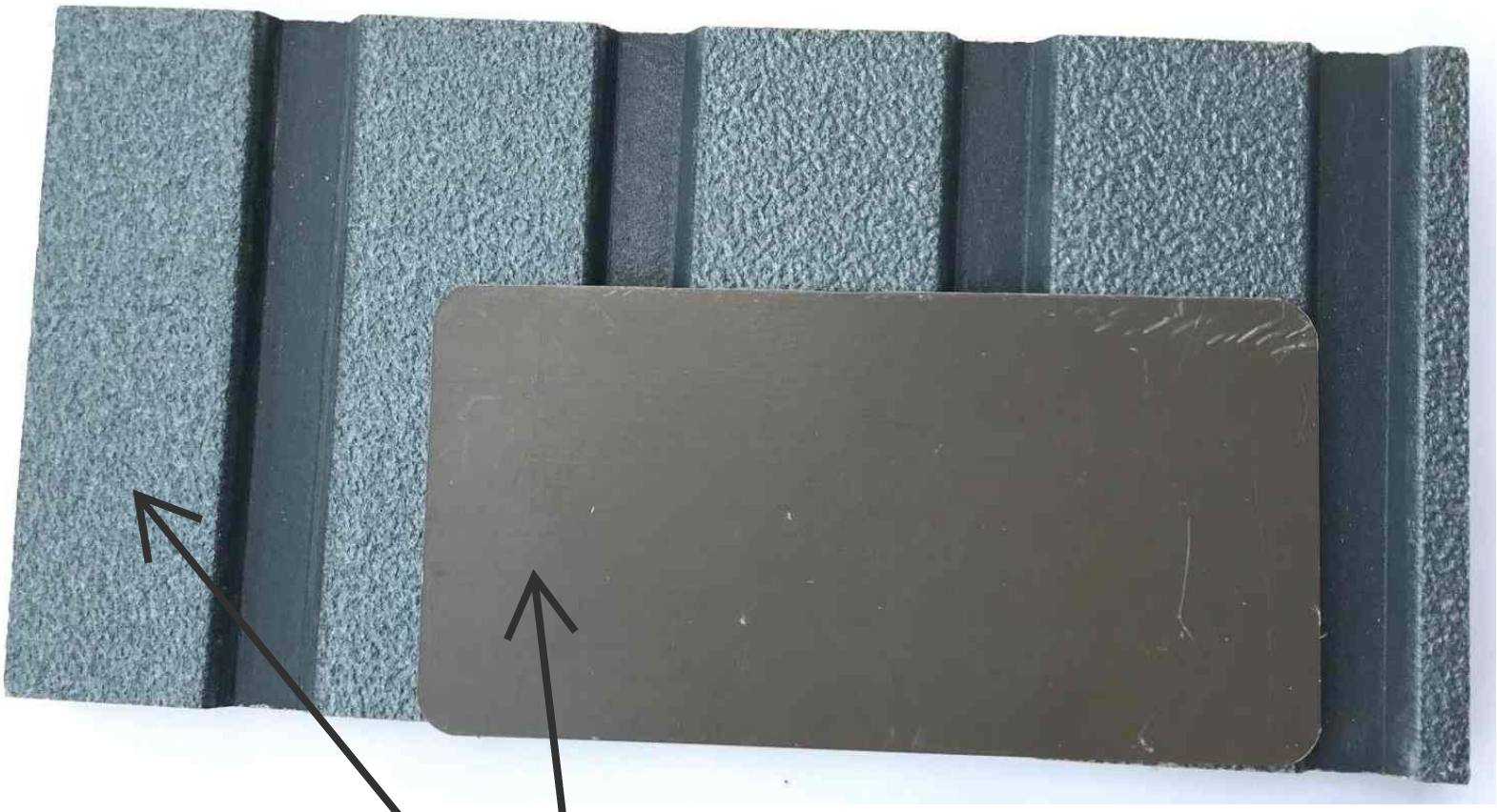
EXHIBIT F

BASE CONCRETE BLOCK VENEER AND TRASH ENCLOSURE BLOCK

HORIZONTAL FIBER-CEMENT SIDING

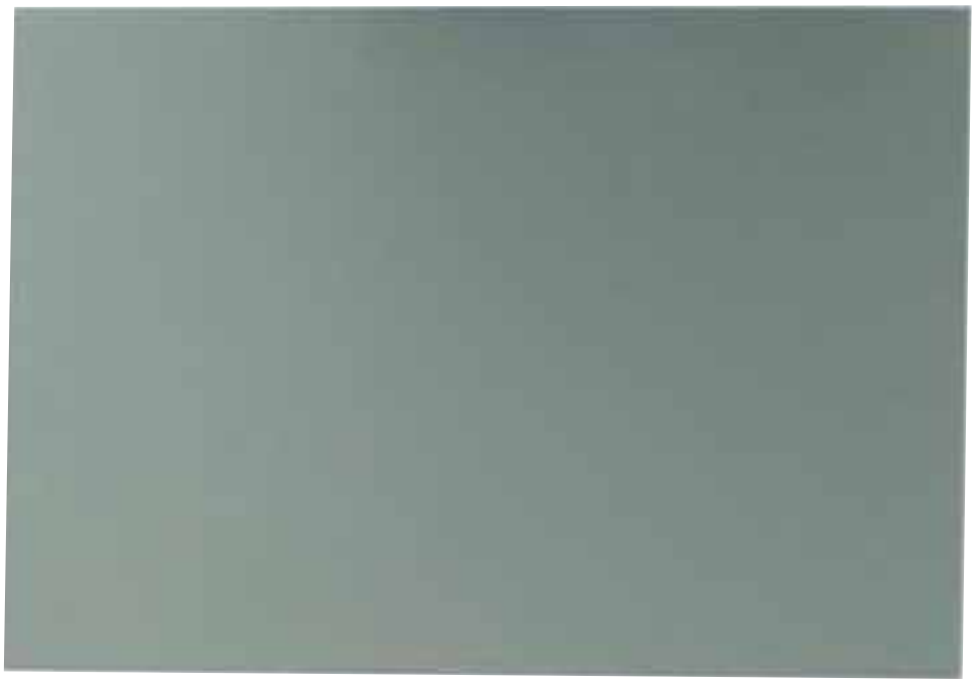


VERTICAL FIBER-CEMENT PANEL SIDING

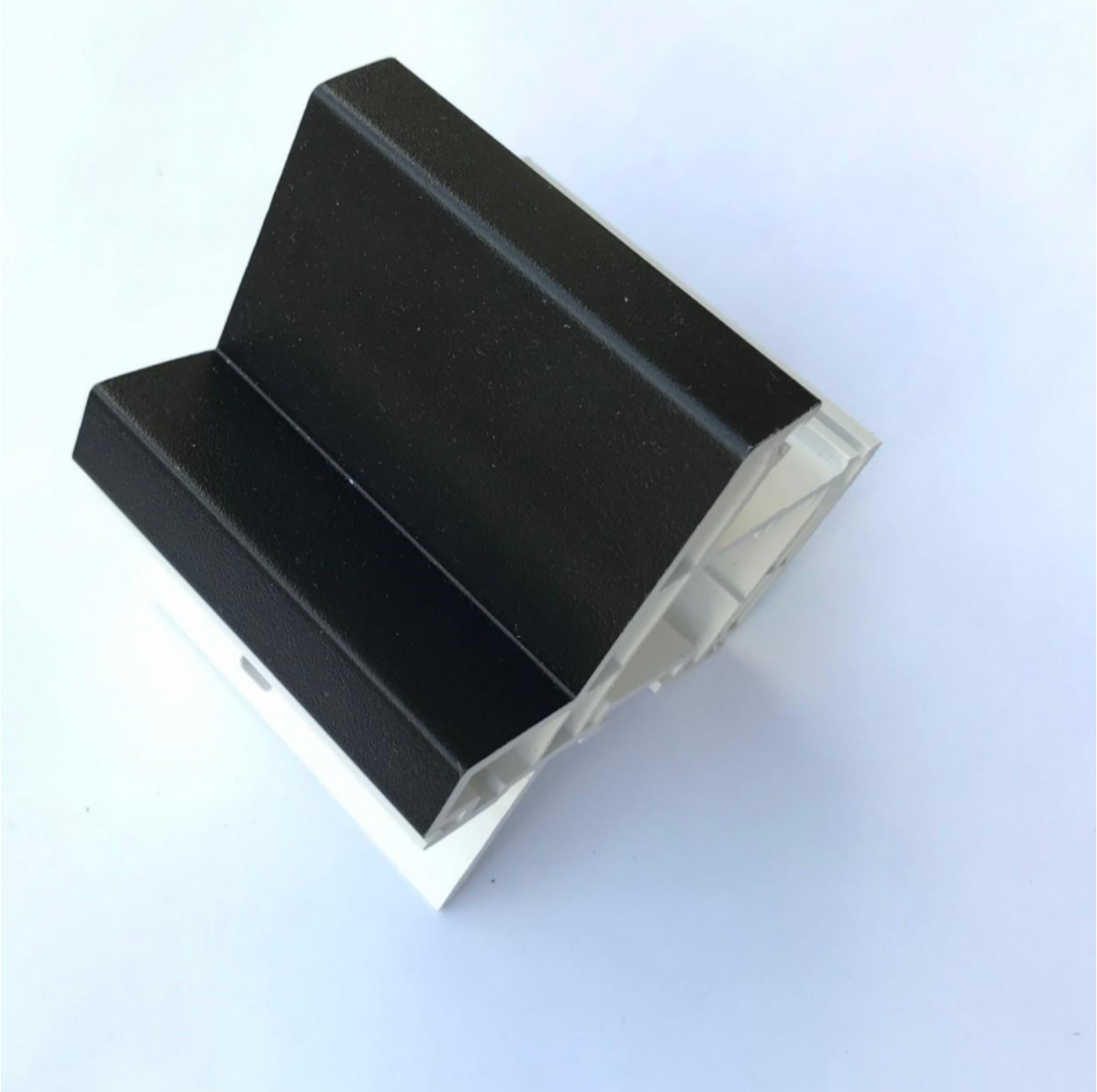


PROPOSED MATERIAL WILL BE PAINTED TO MATCH WEATHERED COPPER COLOR SWATCH SHOWN HERE, BUT WILL HAVE VERTICAL TEXTURE AS SHOWN.

STANDING SEAM METAL ROOFING

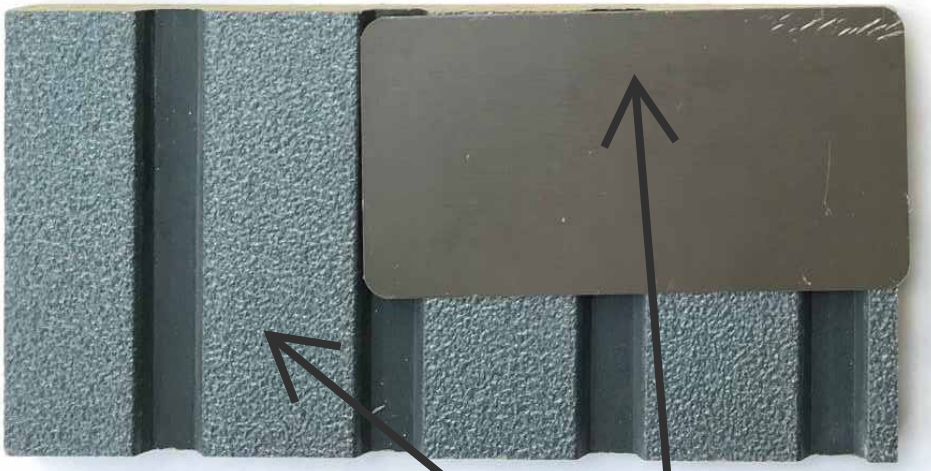


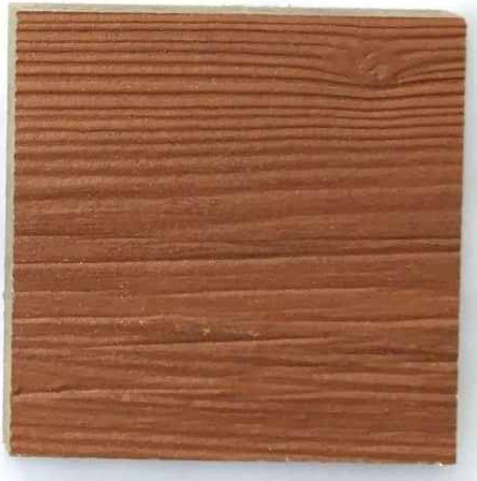
WINDOW COLOR



STURGIS GRAY TRIM AND FASCIA PAINT

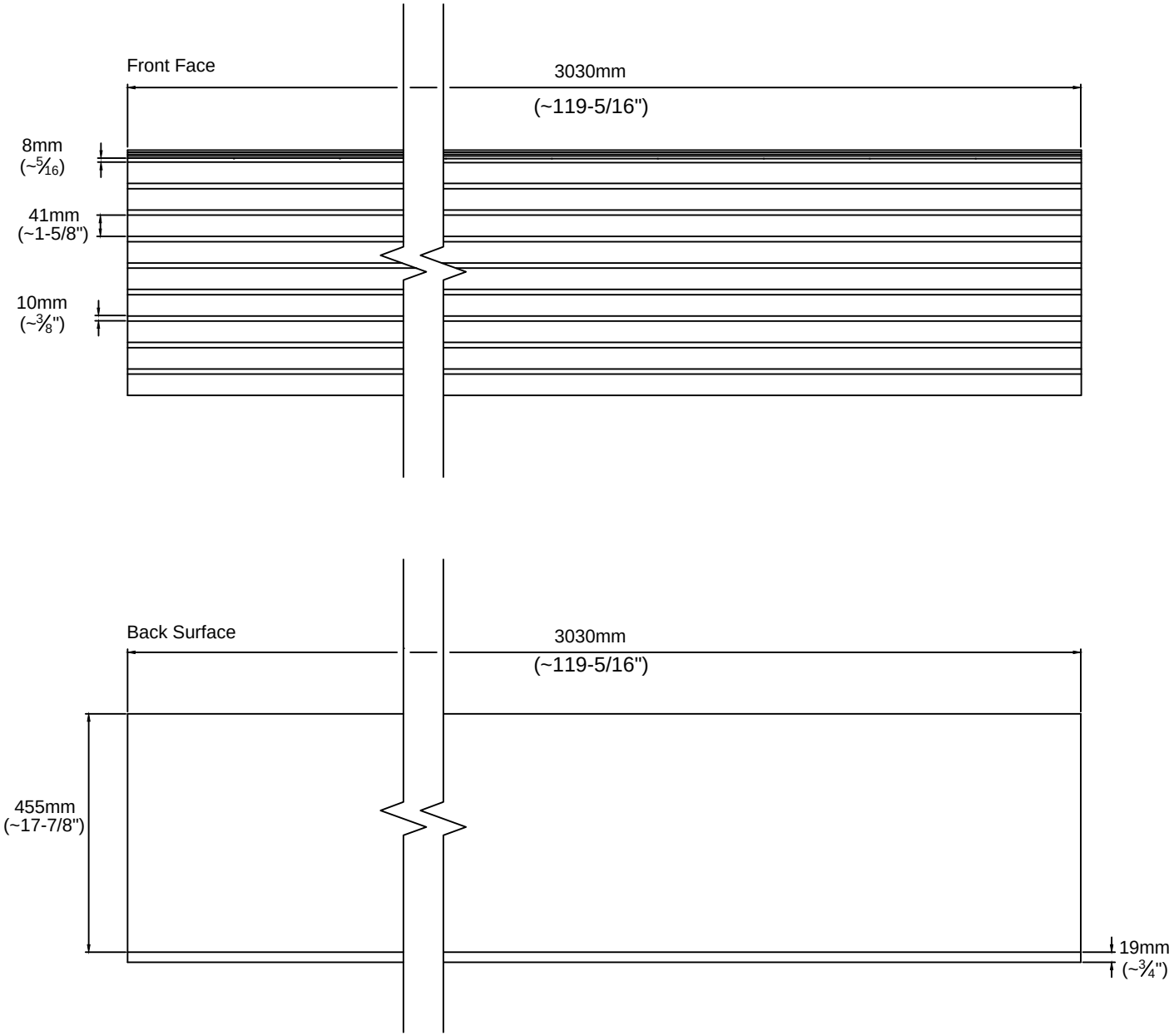
COMBINED BUILDING MATERIALS





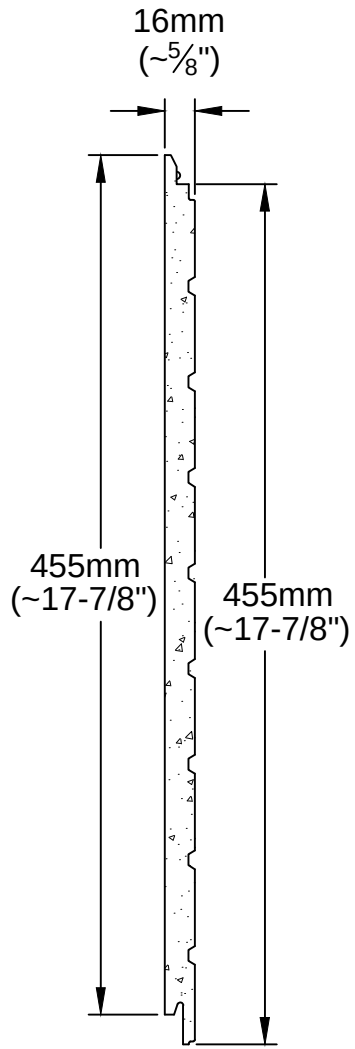
PROPOSED VERTICAL SIDING MATERIAL WILL BE PAINTED TO MATCH WEATHERED COPPER COLOR SWATCH SHOWN HERE, BUT WILL HAVE VERTICAL TEXTURE AS SHOWN.

Exhibit G



AWP-3030 - RIBBED - PANEL DETAIL

SCALE: 1" = 1'-0"



SCALE: 3" = 1'-0"


Hub City
VETERINARY CLINIC

NICHIHA fiber cement

ARCHITECTURAL WALL PANELS | AWP3030 | JULY 2019

Vertical Installation Guide

AWP-3030
VERTICAL INSTALLATION GUIDE

TABLE OF CONTENTS

GENERAL

This guide is intended to provide the key information needed to successfully install Nichiha's 3030mm Architectural Wall Panels (AWP3030) in a vertical application. Further installation information and technical resources such as animated instructional videos, Technical Bulletins, three-part specifications, product testing and certifications, architectural details in AutoCAD, Revit, and PDF versions, and other technical documents are available on our website: nichiha.com/resource-center.

Install products in accordance with the latest installation guidelines and all applicable building codes and other laws, rules, regulations, and ordinances. Review all installation instructions and other applicable product documents before installation. **This install guide's effective date is July 2019.**

PRODUCT INSPECTION

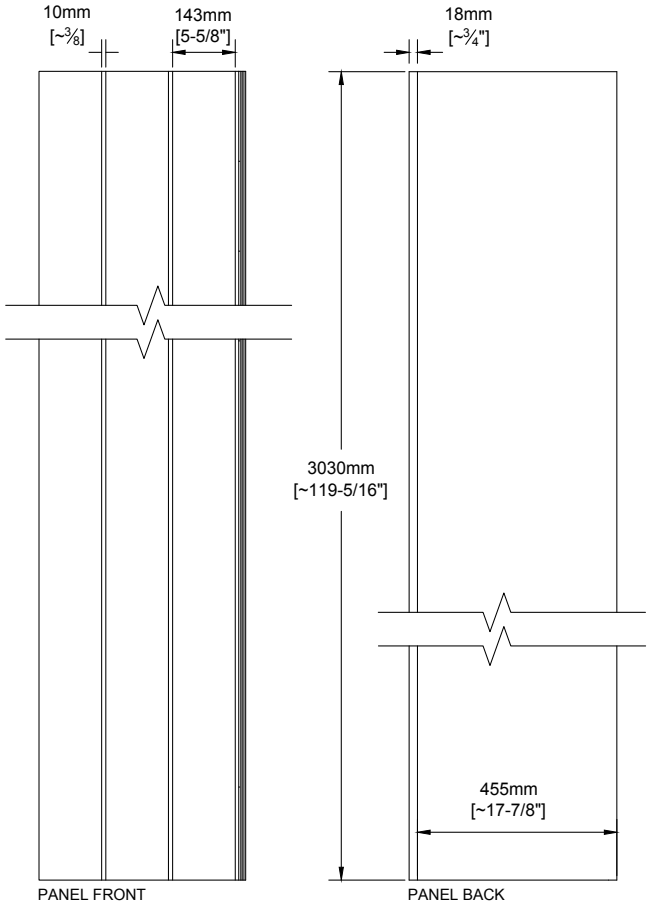
Inspect all products thoroughly prior to installation. Do not install any product which may have been damaged in shipment or appears to have a damaged or irregular finish. Should you have a question or problem with your order, contact your local dealer or Nichiha Customer Service, toll-free, at 1.866.424.4421. **Keep the products dry prior to installation. It is best to store the products indoors, otherwise keep them covered.** Do not stack pallets more than two high.

BASICS OF THE AWP3030 SYSTEM

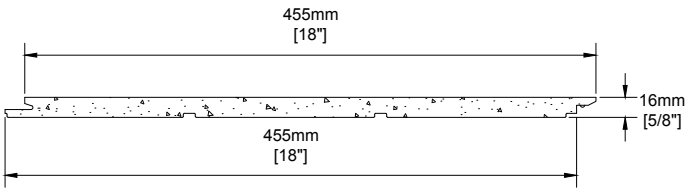
Nichiha AWP3030 dimensions are 455mm (h) x 3,030mm (l) x 16mm (t). It is important to keep in mind the actual metric dimensions when considering panel layout, placement of control and compression joints, and with respect to sizing window and door openings. Approximate Imperial dimensions are 17-7/8" (h) x 119-5/16" (l) x 5/8" (t).

AWP3030 panel edges are shiplapped on the long edges and a factory sealant gasket is included on one edge, providing a factory seal on all vertical joints. AWP attachment hardware engages the long edges, holding the panels off the substrate surface by 10mm (~3/8") and creating a closed-joint, drained/back-ventilated rainscreen system with concealed fastening. When accounting for the overall thickness of the AWP system, add this 10mm plus the thickness of the panel (16mm) for total system thickness of 26mm.

AWP3030 may be installed horizontally or vertically. See also *Horizontal Installation Guide AWP1818, AWP3030.*



VINTAGE WOOD PANEL DETAIL
SCALE: 1" = 1'-0"



PANEL SECTION

LIMITATIONS AND TECHNICAL DESIGN REVIEWS

Natural limitations on product usage are inherent to any cladding product's design, physical characteristics, and attachment system. Nichiha AWP are intended as a low-to-mid-rise cladding product.

Any project of more than three stories or 45 feet, as well as those located in high wind coastal areas (Exposure Categories C and D with Basic Wind Speed in excess of 130 mph), or those with any wall assembly not described in *Framing & Sheathing Requirements*, require a technical review by Nichiha to evaluate feasibility via our Technical Design Review process.

By evaluating a project's unique criteria and design, we can reference independently test-derived and calculated wind load performance data for our products to determine whether and how the panels can safely be installed on the project. Contact your local rep or Nichiha technical department for details or to initiate a Technical Design Review.

AWP are not to be used in any applications/uses not specified or described in this installation guide or other Nichiha technical documents. Any such use shall not be backed by the manufacturer's product warranty.

Do not use AWP on open screen walls.

Insulated Concrete Forms (ICFs) require additional measures.

Installation of AWP products on modular structures that are factory-constructed and then transported to a final site are not approved; and further, excluded from the Limited Product Warranty, per Section 2.F.

AWP installed as soffit is **not** covered by the Nichiha Product Warranty or the Nichiha Finish Warranty. Refer to pages 38-41 of the *AWP Horizontal Installation Guide*.

Please contact Nichiha Technical Services for assistance.

SAFETY

As with any natural stone, masonry, or concrete based product, when cutting, drilling, sawing, sanding, or abrading fiber cement cladding, proper safety measures must be taken due to the potential for airborne silica dust, an OSHA-identified hazardous substance that can pose serious medical risks.

Always wear safety glasses and a NIOSH/OSHA approved respirator with a rating of N, O, or P 100. Carefully follow the respirator manufacturer's instructions as well as applicable governmental safety regulations concerning silica. Refer to Nichiha's SDS for more information.

Always cut fiber cement panels outside and with a dust-collecting HEPA system. Do not cut the products in an enclosed area.

Use a dust-reducing circular saw with diamond-tipped or carbide-tipped fiber cement saw blades.

Always clean panels after cutting. Fiber cement dust can bind to the panel finish. Vacuum dust with a HEPA-filtered vacuum.

FRAMING AND SHEATHING REQUIREMENTS

Prior to Nichiha installation, closely inspect exterior wall substrate and correct any problems. Walls that are out of plumb, for example, can negatively impact the installation quality of AWP. Nichiha Spacer may be used in conjunction with panel attachment hardware if necessary to ensure a smooth, even substrate.

With conventional stud spacing, 7/16" or thicker APA rated OSB or Plywood sheathing ***must*** be used as the fastening base for Vertical AWP3030 as the panel size module will not align with framing. **If nail-base insulation sheathing is considered, please contact Nichiha Technical as additional measures may be required**. Alternatively, studs or furring may be spaced at 45.5cm (17-7/8") o.c. to allow fastening of AWP hardware directly to framing.

Refer to our third party building code certification(s) and/or state/local approvals for allowable wind design pressures at nichiha.com/resource-center.

Nichiha AWP cladding may be installed on vertical walls only. No tilted/sloped walls, nor true radius/ curved walls. Vertical AWP installations are not compatible with PEMBs. AWP may be installed on wood or steel framing, concrete/masonry with furring, and Structural Insulating Panels (SIP) meeting the following requirements:

WOOD STUDS

Structural Sheathing Method
Size: minimum 2"x4" studs
Spacing: 16" o.c. max
Sheathing: APA rated exterior grade minimum 7/16" plywood/OSB required

Custom Stud/Furring Spacing Method
Size: minimum 2"x4" studs
Spacing: 45.5cm (17-7/8") o.c.
Sheathing: APA rated exterior grade minimum 7/16" plywood/OSB, 1/2" or 5/8" gypsum

METAL STUDS

Structural Sheathing Method
Gauge: minimum 18
Spacing: 16" o.c. max
Sheathing: APA rated exterior grade minimum 7/16" plywood/OSB required

Custom Stud/Furring Spacing Method
Gauge: minimum 18
Spacing: 45.5cm (17-7/8") o.c.
Sheathing: APA rated exterior grade minimum 7/16" plywood/OSB, 1/2" or 5/8" gypsum

CONCRETE/MASONRY

Furring is required for installation of AWP over concrete and masonry structures.

Wood Furring: pressure treated lumber 2"x4", oriented vertically, spaced 45.5cm (17-7/8") o.c. max with additional vertical furring segments at Vertical Starter Track locations to enable 9" o.c. fastener spacing for track.

Metal Furring: hat channel, c-stud, or z-furring, minimum 18 gauge with 1"- 2" flanges, oriented vertically, spaced 45.5cm (17-7/8") o.c. max. with additional vertical furring segments at Vertical Starter Track locations to enable 9" o.c. fastener spacing for track.

Sheathing: exterior grade minimum 7/16" plywood/ OSB required with furring spacing other than 45.5cm (17-7/8") o.c.

STRUCTURAL INSULATING PANELS (SIP)

SIPs should be installed in accordance with manufacturer's instructions and local building codes. Additional special Nichiha installation requirements for SIPs are discussed in the Fasteners and Installing the First Course sections to follow.

For buildings greater than one story, contact Technical Department for assistance.

CONTINUOUS INSULATION

When exterior/continuous insulation is to be used with AWP3030 in vertical applications, please contact Nichiha *Technical Services* for assistance. Framing/sheathing/furring alternatives will be necessary.

Also refer to the Technical Bulletin: *Continuous Insulation and AWP* available at Nichiha.com/resource-center.

VERTICAL AWP3030 OVER C.I. ATTACHMENT REQUIREMENTS

When adding a furring grid* to enable AWP installation over c.i., the following general criteria are applicable:

Special attention must be paid to supporting the Vertical Starter Track, which bears the weight of AWP3030 in vertical applications. The clips do not share the dead loads for vertical panels.

1. Shaped metal furrings (Z, hat channel, C, etc.)

- Minimum 18 gauge
- Aligned vertically
- Spaced 16" o.c. (max)
- Min. 7/16" APA Rated OSB or Plywood

- or -

2. Pressure treated lumber

- Minimum 2x (1.5") thickness
- Aligned vertically
- Spaced 16" o.c. (max.)
- Min. 7/16" APA Rated OSB or Plywood

- or -

3. Shaped metal furrings (one layer)

- Minimum 18 gauge
- Aligned vertically at 17-7/8" o.c.
- Additional vertical furring segments at Vertical Starter Track locations to enable 9" o.c. fastener spacing for track

- or -

4. Shaped metal furrings (two layers)
   (Z, hat channel, C, etc.)
   - Layer One
     - Minimum 18 gauge
     - Aligned horizontally
     - Spaced per engineer's design
   - Layer Two
     - Minimum 18 gauge
     - Aligned vertically at 17-7/8" o.c.
     - Additional vertical furring segments at Vertical Starter Track locations to enable 9" o.c. fastener spacing for track.

- or -

5. CL-TALON® 300

- Base Track and Wall Mount T-Tracks (vertical) at 16" o.c. (aligned with framing), and Therme Clips spaced per project loading requirements

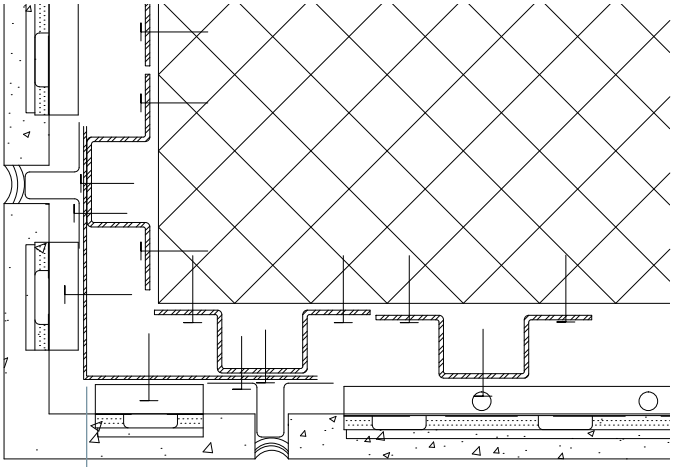
- Wall Mount Supports (horizontal) at 16" o.c.

**Consult a structural engineer to design the furring system to manage the AWP system dead load of minimum 4 psf and also meet the project wind load design criteria. Furring must account for expected building compression. Nichiha does not provide fastener design for anchoring the furring to structure. Refer to IBC 2015 Table 2603.12.2 for more info.*

ACCESSORY ATTACHMENTS

Nichiha Double and Single Flange Sealant Backers and metal trims, such as H-Mold and Corner Key, must be fastened to furring, blocking, or 18 gauge flat stock. Sealant backers must be fastened every 12”-14” vertically, so any use of flat stock must accommodate this fastening schedule.

Outside corners may be wrapped with 18 gauge flat stock fabricated to fit the corner. Attach the stock to furring on both sides of the corner. Corner Clips are used to secure Nichiha factory panel Corners and may be fastened to the flat stock wrapping, as can metal trim corners.



18 ga flat stock wrapping corner

IBC 2015 TABLE 2603.12.2

The model building code for 2015 includes information in Chapter 26 about foam plastic insulation/sheathing and furring minimum fastening requirements. Table 2603.12.2 shows various configurations depending upon framing gauge and spacing, fastener size and spacing, thickness of insulation and cladding weight. As an example, according to the table, 3 inches is the maximum thickness of foam sheathing on which a furring can be added directly on top, spaced at 16” o.c. and fastened with #8 screws every 12”-16” (into 18 gauge wall framing), that can support a cladding weight of 3 psf.

ENERGY CODE FRIENDLY MARKET OPTIONS

A number of engineered third party systems exist that are designed to solve the conflicts between energy code compliance and the safe installation of exterior claddings over continuous insulation.

Nichiha has direct experience with these products:

- Bracket and rail systems:
  - Cascadia Clips®
  - FERO Cladding Support
  - ISO Clip
  - Knight Wall MFI®
- CL-TALON®
- Knight Wall CI® and HCI™ Systems
- SMARTci GreenGirts

WEATHER RESISTIVE BARRIERS

A weather resistive barrier (WRB) is required when installing Nichiha panels over stud walls and SIPs. For CMU/concrete assemblies, Nichiha defers to local code requirements. Use an approved WRB as defined by the 2015 IBC. Refer to local building codes.

A permeable WRB is highly recommended when installing Nichiha panels for residential applications.

Permeable WRB is required for all commercial applications. A fluid applied WRB is acceptable.

Sheathings and insulations with an integrated code-compliant WRB such as ZIP System® and DensElement™ are acceptable.

All openings must have appropriate flashing to prevent moisture penetration. Follow manufacturer's guidelines and all local building codes.

STORAGE & HANDLING

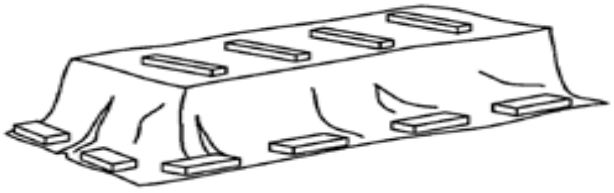
AWP are a finished product and care must be taken to protect them against damage prior to and during installation. Panels must be stored flat and kept dry. Indoor storage is best. Refer to the storage information included on product pallets.

Ensure panels are completely dry before installing. Direct contact between the panels and the ground must be avoided at all times. It is necessary to keep panels clean during the installation process.

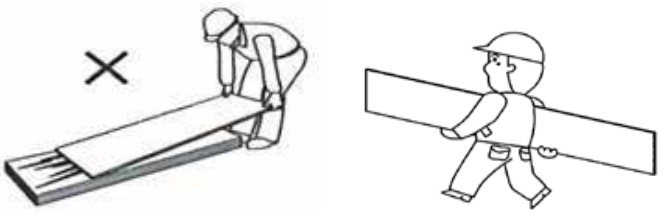
Cut panels face down.

Always clean panels with a clean, soft, dry cloth after cutting. Dust can bind to the finish.

When sidewalks are poured after awp installation, take steps to cover/protect panels near grade. Cement dried on AWP cannot be removed.



Always cover pallets with a tarp or store indoors!



Don't unpackage and re-stack panels!
Always carry panels on edge!

FASTENERS

All Applications

Fasteners must be **corrosion resistant**. Stainless steel or corrosion resistant screws such as hot-dipped zinc or ceramic coated are recommended. Comply with all local building codes for fastener requirements.

Number 10, pan-head screws (HD .365") were used as clip fasteners for AWP wind load testing. The minimum size for clip fasteners is #8. Ultimate Clip and Starter Track screws must have a pan, wafer, or hex type full head.

Min. Number 7 finish screws with a bugle or flat head (min. head diameter 0.255") are appropriate for face fastening locations. These must penetrate framing per the minimum requirements below. Refer to the ***Face Fastening Best Practices*** section for face fastening procedure.

When installing AWP with the Structural Sheathing Method, ensure clip fasteners are at least 1" in length to fully penetrate the plywood or OSB. Wherever possible when face fasteners are needed, screws must be long enough to penetrate all the way through the sheathing and into the framing.

For the Custom Stud Spacing Method, the fasteners must always penetrate the studs or furring with minimum 1" penetration for wood or 1/2" for metal.

FACE FASTENING BEST PRACTICES

To minimize the appearance of face fasteners, utilize the following steps:

1. Apply low adhesive tape such as painters tape to the panel at face fastening locations.
2. Pre-drill panels 1" from the cut edge to be face fastened. Use a countersink drill bit with chamfer matching the head diameter of the bugle-head type screws to be used for face fastening.
3. Fill counter-sunk fastener holes with exterior cementitious filler, such as MH Ready Patch® and later dab touch-up paint with cotton swabs or artist brush.
4. Remove the painter's tape only after applying patch and touch up paint.

INSTALLATION HARDWARE & ACCESSORIES

ULTIMATE VERTICAL STARTER TRACK

Ultimate Vertical Starter Track serves as the foundational support for the AWP system while also providing faster and greater ease of installation. *With Vertical AWP3030, the Starter Track carries the entirety of the dead loads and is required for each course.*

FA 710 T Vertical Starter Track – 10mm rainscreen

ULTIMATE CLIP II

Ultimate Clips are secured to the vertical panels' shiplaps, securing AWP to the wall while holding their back surface off the substrate to create the 10mm (3/8") rainscreen space. *In vertical applications, clips do not support panel weight.*

JEL 778 CLIP Compatible with all 3030mm AWP - 10mm rainscreen

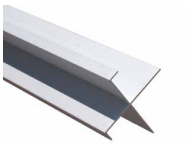
Joint Tab Attachments included with Ultimate Clips are not needed for vertical panel installations.

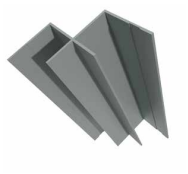
CORRUGATED SPACER

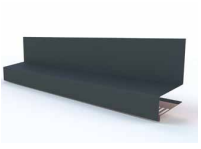
At termination points where Ultimate Clips cannot be used, Nichiha Corrugated Spacer is required to maintain the rainscreen space and prevent panel deflection at face fastening locations such as window jambs and outside corners.

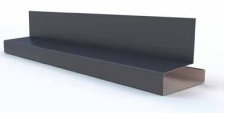
FS 1005 SPACER – 5mm rainscreen

FS 1010 SPACER - 10mm rainscreen









SEALANT BACKERS

Nichiha Sealant Backers provide exact spacing for expansion and termination joints and the recommended depth of sealant (75-80%).

They provide faster installation than a foam backer rod and require less sealant. At sealant joints, use a sealant that complies with ASTM C920, Class 35 (min.). Refer to the Sealant section on page 19 for more information.

Single Flange Sealant Backer: FHK 1015 – 10mm rainscreen
Double Flange Sealant Backer: FH 1015 – 10mm rainscreen

METAL TRIM OPTIONS

Nichiha metal trim provides aesthetically pleasing design options for corners, openings, and transitions.

TRIM	APPLICATIONS
Corner Key	Outside Corners
H-Mold	Vertical Joints
Open Outside Corner	Outside Corners
J-Mold	Terminations
Inside Corner	Inside Corners

ESSENTIAL FLASHING SYSTEM	APPLICATIONS
Starter*	Base/Clearance Concealment
Compression Joint	Horizontal/Compression Joints
Overhang*	Fascia-to-Soffit Transitions

* Inside and outside corner segments are available.

PLANNING AND PANEL LAYOUT

To ensure a successful installation, it is important to first plan how the panels will be laid out, where horizontal/compression joints will be located for each course, and line of sight regarding inside corners decided.

Reminder: AWP3030 actual dimensions are metric: 455mm (h) x 3,030mm (l). Imperial equivalents: 17-7/8" (h) x 119-5/16" (l).

Horizontal/Compression Joints (Page 25)***:*** 1/2" (min.) Horizontal, flashed break detail to allow for building compression at floor lines. ***Horizontal joints may not be staggered.***

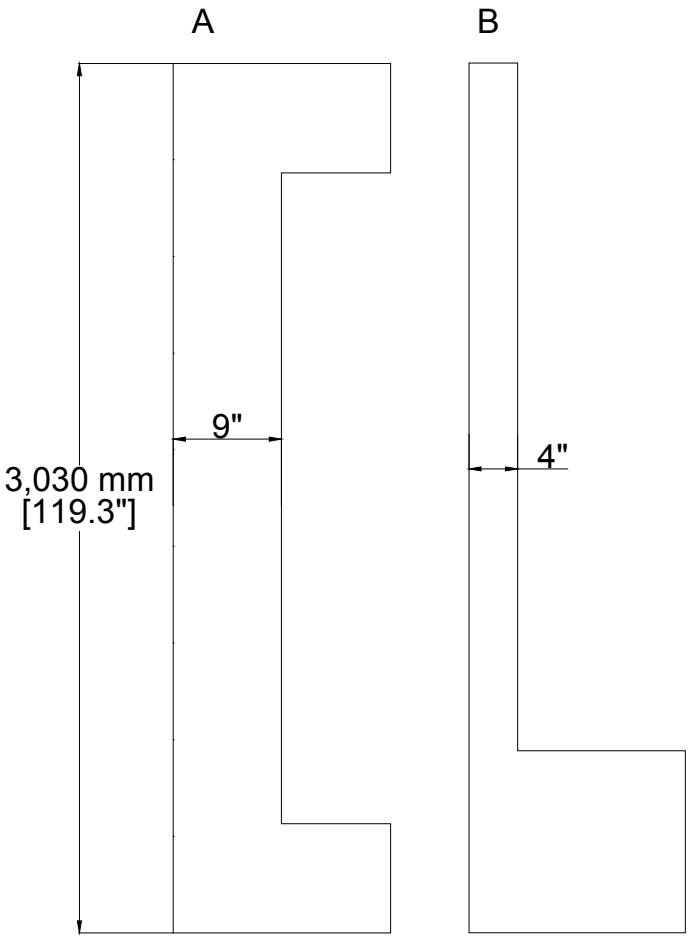
Inside Corner Line of Sight (Page 20)***:*** Sealant joints at inside corners can be placed out of view from the primary line of sight of a wall. Place the sealant joint on the less-viewed corner wall. Alternatively, utilize Inside Corner metal trim.

Cut Panels: In general, it is best to avoid cutting AWP to short or narrow strips and segments of less than 9". The hard minimum width or height is 4". Adjust the layout or use alternate materials when needed to avoid cutting AWP smaller than 4".

Specifically, when an individual panel is taller than a window or other opening and is used over the head or under the sill, do not cut it to less than 9" in width along the opening jamb. (see image A)

When an opening is taller than an individual panel and two or more are needed to cap over the header or cup the sill, do not cut the panel to less than 4" in width along the jamb. (see image B)

Design Wind Pressures: Refer to our code approval documents when determining the best vertical panel installation method for a specific project. The Structural Sheathing Method and Custom Stud Spacing methods result in different allowable design pressures, dependent upon thickness of wood sheathing or type/gauge of custom spaced studs/furring. Refer also to *Limitations, Technical Reviews* section regarding Nichiha's technical review process.



AWP3030 - VERTICAL: INSTALLING THE FA 710 T VERTICAL STARTER TRACK

All Applications

Without custom stud/furring spacing outlined in the Framing & Sheathing Requirements section, 7/16" or thicker APA rated OSB or plywood sheathing MUST be used to enable vertical installation of AWP3030. Plywood/OSB shall be secured to building framing in compliance with best practices and local building codes. *In any case, Vertical Starter Track must be secured to framing and never sheathing alone as it fully carries the weight of the vertical panels. With respect to nail-base insulation sheathings, please contact Nichiha Technical Services for guidance.*

Starter Track must remain continuous. Staggering of horizontal joints is not permitted.

MINIMUM CLEARANCES

The Starter must be level and attached at a minimum of 6" above finished soil grade or per local building codes (use a laser level to verify). When installing over a hard surface such as driveways or sidewalks, a 2" clearance is acceptable.

Keep AWP at least 1" above roofs.

Essential Starter Flashing may be installed prior to the Starter Track to conceal the clearance gap above hardscape and decking. Beginning with outside and inside corner segments, fasten trim at each stud location or every 10" o.c. to sill plate. Fasten inside and outside corner segments to framing on both sides of the trim, keeping at least 1" from trim vertical edges. Main segments will slide into/overlap the corner trim. Position Starter Track to leave 1/4" clearance between the panel edge and trim/flashing.

Vertical Starter Track fastened every 6" to 9" to framing.

ALL APPLICATIONS

To fully secure Vertical Starter Track, use corrosion resistant screws of sufficient length to ensure full penetration of the sheathing and into framing by 1" for wood or 1/2" for metal. ***Starter must be level.***

WOOD & METAL STUDS

Vertical Starter Track must be secured every 6"-9" into the sill plate or to the studs and, if applicable, halfway between into the wood sheathing.

CONCRETE/MASONRY

When installing over concrete construction, the wall must be furred out with pressure treated lumber, metal hat channel, or z-furring. Install APA rated 7/16" OSB or plywood to furring when the spacing is other than 45.5cm (17-7/8") o.c.. Starter Track must be secured at each furring location and halfway between into the sheathing or blocking at an overall fastener spacing of 6"-9" o.c.

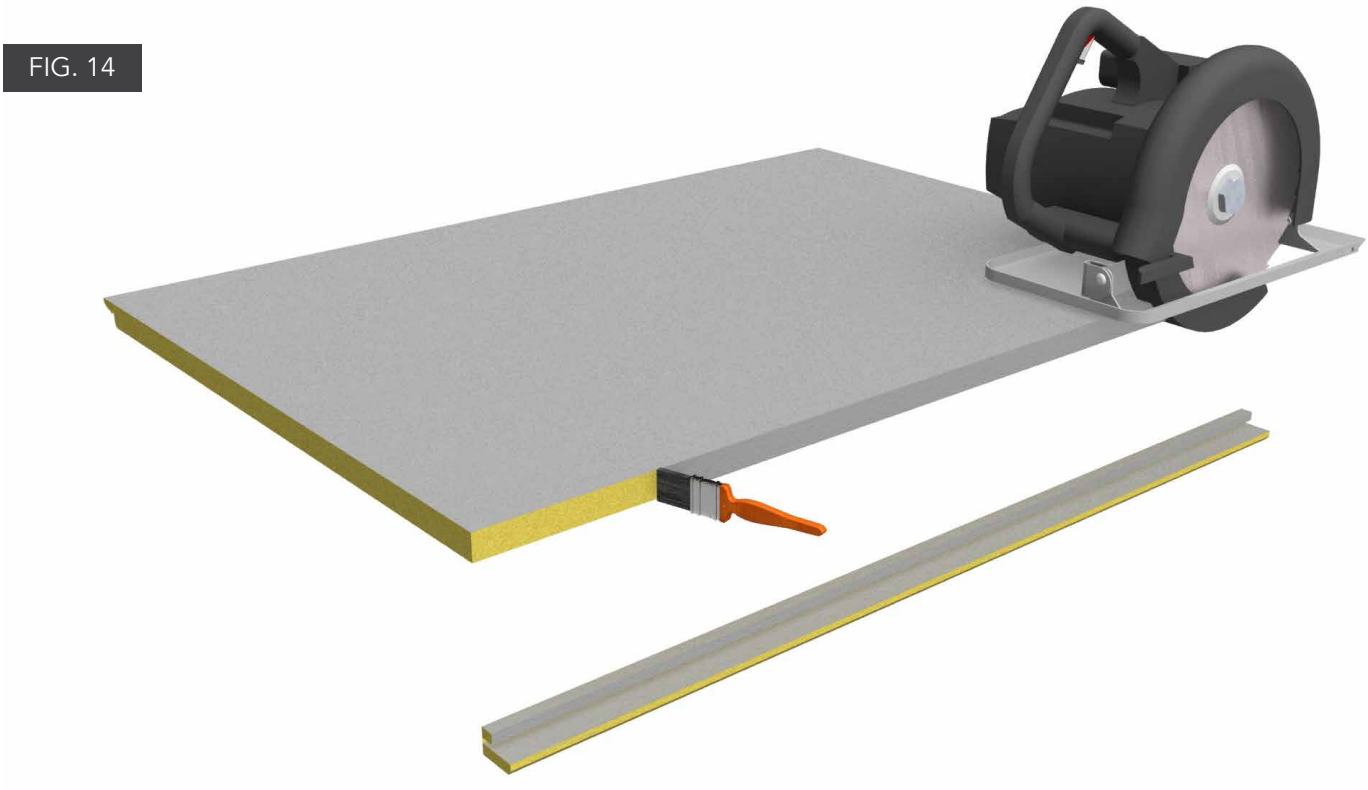
STRUCTURAL INSULATING PANELS (SIP)

Secure Starter Track every 6"-9" o.c. max into the sill/ horizontal base framing of the SIP.

NAIL-BASE INSULATION SHEATHING

Contact Nichiha Technical Services for guidance.

FIG. 14



GENERAL PANEL & ACCESSORY BASICS

PANEL SELECTION

Nichiha AWP are packaged with two panels in a pack, which are placed on pallets consisting of two stacks. Due to alternating patterns of texture and color between individual panels as well as how the panels are manufactured and packaged, it is best to install all panels from each individual stack before taking and installing panels from the second stack on the same pallet. Do not alternate installing from one stack and the second, which may result in undesirable patterns.

SEALING CUT PANEL EDGES

When cutting AWP, it is best to cut with the panel face down, except when cutting brick finish panels as it is easier to follow the simulated mortar lines.

Cut and exposed panel edges must be primed or sealed with fiber cement sealer (e.g. DryLock®) or paint such as Kilz Premium® or Kilz Max®. Do not use supplied Illumination Touch-Up paint. (Fig. 14)

Be sure to clean panels with a dry, soft, clean cloth after cutting to prevent dust from bonding to the finish.

CUTTING ULTIMATE CLIPS

JEL778 Ultimate Clips are 26" long. Where full length clips can be used, they are required. However, there may be conditions where clips must be cut to accommodate panels in smaller areas or segments such as short columns, pilasters, or insets/recesses.

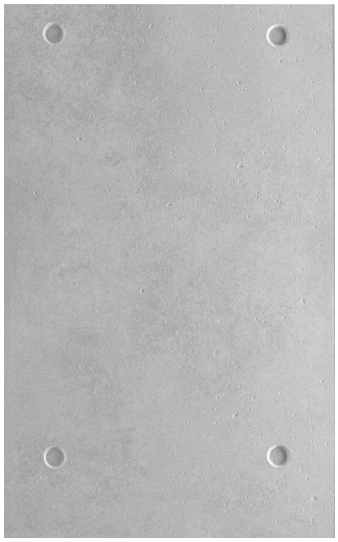
Notches on the upward panel engagement flanges indicate where clips can be cut evenly into thirds. These 1/3 segments can be further reduced evenly into two or four pieces each with weep holes serving as dividing points. The smallest segment must include at least one downward panel engagement flange. Always use the widest clip segment possible. Cut with a non-ferrous saw blade on a band or chop saw.










SEALANT

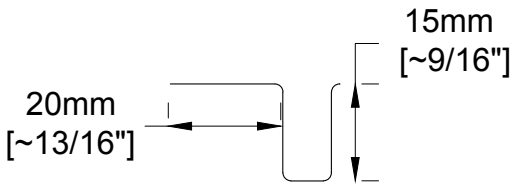
Sealants to be used with AWP must match the following requirements:

- Comply with ASTM C920
- Have a Class of 35, 50, or 100/50 (minimum 35% joint movement)
- Be a polyurethane, polyurethane hybrid, or Adfast Adseal 4580
- Provide two-sided adhesion at joints

OSI® QUAD® may not be used for Nichiha expansion joints:

- It is a class 25 product.
- QUAD® MAX is acceptable since it is a Class 50.

Refer to the Technical Bulletin: *Sealants* available at *nichiha.com/resource-center*.



Single Flange Sealant Backer (FHK1015R) (Galvalume)

SEALANT JOINTS/CAULKING

Fasten Single Flange Sealant Backers at inside corners (one wall at corner), along window and door jambs, and transition points with other cladding. Fasten to framing, blocking or plywood/OSB sheathing at 12”-14” o.c. with the 3/8” bump/ sealant portion butting the corner or jamb.

Sealant complying with ASTM C920, Class 35 (min.) is required where Single and/or Double Flange Sealant Backer is used.

Refer to the sealant manufacturer’s instructions or requirements.

Place low-adhesive tape (masking or painter’s) over the panel along the areas requiring sealant joints for a clean caulk line.

Fill the gap between the panels with a color-matched/coordinating ASTM C920, Class 35 (min.) sealant. The Nichiha Sealant Backer allows for the proper depth of sealant (75-80%).

Before removing tape, press the surface of the sealant with a caulk spatula or similar tool to ensure an even surface.

Remove masking tape before sealant cures.

If excess sealant adheres to panel, remove completely using a putty knife or soft cloth.

AWP3030 - VERTICAL INSTALLATION

Without custom stud/furring spacing outlined in *Framing & Sheathing Requirements* section, 7/16" or thicker APA rated OSB or plywood sheathing MUST be used to enable vertical installation of AWP3030. Wall surfaces must be flat.

Use corrosion resistant screws of sufficient length to ensure full penetration of wood sheathing (Structural Sheathing Method), or the 17-7/8" o.c. studs with the Custom Stud/Furring Spacing Method (minimum penetration 1" into wood, 1/2" into metal), to secure Ultimate Clips. Face fasteners must be at least 1-1/2" in length.

Single Flange Sealant Backer and metal trim should be installed before panels. Refer to ***Inside Corners, Windows & Doors*** and ***Outside Corners*** sections.

AWP installation proceeds by working from left to right.

If starting at an inside corner, predetermine which wall will include the Single Flange Sealant Backer. Consider the location to minimize the visibility of the sealant line. Clad the higher visibility wall without the sealant joint first so that the adjoining wall panels can terminate to it with the Single Flange Sealant Backer detail. Or utilize Inside Corner metal trim.

Prior to installing the first vertical panel, add 10mm corrugated Spacer at the left edge of the wall at the starting point. The Spacer should extend upwards to where the panel will end.

Looking at an AWP3030 oriented horizontally, remove the bottom ship-lapped edge and then rotate the panel 90 degrees clockwise to set the short panel edge on the FA 710T Vertical Starter Track. The freshly cut and sealed edge should butt to the corner/starting point and will cover the 10mm Spacer. Be sure to clean dust from cut panels with a dry, soft cloth or HEPA vacuum.

Pre-drill panels after applying low-adhesive tape to be removed after patching/touch-up. Fasten every 12"-16" o.c., spaced vertically, with a minimum 1" distance from the edge (***Fig. 19a***).

Fill counter-sunk fastener holes with exterior cementitious filler, such as MH Ready Patch® and later dab touch-up paint with cotton swabs. Remove painter's tape.

Whenever possible, use face fastening screws long enough to penetrate all the way through the sheathing and into the framing by 1/2" for metal, 1" into wood. Refer to the ***Touch-up Paint***, ***Minor Repairs*** sections for more info on patching face fasteners.

On the right, factory edge, add four Ultimate Clips evenly spaced along the full AWP3030 panel, with the first at the Starter Track edge. Add four fasteners per clip, evenly spaced (***Fig. 19b***). In the Structural Sheathing Method, the clips will be fastened only to the plywood/osb sheathing. With the Custom Stud Spacing, the clips will align with vertical framing and the fasteners will be secured to the studs or furring (***Fig. 19c***).

Working from left to right, install the next panel with its ship-lapped edges intact. A rubber mallet or block may be used to seat panels firmly in place and tighten together on vertical panel joints. Do not hammer directly on the panels as direct contact may cause cracks, gouges, or chipping. Install four Ultimate Clips as with the first panel, each with four screws. (*Continued p. 20*)

FIG. 19A

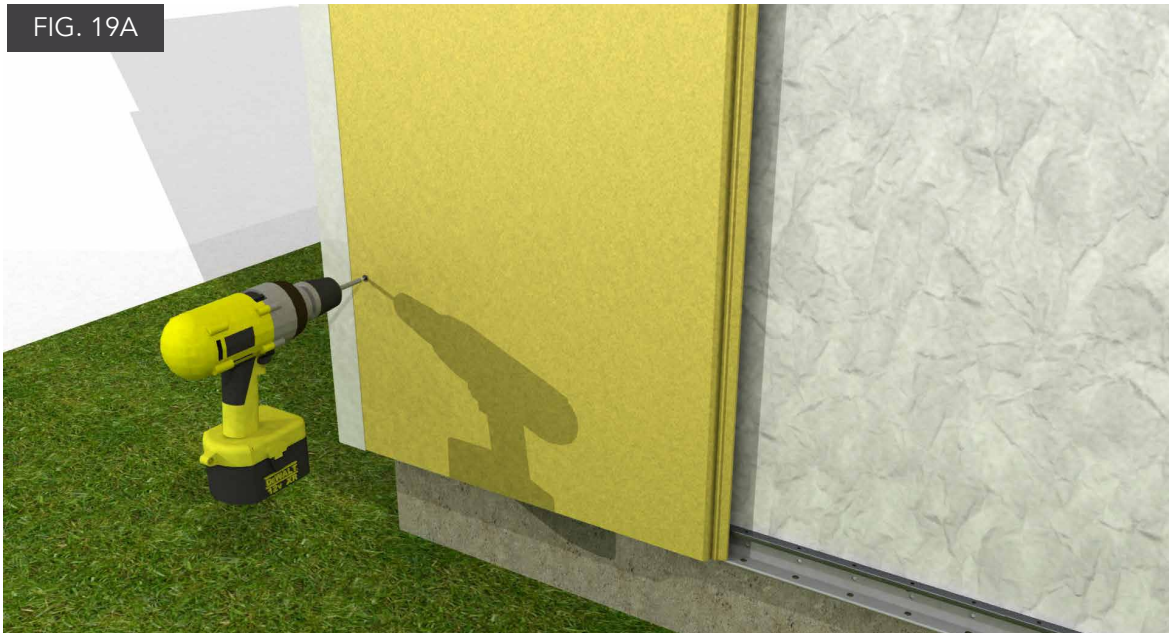
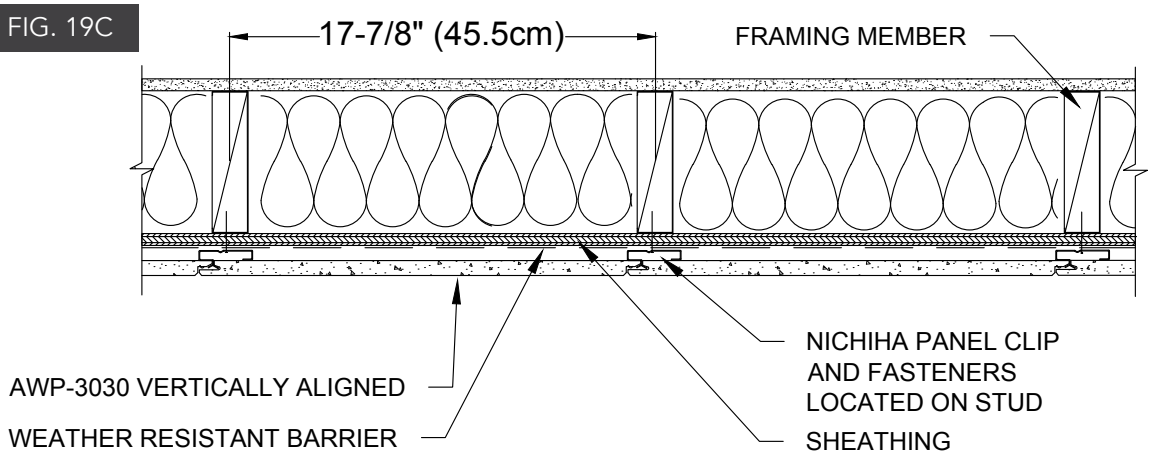


FIG. 19B

FIG. 19C



Continue likewise until reaching a termination or transition point. The factory edge must be removed from the last panel, and this cut edge must be face fastened over 10mm Spacer. Space the fasteners every 12”-16” o.c. vertically, with a minimum 1” distance from the edge. Again, whenever possible, use face fastening screws long enough to penetrate all the way through the sheathing and into the framing, 1/2” into metal, 1” into wood. Refer to ***Face Fastening Best Practices*** for info on patching face fasteners.

To begin a second course of panels, install appropriate horizontal joint flashing or Essential Compression Joint Flashing above the top edge of the bottom/first course of panels. Then repeat the steps beginning with FA 710 T Vertical Starter Track a minimum 1/2” above the top edge of the first course of panels (See *Horizontal/Compression Joint* section). ***Horizontal joints may not be staggered.***

INSIDE CORNERS, WINDOWS & DOORS

All Applications

Appropriate flashing should be used to prevent moisture penetration on all inside corners, doors, and windows. Refer to local building codes for best practices.

Cut and exposed panel edges must be coated with exterior acrylic latex paint.

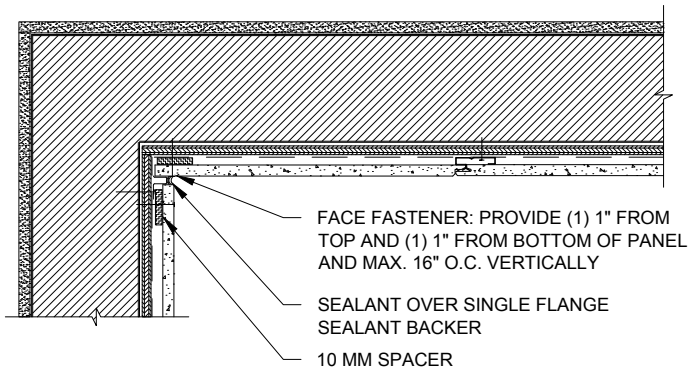
INSIDE CORNERS

Single Flange Sealant Backer (FHK 1015): Decide primary line of sight in order to minimize visibility of the sealant joint.

Install the panel on the front wall (more visible) first. Ensure panel is butted up tight to the inside corner wall. Fasten the Single Flange Sealant Backer onto the side wall right up against the front wall panel’s edge at 12”-14” o.c. to framing, plywood/osb sheathing, or blocking.

Add 10mm Spacer over the fastening flange of the Sealant Backer.

Install side wall panel, with factory edge removed and sealed, directly against the sealant backer, over the Spacer, and secure with face fasteners*. Fill space with ASTM C920, Class 35 (min.) sealant.



Inside Corner Metal Trim: Install Nichiha Inside Corner metal trim directly against the inside corner sheathing. Fasten metal trim every 12”-16” in a staggered fashion on alternating flanges.

Remove the shiplapped edges that will be inserted into the trim, treating the cuts, and install panels normally, butting to the Inside Corner trim in moderate contact.

Trim Boards: Install trim boards at inside corner first and then add Single Flange Sealant Backer. Add ASTM C920, Class 35 (min.) compliant sealant to the gap.

*Face fasteners should fully penetrate OSB or plywood sheathing and into the framing whenever possible. Refer to ***Face Fastening Best Practices*** for info on patching face fasteners.

WINDOWS AND DOORS

Window Sills (J-Mold optional): For recessed windows, add a flashing where the panels will terminate so that the top edge is covered or capped.

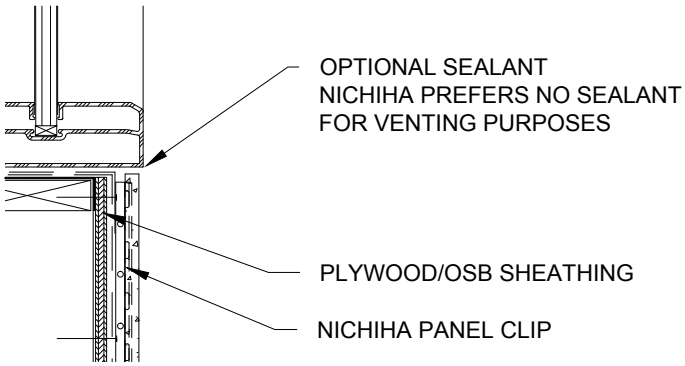
As needed, cut the panel to the required height to fit below the window sill, leaving a 1/4” gap between the top of the cut panel edge and the window sill or trim board.

Cut panel edges must be sealed with 100% acrylic latex exterior primer or paint, such as Kilz Premium or Kilz Max. ***Clean any dust off the panels with a dry, soft clean cloth***.

Fasten Ultimate Clips along the sides of the panel to sheathing, framing, or furring with a clip positioned within an inch of the top end of the panel meeting the sill and the lowest clip at Vertical Starter Track edge.

If the top edge of the panel is fully sheltered under the sill, it is not necessary to seal the 1/4” gap. For better system performance, Nichiha recommends the vented approach.

If desired, install J-Mold trim, fastened every 12”-16”, under the sill prior to panels.



WINDOW/DOOR JAMBS

A minimum gap of 1/4" is required when butting panels into windows, doors, and trim boards. Refer to window/door manufacturer guidelines for spacing trims around windows.

Single Flange Sealant Backer: Install the Single Flange Sealant Backer first, butting to the door/window jamb or trim pieces prior to installing the panels.

The Single Flange Sealant Backer must be fastened a minimum of 12" to 14" o.c. to framing, plywood/osb sheathing, or blocking.

Add 10mm Corrugated Spacer along the jamb.

Remove appropriate ship-lapped edge of panel, clean off dust with soft, dry cloth, and treat cut edge.

Install panels, face fastening through Spacer along the jamb edge every 12"-16", keeping a minimum 1" from panel edge. Use face fasteners long enough to penetrate framing.

Fill gap with recommended sealant.

J-Mold: Pre-install J-Mold trim, fastening every 12"-16", with a 1/4" gap between it and the jamb or per window/door manufacturer instructions

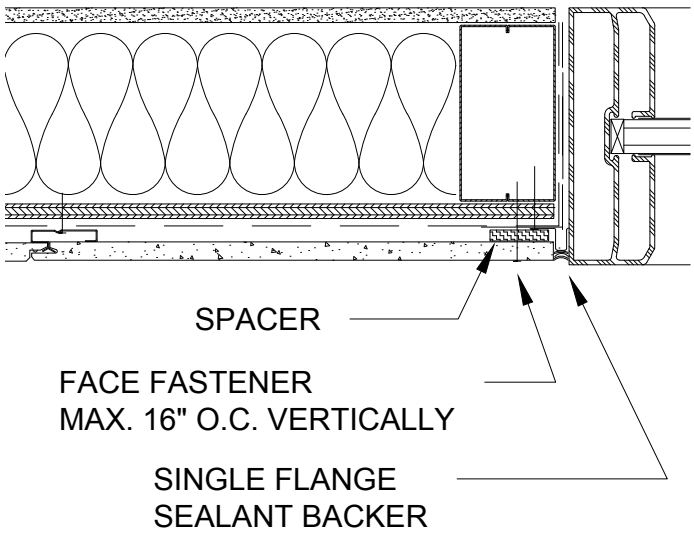
After installing the next-to-last panel, measure from the edge of the face of this panel to the J-Mold edge (the 90 degree angle edge). From this measurement, subtract 1/4" and cut the last panel to this width. Paint or prime cut edges and clean off dust from panel.

Install 10mm Corrugated Spacer next to the metal trim.

Install panels by inserting the cut edge into the metal channel and then shifting the panel over onto the side Ultimate Clips along the adjacent panel, fitting ship-lapped edges together.

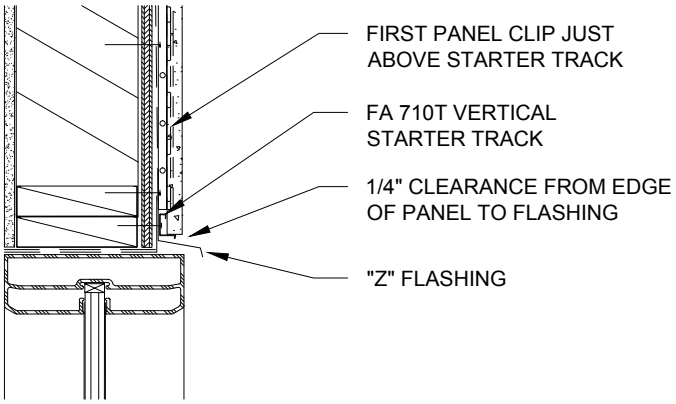
Face fasten through Spacer along the jamb edge every 12"-16". Use face fasteners long enough to penetrate framing.

Lastly, add foam backer rod and sealant to the 1/4" gap, if applicable, between the J-Mold and jamb.



WINDOW/DOOR HEADERS

Starter Track: When starting a course of vertical panels above a window or door, add flashing and FA 710 T Vertical Starter Track at the header, installed with fasteners every 6”-9” into the opening header.



OUTSIDE CORNERS

There are two primary outside corner installation options for vertical AWP3030:

Trim Boards: Fiber Cement, Wood, or PVC

Metal (Open Outside, Corner Key) or Vinyl Trim Channels.

Appropriate flashing must be used as required to prevent moisture penetration at outside corners.

FIBER CEMENT & PVC TRIM BOARDS

Nichiha manufactures a full line of fiber cement trim boards - NichiTrim™, which are available in the Southeast U.S. Refer to Nichiha.com for more information.

When panels are to be butted to fiber cement, wood or other trim pieces, use Nichiha Single Flange Sealant Backer.

Add 10mm Spacer, remove the appropriate panel shiplap, and face fasten panel edge every 12”-16”, vertically, keeping 1” from edge. Apply sealant to joint width. Sealant must be compliant with ASTM C920, Class 35 (min).

METAL & VINYL TRIM

(including Nichiha Corner Key and Open Outside Corner trim)

When installing Nichiha AWP3030 in a vertical orientation, pre-fasten corner trim channels, securing trim to framing every 12”-16”, alternating/staggering the fasteners on both flanges.

At the starting point, such as an outside corner, remove the panel edge, add 10mm Spacer to the wall at the corner. Set the panel on the Starter and into the corner trim channel, and then face fasten the panel as described at the beginning of the *AWP3030 Vertical Panel Installation* section.

Working from left to right, when reaching the next outside corner, follow the steps for the appropriate trim profile:

Corner Key: After installing the next-to-last panel, measure from the edge of the face of this panel to the Corner Key edge (the 90 degree corner angle edge). From this measurement, subtract 1-3/8” and cut the panel to this width. Paint or prime cut edges and clean off dust from panel. (*Fig. 24a*)

Open Outside Corner: After installing the next-to-last panel, measure from the edge of the face of this panel to the Open Outside Corner edge (the 90 degree angle edge). From this measurement, subtract 1/4” and cut the panel to this width. Paint or prime cut edges and clean off dust from panel.

Install 10mm Spacer next to the metal trim. Install panels by inserting the cut edge into the metal channel, rotating into the wall plane, and then shifting the panel over onto the side clips along the adjacent panel, fitting ship-lapped edges together.

Face fasten panels through Spacer along the corner edge every 12”-16”(*Fig. 24b*). Use face fasteners long enough to penetrate framing.

Fit panels into channel trim so that panel edges are not exposed.

Nichiha metal trim pieces are each 10’ in length. To cut metal trim, use a non-ferrous carbide miter saw blade. When butting/stacking metal trim pieces, add a bead of polyurethane sealant at the seam/joint.

Metal trim can be pre-finished when purchased to match Nichiha Color Xpressions color(s). Otherwise, for field painting primed metal trim refer to Tamlyn’s XtremeTrim Painting Guide.

FIG. 24A

FIG. 24B

NON-90 DEGREE CORNERS

Corners other than 90 degrees can be achieved with custom metal trim, butting panels to trim board with a minimum 1/4" sealant gap, or with the use of Double Flange Sealant Backer to set cut panel edges at the desired corner angle. Please contact Nichiha Technical.

VERTICAL CONTROL/EXPANSION JOINTS

All Applications

Because thermal expansion occurs in the long (3030mm) dimension of the panels, Vertical Control/ Expansion Joints are not required for vertical installations of AWP3030.

HORIZONTAL/COMPRESSION JOINTS

All Applications

The module of Vertical AWP3030 necessitates a continuous Horizontal/Compression Joint every 119-5/16" (repeating after each course).
Do not stagger horizontal joints.

Do not span floor lines with panels.

INSTALLING A HORIZONTAL COMPRESSION JOINT

Install Essential Compression Joint Flashing or heavy gauge z-shaped metal flashing or drip cap over the top edge of the course of panels terminating under the Horizontal Compression Joint location. Fasten Essential Flashing at each stud location.

Install Vertical Starter Track over the flashing and check for level. Place Vertical Starter at least 1/2" above the course below and 1/4" above flashing/ trim. A best practice is to add flashing tape to cover the fasteners of the flashing, sealing it to the WRB.

Continue to install panels according to these guidelines with compression joints every 119-5/16" (max).

LARGE OPENINGS

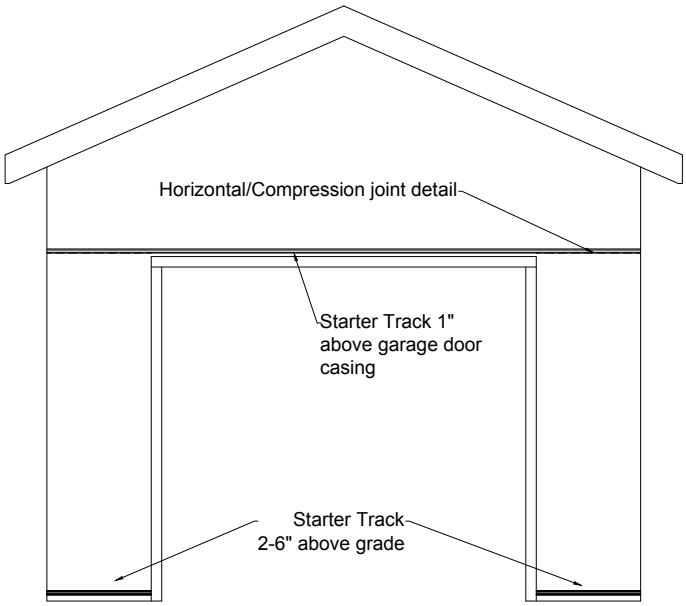
All Applications

Install Vertical Starter Track at the wall base in keeping with standard instructions on both sides of the opening.

Install Vertical Starter Track at the head of the opening, either the width of the opening or all the way across the wall.

Add panels per the standard procedure as in a typical *Window or Door Opening* for the jamb conditions.

Do not span floor lines with panels. Plan for a *Horizontal/Compression Joint* at the head of the opening or above, at the same level where the panels along the sides of the opening terminate, assuming the garage or other large opening is shorter than full length panels.



PENETRATIONS, RAILINGS, AND SIGNAGE

Openings for small penetrations for pipes or conduits may be cut through a panel with the hole sealed with ASTM C920 compliant sealant. For larger penetrations greater than 1-1/2", it is best to block or frame out the opening. Treat the penetration like a small window.

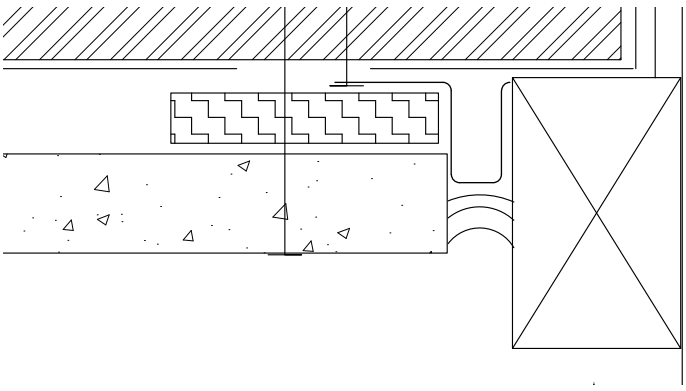
Along the jambs of the opening install Single Flange Sealant Backer. Cut panel edge as needed to butt to Sealant Backer and add recommended sealant.

Underneath the opening block out, terminate panel with 1/4" gap. Sealant here is optional, depending on the depth of the blocking.

Above the penetration, add flashing and install FS1010 Spacer as needed for face fastening panel edge at framing locations. Ensure minimum 1/4" gap between bottom of panel edge and penetration blocking.

Keep any face fasteners 1" away from panel edges.

If installing railings or signage over AWP, ensure fasteners are secured through to framing or other structural support. Do not fasten any attachments solely to panels. Add a small spacer (up to 10mm) between the signage and AWP to prevent moisture pooling on top of the attachment and seeping between it and the AWP, becoming trapped.

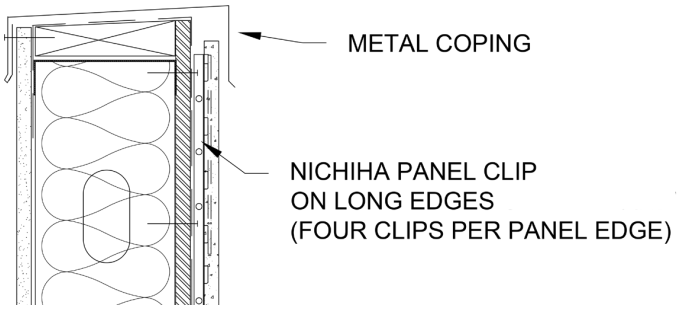


LAST COURSE

All Applications

Cut panels (horizontally) to properly fit at the roof line under soffit or parapet cap (or at the proper transition point). Ensure Ultimate Clips along factory edges are secured no more than 1”-2” from the top of the panels.

Cover top panel row edge with roof cap/coping, where applicable.



GABLE & OVERHANG

Allow a minimum of 1” clearance (as per local building codes) above the roof line.

At the top, cut the panel to follow the slope of the gable or overhang.

When installing soffit, the wall panels should be installed first, with the soffit installed over the panels.

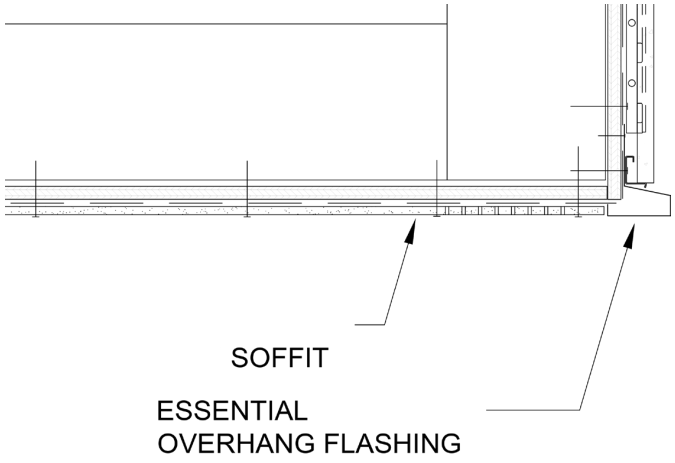
Seal all cut panel edges with 100% acrylic primer or paint. Do not leave any panel edges exposed.

Essential Overhang Flashing may be used at the base of overhangs/bump-outs or porte-cocheres.

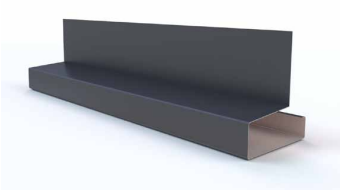
Prior to panel installation, fasten Overhang Flashing at each stud location, beginning with corner segments. Main segments will slide under/overlap corner segments.

Use Joint Clip segments to join main segments together. After first piece is secured, add a Joint Clip, fastening through both it and the first main segment. The next main segment will slide behind the Joint Clip.

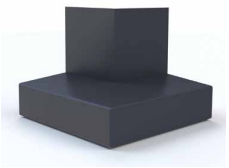
Position Overhang so that its bottom/return flange butts to or overlaps soffit. The bottom return portion must extend beyond the face of the fascia substrate.



Essential Overhang Flashing & Joint Clip



Outside Corner



Inside Corner

TRANSITIONS WITH HORIZONTAL AWP

On projects also utilizing horizontally-installed AWP, expansion and compression type joints will be required as there is no way to naturally joint horizontal and vertical AWP directly.

VERTICAL JOINTS

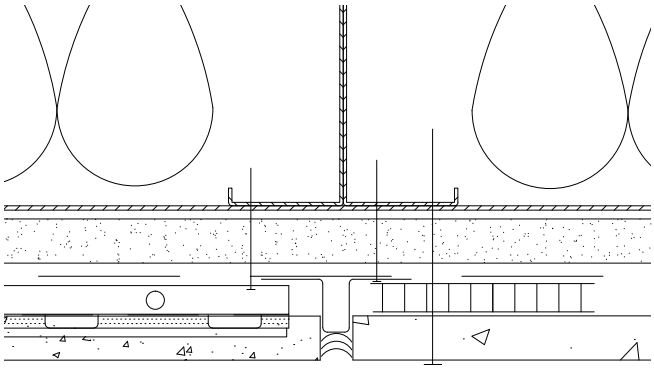
A Double Flange Sealant Backer or H-Mold trim is necessary at vertical joints/transitions between horizontally oriented panels and vertically oriented ones.

HORIZONTAL JOINTS

A horizontal/compression joint style detail is necessary to transition between horizontal and vertical AWP. Please refer to *Horizontal/Compression Joints* on page 25.

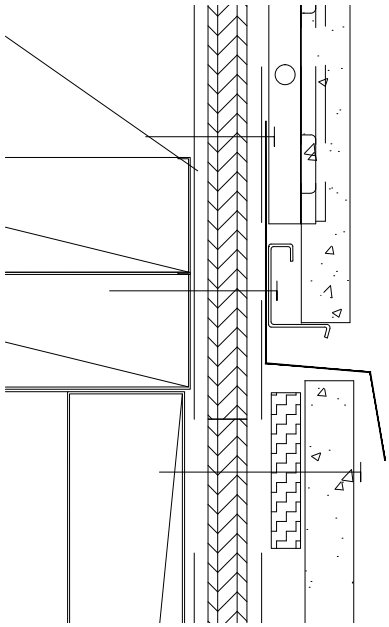
Horizontal panel to Vertical panel Transitions
Face fasten the top, cut edge of the horizontal AWP, cap it with Essential Compression Joint Flashing or Z-flashing. To then install vertical AWP, add the Vertical Starter Track following the standard procedure and fastening requirements.

Vertical panel to Horizontal panel Transitions
Install vertical panels to the desired transition level and cap with Essential Compress Joint Flashing or Z-flashing. Install the Horizontal Starter Track 1-1/4" above the flashing, following the standard procedure and fastening requirements. Refer to the ***Horizontal Installation Guide AWP1818, AWP3030***.



Horizontal AWP | *Vertical AWP*

Vertical transition joint: Double Flange Sealant Backer joint (H-Mold also OK)

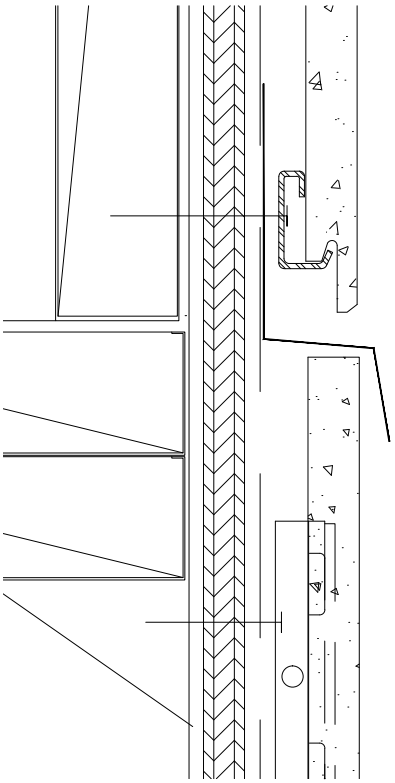


Vertical AWP

Vertical Starter Track

Horizontal AWP

Horizontal transition joint:
Compression Joint details



Horizontal AWP

Horizontal Starter Track

Vertical AWP

CLEANING & MAINTENANCE

CLEANING PANELS

After completion of the installation or for periodic maintenance, it may be necessary to clean panels.

When cleaning panels, use no more than 400 psi of water pressure at 10" to 12" away. Do not pressure wash custom color panels.

To clean heavily soiled areas, a mild household detergent and/or soft bristle brush may be required.

Do not allow any detergent/cleaner to dry on panels. Rinse immediately after cleaning.

PAINT TOUCH-UP

Touch up paint must be exterior grade 100% acrylic latex and can be color matched by taking a panel sample to your local paint or home improvement store.

A small amount of touch-up paint is supplied with your custom color panel order. Do not use touch-up paint for edge treatment/sealing due to the limited quantity provided.

Utilize low-adhesive tape to isolate patching and touch-up locations such as face fastened areas. Where face fasteners have been used and patched by cementitious filler, use a cotton swab to lightly dab touch-up paint.

For scratches, use a cotton swab for small ones or 1" foam brush for longer ones, again using a dabbing motion rather than brushing in order to minimize the amount of paint applied.

REMOVAL OF EXTERIOR ACRYLIC LATEX PAINT

Wet Paint Removal - While the paint is still wet, flush the area with clean water, using mild abrasion with a clean cloth or soft brush.

Semi-Dry Paint Removal - If paint has set, but not dried, flush and clean as above, followed by light scrubbing with alcohol to remove any remaining paint residue. Rinse with water and a clean cloth.

Dry Paint Removal - Please refer to paint-removal guide in the next section.

OTHER PAINT & GRAFFITI REMOVAL

The following products have been tested on Nichiha panels to aid in the removal of graffiti type markings.* These citrus-based products can also be used for basic panel cleaning purposes. The panels were sprayed with an indoor/outdoor aerosol spray paint and left to dry overnight, and then the paint removal products were applied following the manufacturer's guidelines.

All products tested achieved good results. However, the outcome may vary depending on the amount of paint that needs to be removed. Be sure to follow all manufacturer's guidelines and first test in an inconspicuous area before working on a larger area.

*Do NOT use these cleaners with custom color panels. *Nichiha is not liable for any damage caused by the use of these cleaners.*

CITRISTRIP

www.citristrip.com

Products tested:
Citristrip Striping Gel - One Quart container
Citristrip Stripping Aerosol - 18 oz. spray can

GOOF OFF GRAFFITI REMOVER

www.goof-off.com

Products tested:
Goof Off Aerosol - 16 oz. spray can
Goof Off - 22 oz. trigger spray bottle

TAGAWAY

www.tagaway.com

Product tested:
Tagaway - 32 oz. trigger spray bottle

REPAIRING MINOR DAMAGE

Isolate the blemish with a low adhesive tape such as painters tape. This will help protect the surrounding area of the panel and aide in creating a more polished, clean repair.

Lightly brush/abrade the surface within the taped off area in order to remove any loose material.

Carefully fill and smooth the resultant prepped area with cementitious patching material such as MH Ready Patch. Allow to dry/cure fully.

Gently smooth the patch and then apply touch-up paint to the affected area. Allow touch-up paint to dry and remove the tape.

PANEL REPLACEMENT

Set the depth of the circular saw blade slightly deeper than the panel so the saw blade does not cut into the building wrap or sheathing.

Make cuts into the damaged panel and break into pieces for easier removal.

Remove damaged panel.

If necessary, cut new panel to appropriate height.

Looking at the panel oriented horizontally, cut the top ship-lapped edge off the panel (*Figure 33a*).

Clean off dust and seal the cut edge.

Add 10mm Spacer along the right side of the uncovered wall surface. (*Figure 33b*)

Set the new panel in place on the Vertical Starter Track with the intact factory edge fitting on the exposed clips on the left side of the uncovered space.

Pre-drill and face fasten the right edge of panel through the Spacer with a screw every 12”-16” into framing, furring, or blocking (*Figure 33c*). When only wood sheathing is available for the face fasteners, reduce the screw spacing to 6”-8” o.c.

Fill countersunk screw heads per *Paint Touch Up* and *Minor Repairs*.

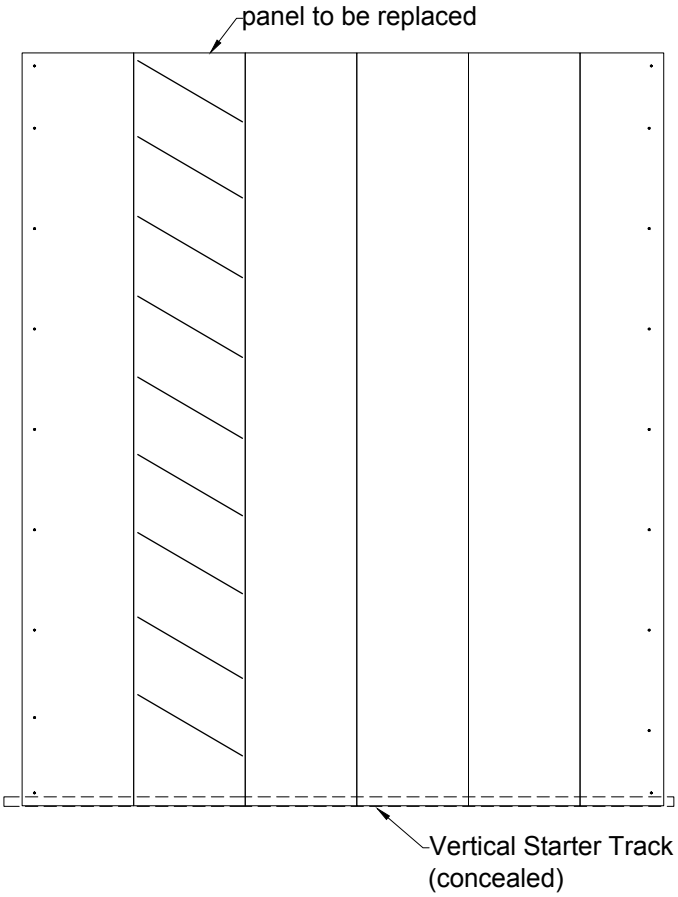


FIG. 33A

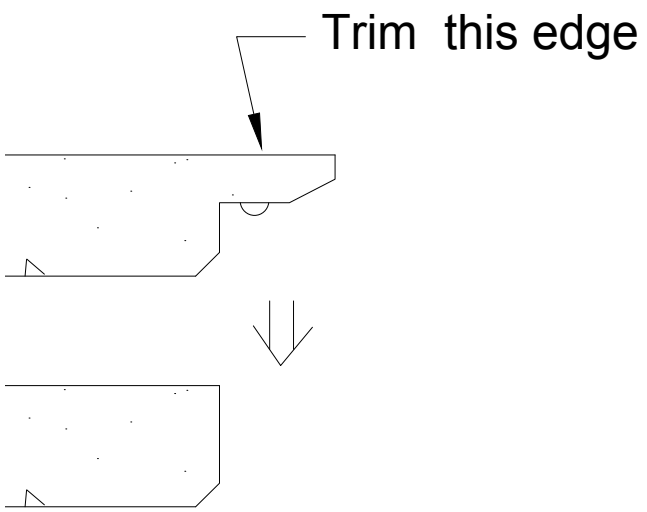


FIG. 33B

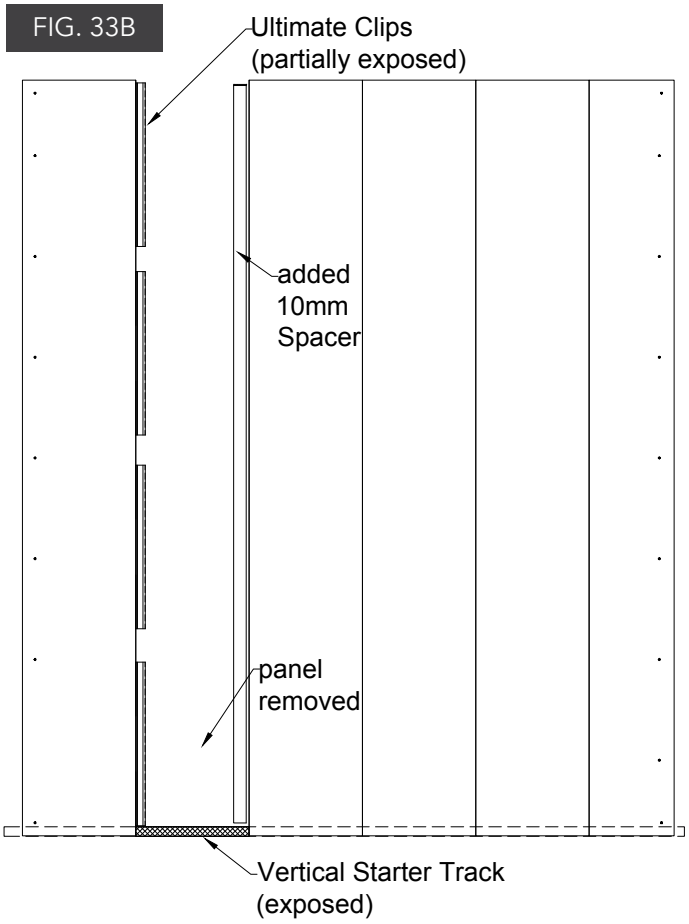
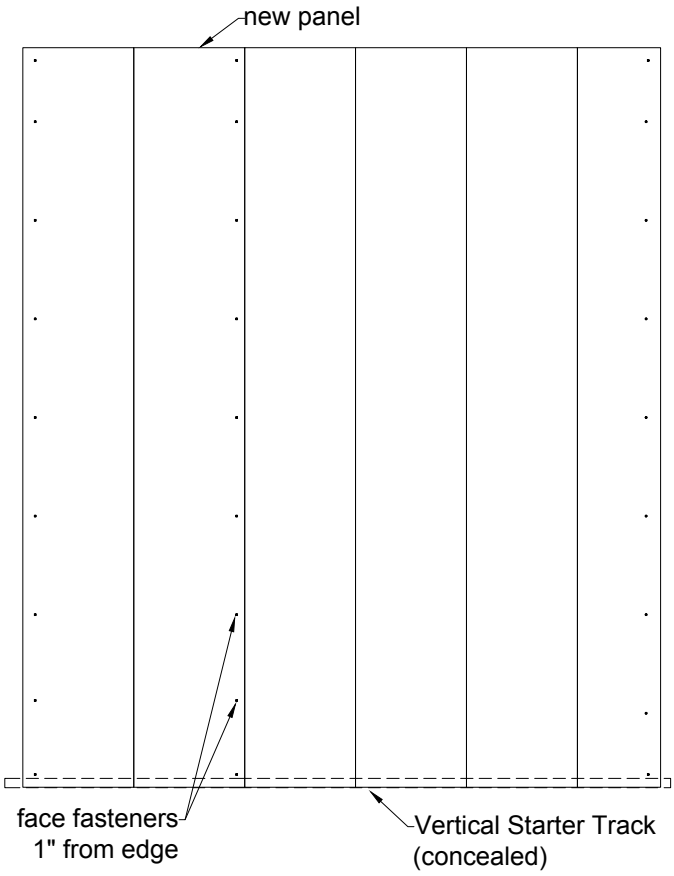


FIG. 33C



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creates a hidden fastening system that all but eliminates face fastening. Installation is quick and easy and never requires specialty subcontractors.

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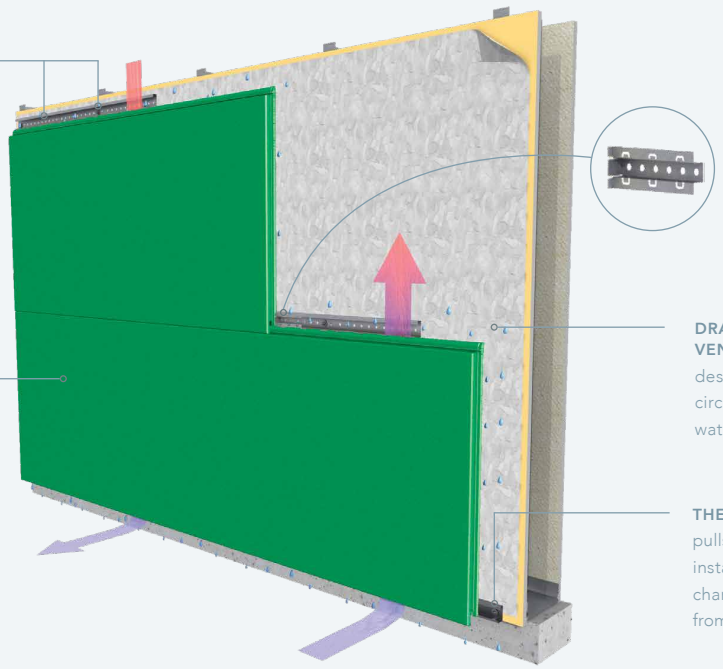
are lightweight, easy to handle and available in a virtually endless color palette and a diverse offering of textural finishes.



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  Tamlyn warrants defective-free products for a period of 10 years for the original purchaser. Please visit tamlyn.com for detailed information on terms, conditions and limitations.

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Florida Approval
12875

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EXHIBIT H

March 12, 2020

Steve Kelly, Project Coordinator
Clackamas County Community Development
2051 Kaen Road, Suite 245
Oregon City, Oregon 97045

Via email: stevekel@clackamas.us

Regarding: Traffic Impact Analysis Letter
Sandy Health Clinic
39831 Highway 26
Sandy, Oregon 97055
PBS Project 71524.000

Dear Mr. Kelley:

This document represents a traffic impact analysis (TIA) letter to meet the submittal requirements of the City of Sandy (City) and the Oregon Department of Transportation (ODOT). The TIA letter was scoped based on consultation with the City, ODOT, and Clackamas County.

PROJECT DESCRIPTION

The Clackamas County Health Department proposes to consolidate its health services from two offices in Sandy, Oregon, to one location. The existing offices are Sandy Health Clinic located at Sandy High School, 37400 Bell Street, and Clackamas County Health Center, located downtown at 38872 Proctor Boulevard. The proposed site has an existing 6,300-square-foot building used as a warehouse that will be replaced with a 9,600-square-foot health clinic. See Figure 1 for a vicinity map.

The site is within the city under its jurisdiction at the northeast corner of the Highway 26/Ten Eyck Road intersection, and the site will send all of its trips through the Highway 26/Ten Eyck Road intersection. See Figure 2 for the site plan. ODOT recommended a TIA be prepared to determine if a right-turn lane is warranted on westbound Highway 26 at Ten Eyck Road. The intersection of Highway 26 and Ten Eyck Road is under ODOT authority, and Ten Eyck Road is under Clackamas County jurisdiction. After contacting each of the three public agencies and holding discussions with Ankrom Moisan Architects, Inc., the TIA was focused toward two intersections: Highway 26 and Ten Eyck Road, related to the need for a westbound right-turn lane, and Pleasant Street and Ten Eyck Road, related to queueing on southbound Ten Eyck Road.

ODOT recommended that, as a condition of approval, a TIA be prepared to determine if a right-turn lane is warranted for westbound Highway 26 at Ten Eyck Road. If a right-turn lane is not warranted, ODOT recommended that the sidewalk along the site frontage of Highway 26 be extended into the roadway in such a way as to eliminate the existing slip lane and define the bicycle lane through the intersection. Figure 3 shows the existing lane configuration of the intersections in the vicinity of the project.

City staff directed PBS to include an evaluation of queueing on Ten Eyck Road to verify it will not block access to Pleasant Street.

TRAFFIC VOLUMES

PBS contracted with All Traffic Data to collect AM and PM peak hour traffic counts for the adjacent streets at Ten Eyck Road/Highway 26, Ten Eyck Road/Pleasant Street (east leg), and Ten Eyck Road/Pleasant Street (west leg). The traffic data were collected on February 19, 2020. Detailed traffic volume reports are provided in Appendix A

Background Growth

Background growth is a generic increase in traffic volumes that either is not attributable to specific developments in process (in process) or is attributable to influences outside the study area. No in process projects contributed trips to the studied intersections. A linear background growth rate of 2.0% per year was applied to 2020 peak hour volumes between public roadways at the studied intersections. The 2.0% growth rate was based on evaluation of ODOT count volumes on Highway 26 through traffic east and west of Ten Eyck Road between 2013 and 2018. The background growth volumes are included in the 2022 build-out year and the 2029 forecast year traffic volumes. Details of the background growth rate estimate are in Appendix A

Seasonal Adjustment Factor

A 28% seasonal adjustment factor (SAF) was applied to the through movements on Highway 26 based on the ODOT *Analysis Procedure Manual*, Version 2 (APMv2). Since no ODOT automatic traffic recorders (ATRs) are located within the study area, and no ATRs offer similar characteristics or reasonable adjustments, the seasonal trend table method was used. The 28% SAF was calculated based on the average of the commuter and summer trends, adjusting from the mid-February counts to the seasonal peak period.[1] Figure 5 presents the 30th highest-volume hour, including the SAF. Details of the seasonal adjustment factor estimate are in Appendix A

Baseline Volumes

The 2020, 2022, and 2029 baseline volumes represent the study area traffic volumes without the Sandy Health Clinic project development trips. The baseline volumes are calculated as the sum of existing traffic, background growth, and season factors. The 2029 forecast year is used to compare to the City of Sandy's Transportation System Plan (TSP).

TRIP GENERATION AND DISTRIBUTION

The following section relies on data provided in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual,* 10th Edition (2017). Detailed trip generation calculations are provided in Appendix B.

Trip Generation

The proposed Sandy Health Clinic will utilize a site with an existing building. The net new trips to the site are based on the replacement of a 6,300-square-foot building used for food distribution and warehouse space with a 9,600-square-foot health clinic. Figure 2 provides a site plan for the proposed site. Trip generation for both the existing warehouse and the proposed health clinic are based on an independent variable of 1,000 square feet in the respective buildings. The trip generation estimates were calculated using the ITE weighted average trip rates for the peak hours of the adjacent streets. Table 1 summarizes the trip generation calculations.

[1] Noting that Highway 26 is a primary route connecting between the Portland metro area and the Mount Hood winter recreation areas, the recreational summer-winter seasonal trend was also evaluated. Averaging the commuter and recreational summer-winter trends, while not an approved blend per ODOT APMv2, also yields a 28% SAF.

Table 1. Trip Generation

ITE Land Use:	Existing Warehouse Code 150		Proposed Clinic Code 630		Net New Trips	
Independent Variable:	1,000 square feet		1,000 square feet			
Size:	6.3		9.6			
Weekday ADT:	11		366		355	
Total Peak Hour Trips:	AM	PM	AM	PM	AM	PM
In:	1	0	27	9	26	9
Out:	0	1	8	22	8	21
Total:	1	1	35	31	34	30

Findings: The proposed Sandy Health Clinic project will generate 355 net new trips on an average weekday, 34 net new trips in the AM peak hour of the adjacent streets, and 30 net new trips in the PM peak hour of the adjacent streets

Proposed Trip Distribution

The proposed distribution of new trips is based on a review of the land uses within the study area, consultation with Clackamas County health clinic staff, and on engineering judgment. See Appendix B for correspondence on the trip distribution of the existing Sandy Health Clinic. All trips from northwest, southwest, and west of the site intersect Highway 26, and approach from the west of the site on Highway 26. All traffic southeast, northeast, and east of the site will approach the site from the east on Highway 26. The overall distribution pattern is proposed as follows:

- 90% to and from the site via Highway 26 from the west
- 10% to and from the site via Highway 26 from the east

The distribution pattern above represents an external distribution of the net new trips entering and exiting the study area. The distribution and assignment of the project's net new trips are shown on Figure 4.

INTERSECTION OPERATIONS AND ROADWAY CAPACITY ANALYSES

Operation Standards

The *City of Sandy Minimum Requirements for Traffic Analysis* cites a minimum level of service (LOS) D for signalized intersections and for stop conditions. The LOS is based on the volume-to-capacity ratio (v/c) for signalized intersections when the development is in full service. ODOT has a mobility standard of a v/c ratio 0.85 for highways categorized as Freight Route on a statewide highway for locations inside an urban growth boundary and a posted speed equal to or under 35 miles per hour (mph).

Analysis Methodology

Traffic impacts were estimated to determine the extent of change in traffic conditions caused by future development. In order to make this determination, the following assumptions were employed:

- The individual peak hour volumes were analyzed for 2020 existing year, 2022 assumed full operation, and 2029 forecast year.
- The analysis is based on the AM and PM peak hour of the adjacent streets.
- No in-process trips were included in the analysis.

- An SAF of 28% increase was applied to the through movement volumes on Highway 26 based on the ODOT APMv2 Seasonal Trend Table method.
- The peak hour factor (PHF) for the overall intersection, as calculated from the count data, was applied for each analysis scenario.
- A minimum value of 2.0% was assumed for each movement in the future conditions for heavy vehicle percentage (HV%).
- As noted previously, trip generation, distribution, and assignment estimates for the project were prepared for the weekday AM and PM peak hours on the surrounding street system.
- Cumulative traffic impacts of the proposed project were determined by superimposing the project-generated traffic onto the baseline volumes for the weekday AM and PM peak hour at studied intersections. This sum is termed the "With Project" conditions.
- The LOS for the signalized intersection was calculated with Trafficware's Synchro software, Version 10, based on *Highway Capacity Manual* (HCM) 6th Edition (2016) methodologies. The ODOT protocol for Synchro analysis at signalized intersections was used to calculate the intersection v/c ratio.
    - Signalized intersection results are reported as the v/c ratio for the intersection.
    - ODOT right-turn lane warrants at a signalized intersection are based on volume threshold and LOS standards per ODOT APMv2.
    - Traffic signal timing values were supplied by ODOT and used throughout the LOS analysis without modification.
    - The analysis includes a 2029 With Project alternative with a right-turn lane for westbound Highway 26.
- No site driveways were analyzed for this report.
- The queueing was estimated for 2029 conditions with and without the project using SimTraffic following ODOT APMv2.
- Right-turn lane impacts on bicycle safety are based on bicycle level of traffic stress (LTS) methodology, noted in APMv2.
- The results of the TIA were compared to the City's TSP related to the Highway 26/Ten Eyck Road improvements.

Level of Service Analyses

Table 2 presents the LOS analysis for the Highway 26/Ten Eyck Road intersection for 2020 existing conditions during the studied peak hours. Detailed LOS calculation reports are provided in Appendix C.

Table 2. Estimated Level of Service at Study Area Intersection for 2020 Existing Conditions

INTERSECTION	AM Peak Hour			PM Peak Hour		
	LOS	Delay (sec/veh)	Intersection v/c Ratio	LOS	Delay (sec/veh)	Intersection v/c Ratio
Highway 26/Ten Eyck Road	A	9.1	0.56	C	20.8	0.67

Finding: The existing Highway 26/Ten Eyck Road intersection operates above LOS standards.

Table 3 presents the LOS analysis for the Highway 26/Ten Eyck Road intersection for 2022 without the project during the studied peak hours. Detailed LOS calculation reports are provided in Appendix C.

Table 3. Estimated Level of Service at Study Area Intersection for 2022 Without Project Conditions

INTERSECTION	AM Peak Hour			PM Peak Hour		
	LOS	Delay (sec/veh)	Intersection v/c Ratio	LOS	Delay (sec/veh)	Intersection v/c Ratio
Highway 26/Ten Eyck Road	A	9.5	0.58	C	21.4	0.70

Finding: In 2022 without the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards.

Table 4 presents the LOS analysis for the Highway 26/Ten Eyck Road intersection for 2022 with the project during the studied peak hours. Detailed LOS calculation reports are provided in Appendix C.

Table 4. Estimated Level of Service at Study Area Intersection for 2022 With Project Conditions

INTERSECTION	AM Peak Hour			PM Peak Hour		
	LOS	Delay (sec/veh)	Intersection v/c Ratio	LOS	Delay (sec/veh)	Intersection v/c Ratio
Highway 26/Ten Eyck Road	B	10.2	0.59	C	21.8	0.72

Finding: In 2022 with the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards.

Table 5 presents the LOS analysis for the Highway 26/Ten Eyck Road intersection for 2029 without the project during the studied peak hours. Detailed LOS calculation reports are provided in Appendix C.

Table 5. Estimated Level of Service at Study Area Intersection for 2029 Without Project Conditions

INTERSECTION*	AM Peak Hour			PM Peak Hour		
	LOS	Delay (sec/veh)	Intersection v/c Ratio	LOS	Delay (sec/veh)	Intersection v/c Ratio
Highway 26/Ten Eyck Road	B	11.1	0.64	C	24.0	0.81

*This TIA evaluates the intersection in its existing configuration. The northbound and southbound left-turn lanes called for in City of Sandy's TSP are not evaluated.

Finding: In 2029 without the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards.

Table 6 presents the LOS analysis for the Highway 26/Ten Eyck Road intersection for 2029 with the project during the studied peak hours. It includes the LOS results with a westbound right-turn lane. Detailed LOS calculation reports are provided in Appendix C.

Table 6. Estimated Level of Service at Study Area Intersection for 2029 With Project Conditions

INTERSECTION*	AM Peak Hour			PM Peak Hour		
	LOS	Delay (sec/veh)	Intersection v/c Ratio	LOS	Delay (sec/veh)	Intersection v/c Ratio
Highway 26/Ten Eyck Road	B	12.0	0.66	C	24.4	0.84
Highway 26/Ten Eyck Road With Westbound Right-Turn Lane	B	11.4	0.66	C	23.0	0.83

*This TIA evaluates the intersection in its existing configuration and with the addition of a westbound right-turn lane. The northbound and southbound left-turn lanes called for in City of Sandy's TSP are not evaluated.

Findings: In 2029 with the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards. The operation of the Highway 26/Ten Eyck Road intersection will not significantly improve with the installation of a westbound right-turn lane on Highway 26.

Recommendation: Do not install a right-turn lane for westbound Highway 26 at Ten Eyck Road.

The City's TSP calls for left-turn lanes on Ten Eyck Road and Wolf Drive at Highway 26, project M8. This improvement alternative was not evaluated for LOS, but the findings of the evaluation without M8 improvements did not support this relatively expensive improvement. The applicant is advised to maintain the existing 39-foot street width on Ten Eyck Road frontage to allow this improvement in the future.

Finding: Maintain the width of 39 feet on Ten Eyck Road to provide the necessary width a for future left-turn lane.

Queueing Analysis

Table 7 presents the 95th percentile queue analysis for the Highway 26/Ten Eyck Road and Ten Eyck Road/Pleasant Street intersections to verify the queuing at the intersections do not conflict with each other and that the existing lane storage is not exceeded. The queue analysis is based on procedures and settings outlined in ODOT APMv2 when using Trafficware's SimTraffic (Version 10) simulation software. Table 7 includes a column with queue model results with the inclusion of the southbound left-turn lane on Ten Eyck Road, City TSP project M8, between Highway 26 and the east segment of Pleasant Street. The detailed queuing reports are provided in Appendix C.

Table 7. 95th Percentile Queue Analysis for 2029 Conditions

Intersection	Lane/Lane Group	Available Storage[2] (ft)	Weekday AM Peak Hour Queue (ft)			Weekday PM Peak Hour Queue (ft)		
			2029 Without Project	2029 With Project	*Add SB LT Lane*	2029 Without Project	2029 With Project	*Add SB LT Lane*
Highway 26/Ten Eyck Road	EB LT	120	100	125	125	**225**	**250**	**250**
	EB TH	400	250	275	275	375	**475**	**450**
	EB TH	1,000	200	200	200	350	425	400
	EB RT	100	75	50	50	**175**	**175**	**175**
	WB LT	100	0	0	0	50	75	75
	WB TH	1,200	275	275	300	500	500	500
	WB TH+RT	1,200	250	250	275	475	475	475
	NB	275	175	175	175	275	250	250
	SB	120	**200**	**200**	**175**	**325**	**350**	**225**
Ten Eyck Road/Pleasant Street[1]	EB	120	75	50	50	75	100	75
	WB	120	0	50	50	50	125	75

BOLD font indicates the queue exceeds the noted available storage.

[1] The queue lengths are reported for both intersections.

[2] For exclusive turn lanes, the available storage noted represents the length of the full-width lane, exclusive of the taper or transition. For continuous lanes, the available storage noted represents the distance from the intersection stop bar to the next upstream intersection or major driveway.

Eastbound left-turn queues at the Highway 26/Ten Eyck Road signal are anticipated to spill beyond the 120 feet of available storage lane during the PM peak hour, both without and with the project trips. The queue will block the eastbound-to-westbound Highway 26 connector and the ARCO gas station driveway. These queues will be made slightly longer by the addition of the Sandy Health Clinic project trips due to the eight new PM peak hour trips turning left on to Ten Eyck Road.

Eastbound through queues at the Highway 26/Ten Eyck Road signal are anticipated to spill beyond several driveways during the PM peak hour; with the addition of the Sandy Health Clinic project trips, the queues could spill beyond the Revenue Avenue intersection, likely due to the eastbound left-turn lane overflow.

Eastbound right-turn queues at the Highway 26/Ten Eyck Road signal are anticipated to spill beyond the 100 feet of available storage lane during the PM peak hour, both without and with the project trips. The Sandy Health Clinic project trips will have negligible effect on these queues.

Southbound queues at the Highway 26/Ten Eyck Road signal are anticipated to spill beyond the upstream intersections, both without and with the project trips. The queue will routinely block the driveways closest to the intersection (serving the lot on the northwest intersection corner) and the east segment of Pleasant Street. During the PM peak hour, the west segment of Pleasant Street also will be blocked by the southbound queue. The southbound queues will be made slightly longer by the addition of the Sandy Health Clinic project trips due to most trips turning right in the PM peak hour (19 of 21 trips). The queueing is much more impacted by the 2.0%

growth for each turning movement over the next nine years. This may be overly conservative as the 2.0% growth used in this report was based on ODOT through movements on Highway 26.

Finding: The trips from the Sandy Health Clinic do not significantly contribute to the queueing. The addition of a southbound left-turn lane to Ten Eyck Road with the future City project may reduce southbound queues at Highway 26. However, the 95th percentile queues will still extend beyond the east segment of Pleasant Street.

Recommendation: Collect additional turning movement counts in the future to verify the intersection volumes, especially the eastbound left-turn and southbound traffic movements, are growing at 2.0% annually. Reevaluate the queuing with the next TSP update.

SAFETY EVALUATION

The safety evaluation focused on crash history at the existing intersection, bike evaluation, pedestrian safety, and Americans with Disabilities Act (ADA) access.

Traffic Safety

The proposed Sandy Health Clinic was evaluated for traffic safety based on the existing crash history of the Highway 26/Ten Eyck Road intersection, sight distance of driveways, and driveway/intersection spacing. The crash history was reviewed for the last available 5-year period (January 1, 2014 to December 31, 2018). The records show 11 crashes at the Highway 26/Ten Eyck intersection with 6 rear-end crashes (5 of those on Highway 26) and 2 right-angle crashes. None were related to the right-turning vehicles and none were related to bicycles. The intersection crash rate per million vehicles entering is 0.26. The mean critical crash rate for a four leg, signalized intersection in an urban area is 0.40. See Appendix D for the crash history and crash rate calculations.

Finding: The intersection crash rate is lower than the mean critical crash rate. No further investigation is necessary.

The stopping sight distance necessary is based on the existing speed limit and the likely travel speeds on the east leg of Pleasant Street. As a local street, Pleasant Street is assumed to have a 25 mph speed limit, but based on the dead end 450 feet to the east of the proposed site driveway and an intersection of Ten Eyck Road 150 feet to the west of the proposed site driveway, speeds are assumed to be 20 mph approaching the driveway. The stopping sight distance is adequate for looking east and west, but care should be taken not to install landscaping or signs along the site frontage that may restrict sight distance below 200 feet.

Finding: The proposed driveway will meet stopping sight distance standards.

Recommendation: The site plan should take care to maintain approximately 200 feet of sight distance in both directions on Pleasant Street.

The applicant proposes elimination of an existing site driveway on Ten Eyck Road. No crashes were noted associated with this driveway, but removing it will likely reduce risk of crashes in the future. The driveway's proximity to the Highway 26 signal (70 feet) may have contributed to past crashes. The same is true of eliminating the existing driveway on Pleasant Street that is close to Ten Eyck Road but is much less likely to be a safety concern due to the low traffic volume on Pleasant Street.

Finding: The project should improve safety on Ten Eyck Road and Pleasant Street by eliminating two driveways.

Bicycle Safety
The multi-model safety evaluation is related to the bike lane and motor vehicle lane interaction at the westbound bike lane approaching the Highway 26/Ten Eyck Road intersection. The existing and future conditions are evaluated using the bicycle LTS. The westbound Highway 26 approach to Ten Eyck Road has a 135-foot-long taper (slip lane) with a dropped bike lane. The right-turn lane is approximately 50 feet long with a dashed merge area approximately 50 feet long. Based on ODOT APMv2: "*A roadway with no marked bike lanes and a right-turn lane will be a high stress location unless the right-turn lane is short and rarely used. This condition will also occur if a bike lane is dropped ahead of an intersection. If the turn lane is short (less than 75') then there is no impact on the LTS*."

With the development, the right-turn volume will increase from 16 vehicles per hour to approximately 22 vehicles in the AM and PM peak hour. In the AM hours only one bicycle used the westbound bike lane. In the PM peak hours, no bicycles were counted. With the short length of the right-turn lane, there is no impact on the bicycle LTS.

Finding: No mitigation is necessary for the existing slip lane and bike lane due to short length of the lane and the low turning movement volumes.

Recommendation: Make no change to the existing westbound slip lane.

Pedestrian Safety
The current site does not have a sidewalk on the east side Ten Eyck Road. The City has a sidewalk project in process to install a sidewalk on Ten Eyck Road and Pleasant Street, referred to as the *SE Ten Eyck Road & Pleasant Street Curb and Sidewalk Improvements*. The project will provide ADA access to the Sandy Health Clinic.

The project may be modified to reduce the turning radius on northeast corner of the Highway 26/Ten Eyck Road intersection. This will reduce vehicle speeds and provide more area for ramp improvements at the corner. This should improve pedestrian safety.

Finding: The proposed modification to the City's sidewalk project will improve pedestrian safety but not reduce the width of Ten Eyck Road below 36-feet to allow future installation of a left-turn lane.

FINDINGS
The TIA findings are summarized below:

- The proposed Sandy Health Clinic project will generate 355 net new trips on an average weekday, 34 net new trips in the AM peak hour of the adjacent streets, and 30 net new trips in the PM peak hour of the adjacent streets.
- The existing Highway 26/Ten Eyck Road intersection operates above LOS standards.
- In 2022 without the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards.
- In 2022 with the project, the Highway 26/Ten Eyck Road intersection will operate at above LOS standards.
- In 2029 without the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards
- In 2029 with the project, the Highway 26/Ten Eyck Road intersection will operate above LOS standards.
- In 2029 with the project, the operation of the Highway 26/Ten Eyck Road intersection will not significantly improve with the installation of a westbound right-turn lane on Highway 26.

- The trips from the Sandy Health Clinic do not significantly contribute to queueing at the Highway 26/Ten Eyck Road intersection.
- Maintain the width of 39 feet on Ten Eyck Road to provide the necessary width a for future left-turn lane.
- The intersection crash rate is lower than the mean critical crash rate. No further investigation is necessary.
- The proposed driveway on Pleasant Street will meet stopping sight distance standards.
- The project should improve safety on Ten Eyck Road and Pleasant Street by eliminating two existing driveways (one on each roadway).
- No mitigation is necessary for the existing slip lane and bike lane due to its short length and low turning movements.
- The proposed modification to the City's sidewalk project will improve pedestrian safety but not reduce the width of Ten Eyck Road below 36-feet to allow future installation of a left-turn lane.

RECOMMENDATIONS

The TIA recommendations are summarized below:

- Do not install a right-turn lane for westbound Highway 26 at Ten Eyck Road.
- Make no change to the existing westbound slip lane.
- Collect additional turning movement counts in the future to verify the intersection volumes, especially the eastbound left-turn and southbound traffic volumes, are growing at 2.0% annually. Reevaluate the queuing with the next TSP update.
- The site plan should take care to maintain approximately 200 feet of sight distance in both directions on Pleasant Street.

CLOSING

Please feel free to contact me at 360.567.2117 or John.Manix@pbsusa.com with any questions or comments.

Sincerely,

John Manix, PE
Senior Traffic Engineer

Attachments:
Figure 1. Vicinity Map
Figure 2. Site Plan
Figure 3. Trip Distribution and Assignment
Figure 4. 2040 With Project Volumes

Appendix A. Traffic Counts
Appendix B. Trip Generation Calculations
Appendix C. Level of Service Calculations
Appendix D. Crash History

BJ:DAH,JAM:mo

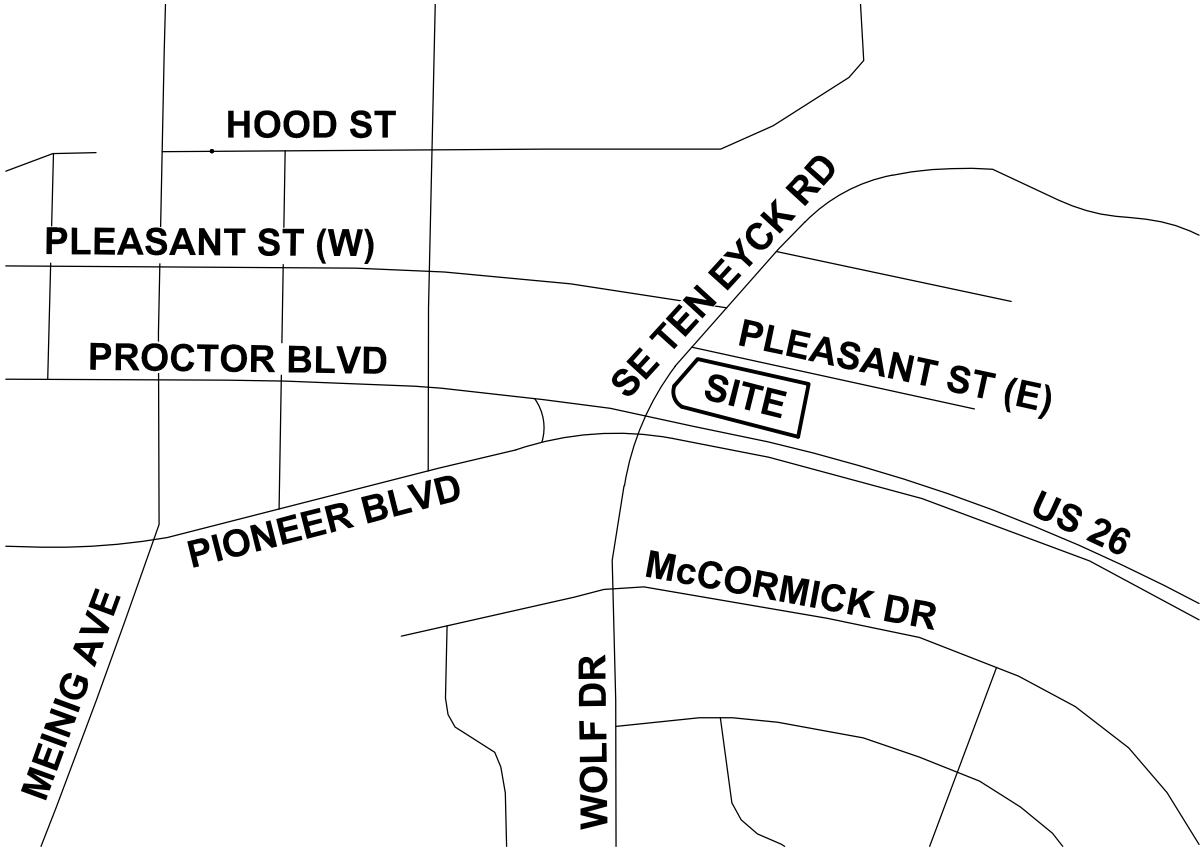


FIGURE 1

Vicinity Map

Sandy Health Clinic

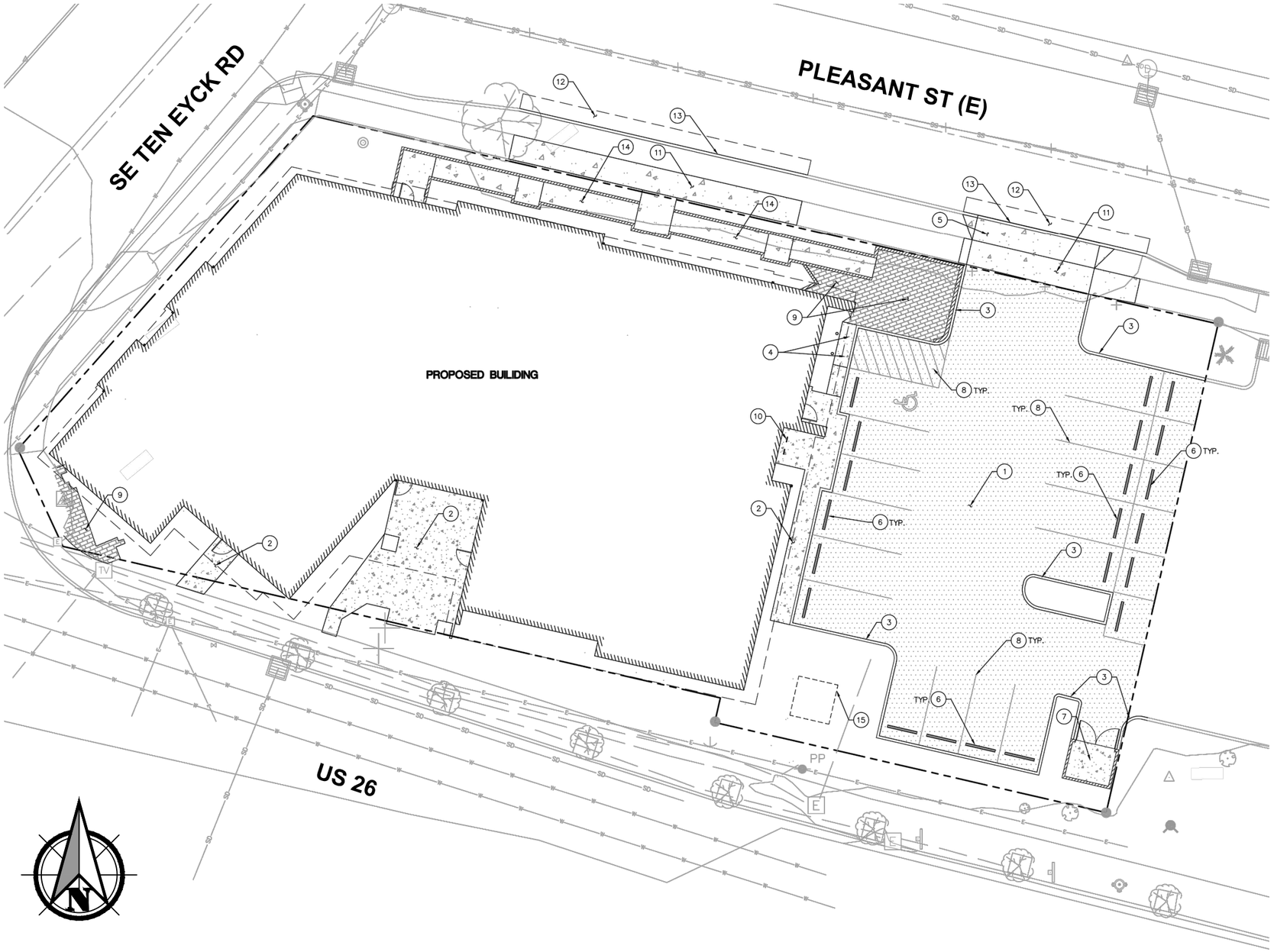
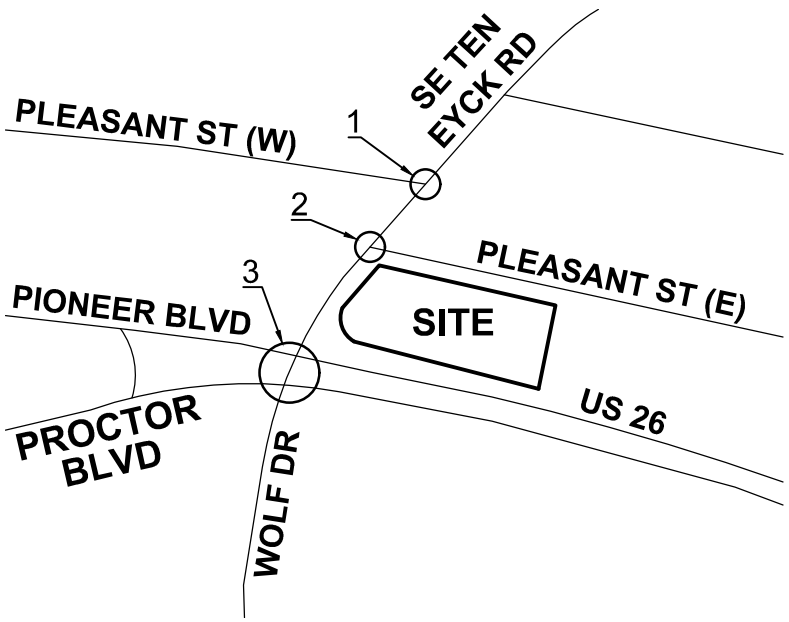
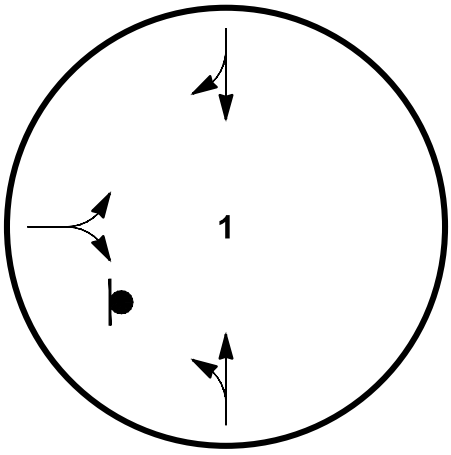


FIGURE 2

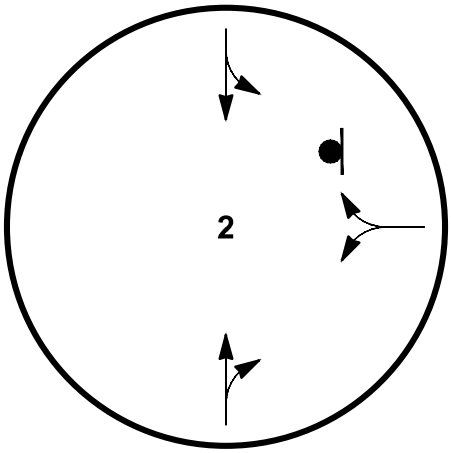
Site Plan

Sandy Health Clinic

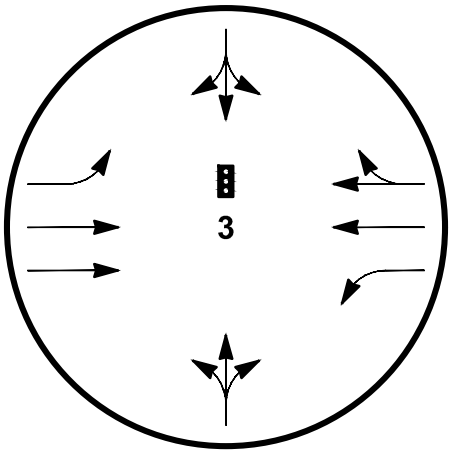




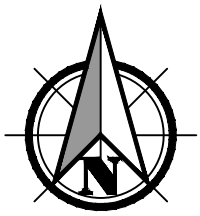
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26



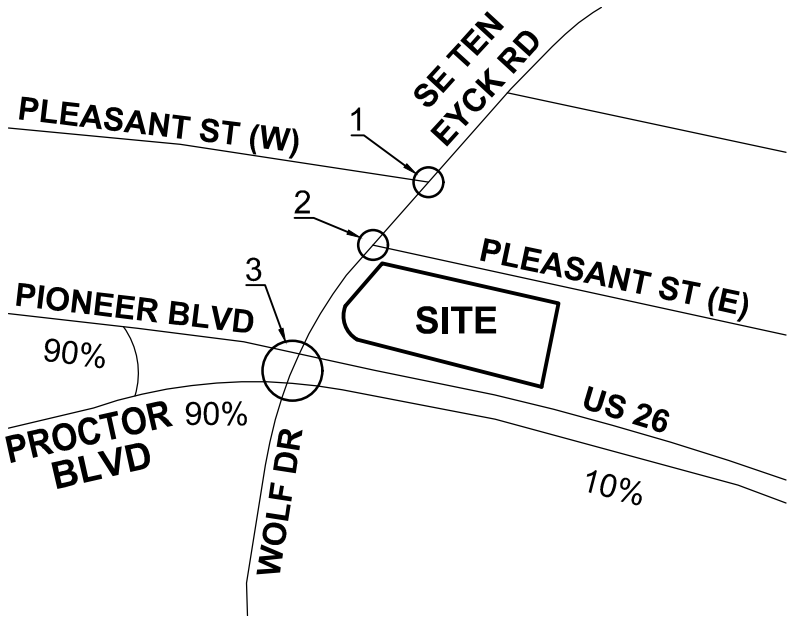
LEGEND

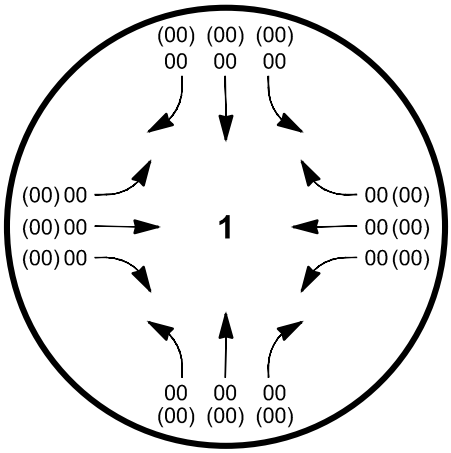
- INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN

FIGURE 3

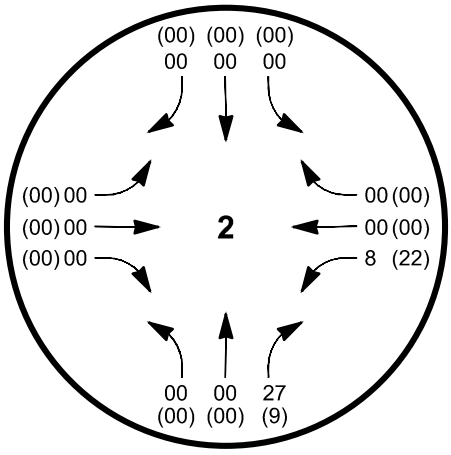
Existing Lane Configurations

Sandy Health Clinic

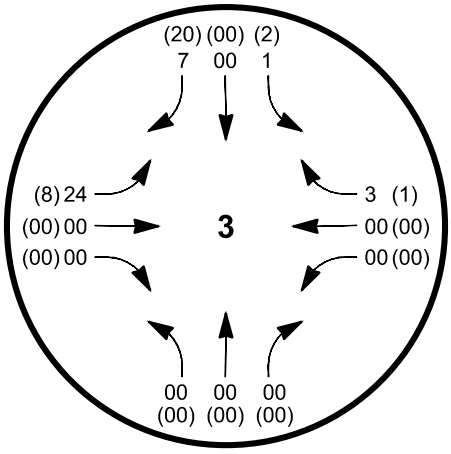




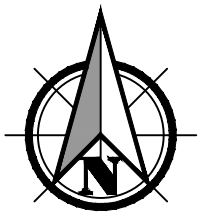
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26

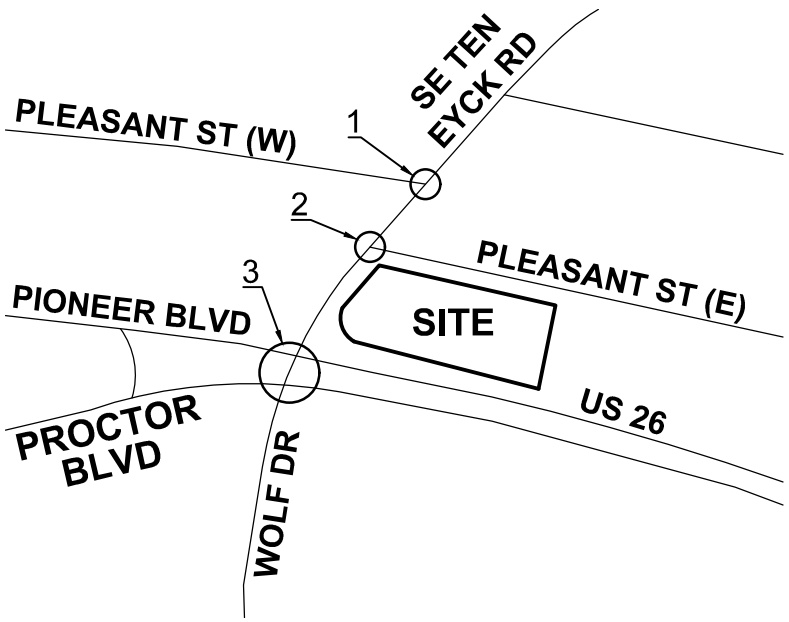


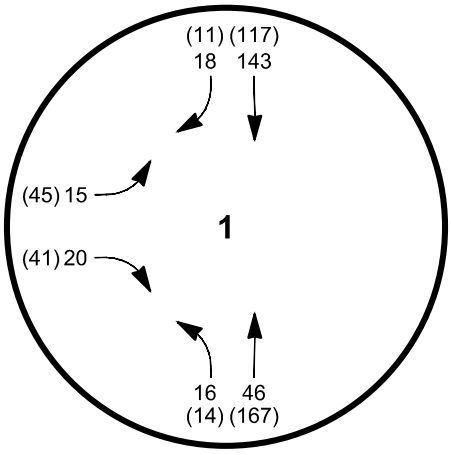
LEGEND	
○	INTERSECTION
XXX	AM PEAK HOUR
(XXX)	PM PEAK HOUR

FIGURE 4

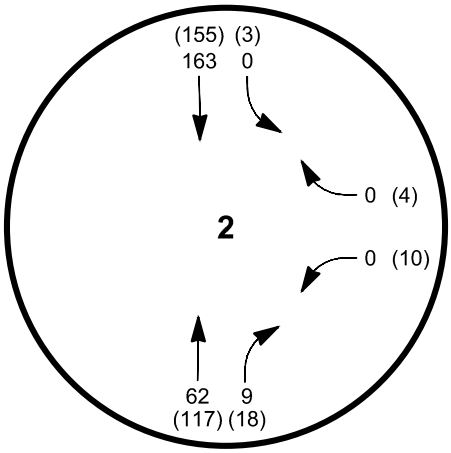
Trip Distribution & Assignment

Sandy Health Clinic

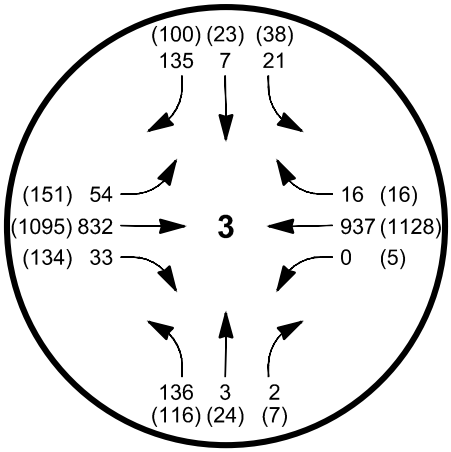




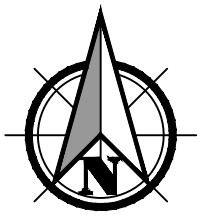
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26

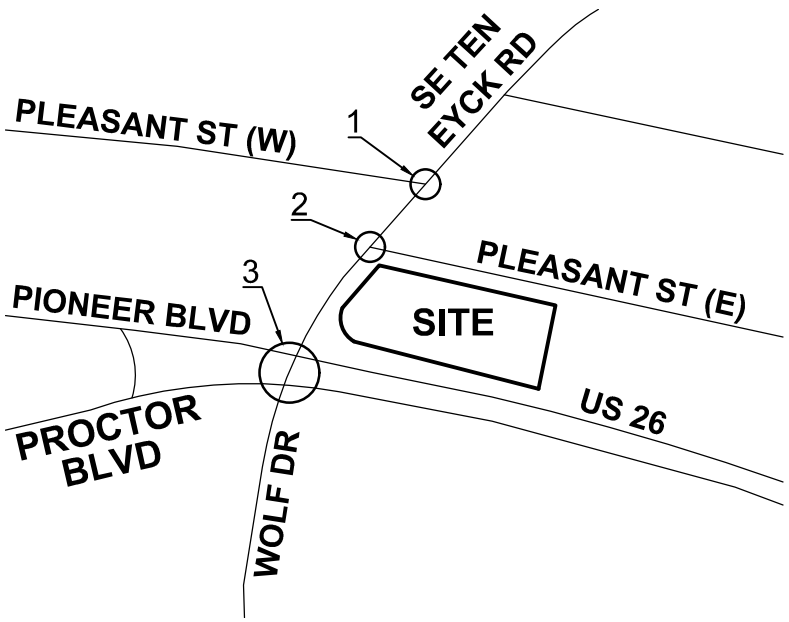


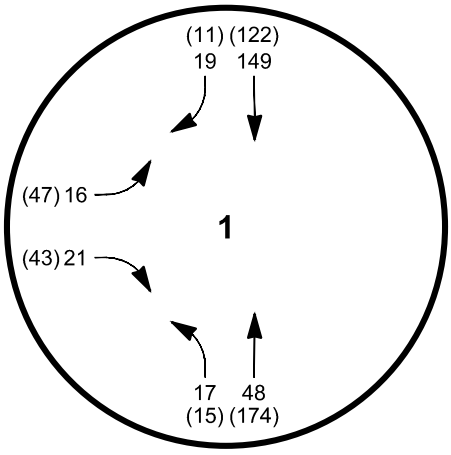
LEGEND	
○	INTERSECTION
XXX	AM PEAK HOUR
(XXX)	PM PEAK HOUR

FIGURE 5

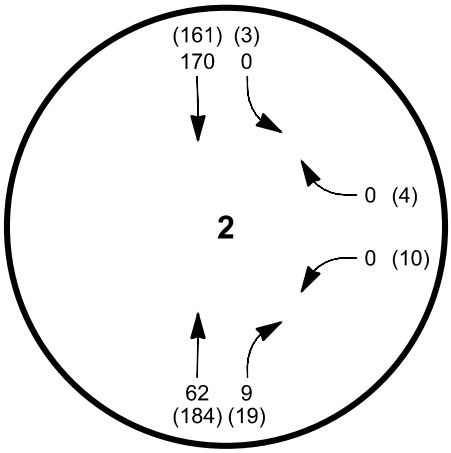
2020 Existing Traffic Volumes

Sandy Health Clinic

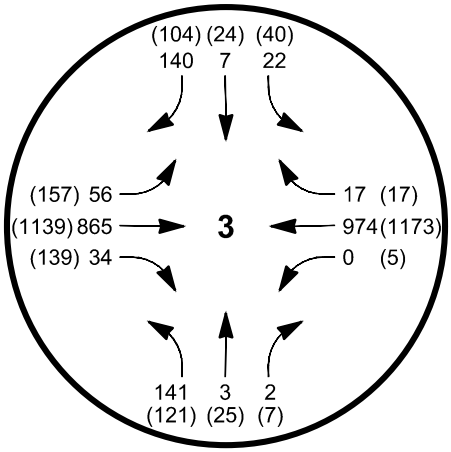




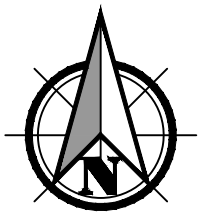
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26

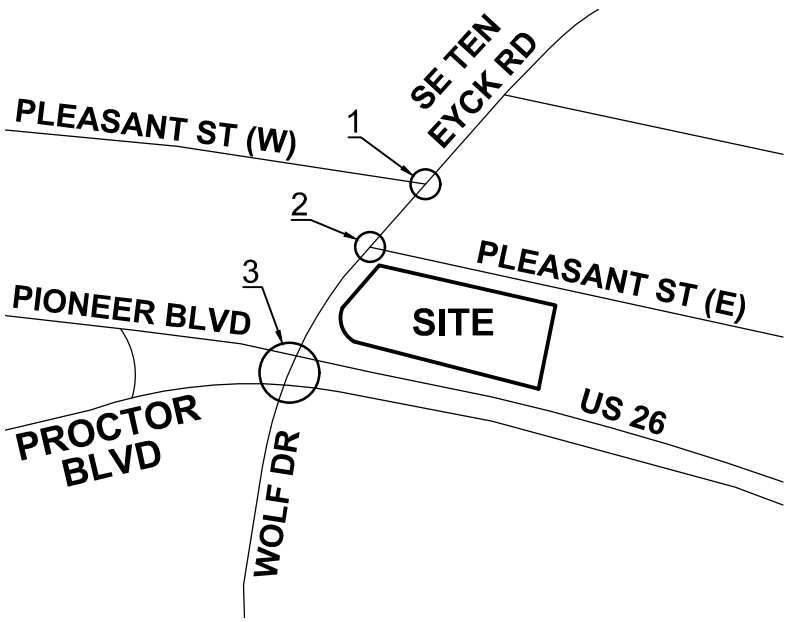


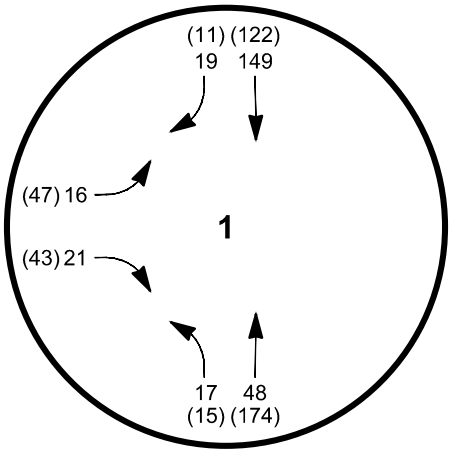
LEGEND	
○	INTERSECTION
XXX	AM PEAK HOUR
(XXX)	PM PEAK HOUR

FIGURE 6

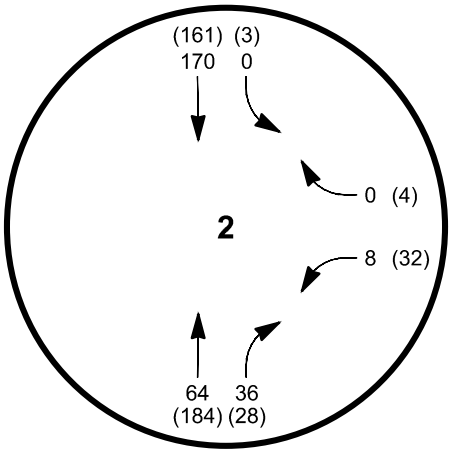
2022 Without Project Traffic Volumes

Sandy Health Clinic

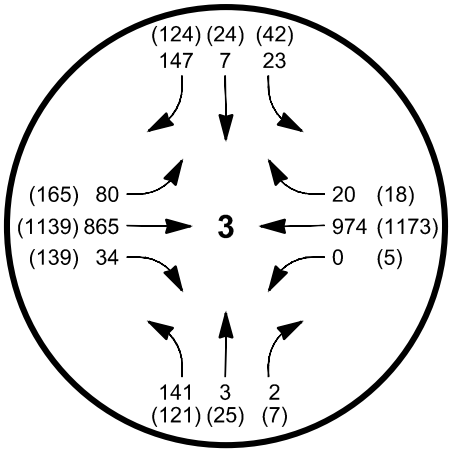




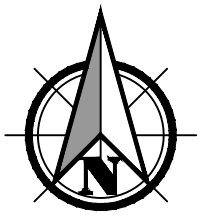
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26

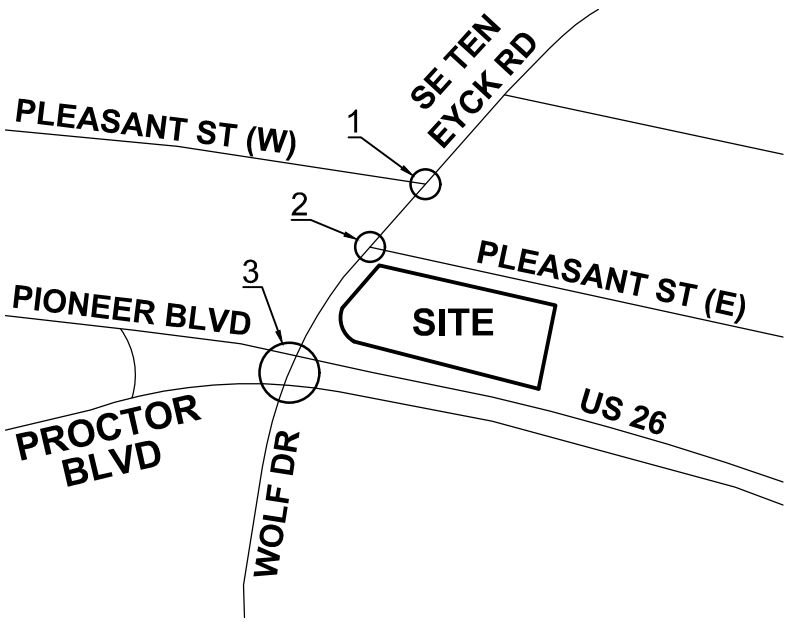


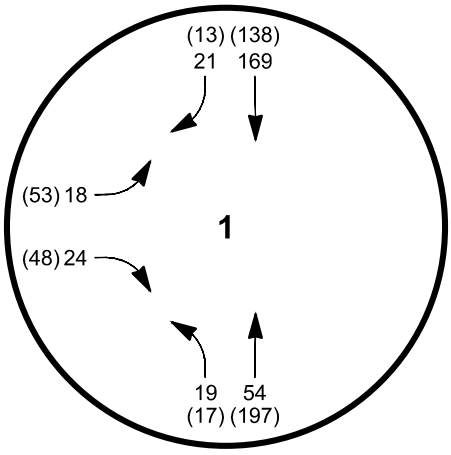
LEGEND	
○	INTERSECTION
XXX	AM PEAK HOUR
(XXX)	PM PEAK HOUR

FIGURE 7

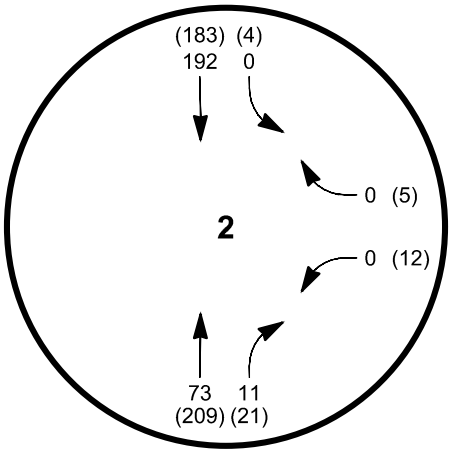
2022 With Project Traffic Volumes

Sandy Health Clinic

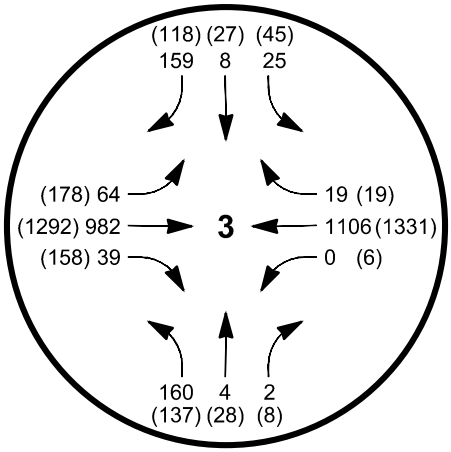




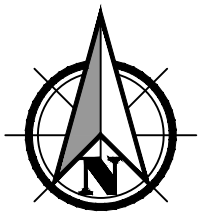
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26

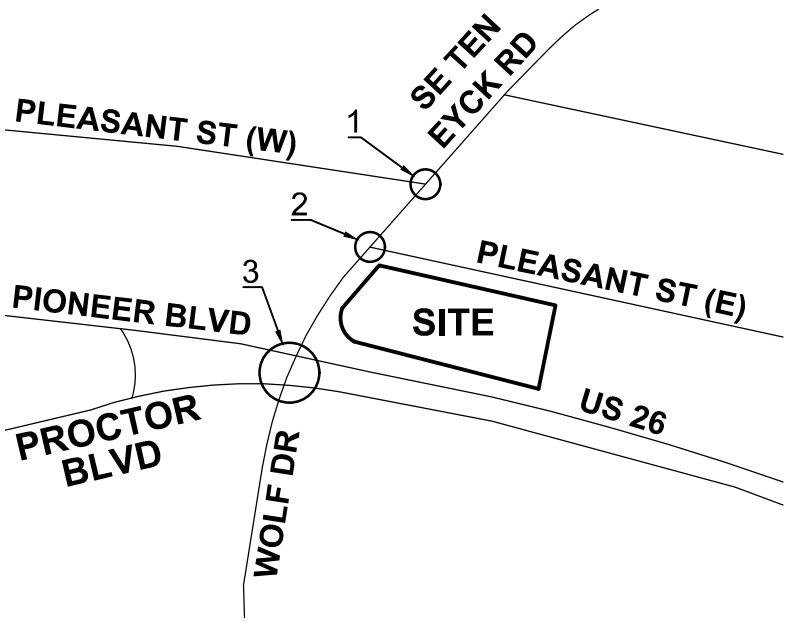


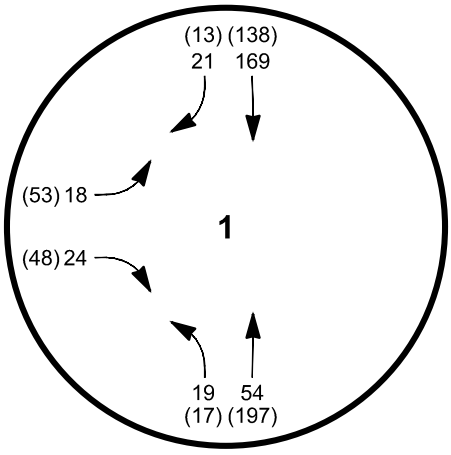
LEGEND	
○	INTERSECTION
XXX	AM PEAK HOUR
(XXX)	PM PEAK HOUR

FIGURE 8

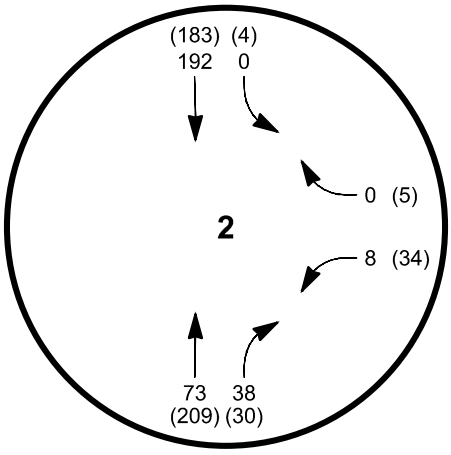
2029 Without Project Traffic Volumes

Sandy Health Clinic

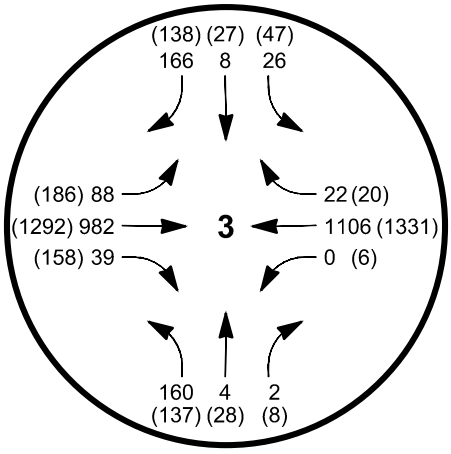




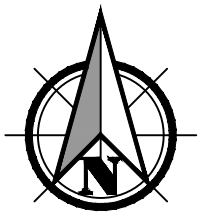
Ten Eyck Road /
Pleasant Street (W)



Ten Eyck Road /
Pleasant Street (E)



Ten Eyck Rd - Wolf Dr / US 26



LEGEND	
○	INTERSECTION
XXX	AM PEAK HOUR
(XXX)	PM PEAK HOUR

FIGURE 9

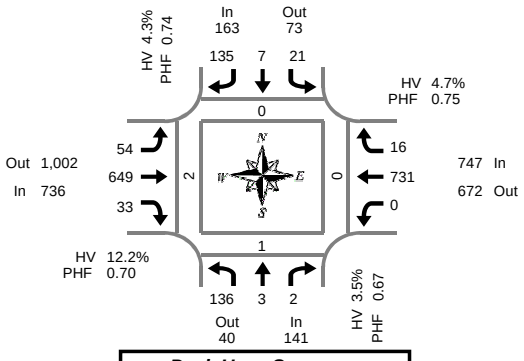
2029 With Project Traffic Volumes

Sandy Health Clinic

Appendix A
Traffic Counts

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Ten Eyck Rd & Hwy 26

Wednesday, February 19, 2020
7:00 AM to 9:00 AM

Peak Hour Summary
7:00 AM to 8:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	13	0	0	0	3	0	11	0	2	33	2	0	0	61	1	0	126	0	0	0	0
7:05 AM	16	0	0	0	0	0	15	0	6	39	0	0	0	78	1	0	155	0	1	0	1
7:10 AM	20	0	0	0	3	1	12	0	2	26	2	0	0	83	1	0	150	0	0	0	0
7:15 AM	15	0	0	0	2	0	18	0	2	53	3	0	0	85	1	0	179	0	0	0	0
7:20 AM	16	2	0	0	2	0	17	0	3	39	3	0	0	64	0	0	146	0	0	0	0
7:25 AM	9	0	0	0	1	0	12	0	2	39	4	0	0	74	3	0	144	0	0	0	0
7:30 AM	7	0	0	0	0	1	9	0	4	53	4	0	0	58	3	0	139	0	0	0	0
7:35 AM	12	1	0	0	0	1	13	0	10	57	4	0	0	45	1	0	144	0	0	0	0
7:40 AM	5	0	0	0	3	1	5	0	7	71	2	0	0	55	0	0	149	0	0	0	0
7:45 AM	8	0	0	0	3	1	13	0	4	86	3	0	0	49	3	1	170	0	0	0	1
7:50 AM	5	0	1	0	4	1	4	0	8	79	4	0	0	41	0	0	147	0	0	0	0
7:55 AM	10	0	1	0	0	1	6	0	4	74	2	0	0	38	2	0	138	0	0	0	0
8:00 AM	4	0	0	0	1	0	8	0	1	62	4	0	0	45	1	0	126	0	0	0	0
8:05 AM	12	0	0	0	1	0	9	0	3	55	1	0	0	43	0	0	124	0	0	0	1
8:10 AM	5	0	0	0	0	0	9	0	4	60	2	0	0	46	0	0	126	0	0	0	0
8:15 AM	4	0	0	0	0	0	8	0	4	47	1	0	1	51	0	0	116	0	0	0	0
8:20 AM	7	0	0	0	3	0	12	0	4	62	1	0	0	48	2	0	139	0	0	0	0
8:25 AM	6	2	1	0	1	0	11	0	3	61	4	0	0	40	0	0	129	0	0	0	0
8:30 AM	7	1	0	0	6	0	9	0	7	60	1	0	1	47	1	0	140	0	0	0	1
8:35 AM	12	0	0	0	1	1	7	0	5	53	3	0	0	53	2	0	137	0	0	0	0
8:40 AM	9	1	1	0	2	1	11	0	1	56	2	0	1	53	0	0	138	0	0	0	0
8:45 AM	15	0	0	0	5	0	13	0	10	64	3	0	0	51	1	0	162	0	0	0	0
8:50 AM	4	1	0	0	2	0	14	0	5	60	3	0	0	62	2	0	153	0	0	0	0
8:55 AM	3	0	0	0	3	1	4	0	3	60	2	0	0	45	0	0	121	2	0	0	0
Total Survey	224	8	4	0	46	10	250	0	104	1,349	60	0	3	1,315	25	1	3,398	2	1	0	4

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	49	0	0	0	6	1	38	0	10	98	4	0	0	222	3	0	431	0	1	0	1
7:15 AM	40	2	0	0	5	0	47	0	7	131	10	0	0	223	4	0	469	0	0	0	0
7:30 AM	24	1	0	0	3	3	27	0	21	181	10	0	0	158	4	0	432	0	0	0	0
7:45 AM	23	0	2	0	7	3	23	0	16	239	9	0	0	128	5	1	455	0	0	0	1
8:00 AM	21	0	0	0	2	0	26	0	8	177	7	0	0	134	1	0	376	0	0	0	1
8:15 AM	17	2	1	0	4	0	31	0	11	170	6	0	1	139	2	0	384	0	0	0	0
8:30 AM	28	2	1	0	9	2	27	0	13	169	6	0	2	153	3	0	415	0	0	0	1
8:45 AM	22	1	0	0	10	1	31	0	18	184	8	0	0	158	3	0	436	2	0	0	0
Total Survey	224	8	4	0	46	10	250	0	104	1,349	60	0	3	1,315	25	1	3,398	2	1	0	4

Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	141	40	181	0	163	73	236	0	736	1,002	1,738	0	747	672	1,419	1	1,787	0	1	0	2
%HV	3.5%				4.3%				12.2%				4.7%				7.7%				
PHF	0.67				0.74				0.70				0.75				0.92				

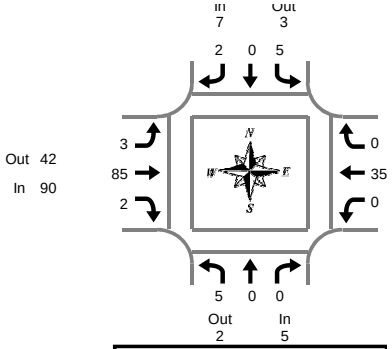
By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	136	3	2	141	21	7	135	163	54	649	33	736	0	731	16	747	1,787
%HV	3.7%	0.0%	0.0%	3.5%	23.8%	0.0%	1.5%	4.3%	5.6%	13.1%	6.1%	12.2%	0.0%	4.8%	0.0%	4.7%	7.7%
PHF	0.67	0.38	0.25	0.67	0.53	0.58	0.72	0.74	0.64	0.68	0.69	0.70	0.00	0.74	0.57	0.75	0.92

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	136	3	2	0	21	7	135	0	54	649	33	0	0	731	16	1	1,787	0	1	0	2
7:15 AM	108	3	2	0	17	6	123	0	52	728	36	0	0	643	14	1	1,732	0	0	0	2
7:30 AM	85	3	3	0	16	6	107	0	56	767	32	0	1	559	12	1	1,647	0	0	0	2
7:45 AM	89	4	4	0	22	5	107	0	48	755	28	0	3	554	11	1	1,630	0	0	0	3
8:00 AM	88	5	2	0	25	3	115	0	50	700	27	0	3	584	9	0	1,611	2	0	0	2

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Ten Eyck Rd & Hwy 26

Wednesday, February 19, 2020
7:00 AM to 9:00 AM

Peak Hour Summary
7:00 AM to 8:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	0	0	1	0	0	0	0	0	8	1	9	0	5	0	5	15
7:05 AM	1	0	0	1	0	0	0	0	0	13	0	13	0	2	0	2	16
7:10 AM	0	0	0	0	1	0	0	1	0	6	0	6	0	4	0	4	11
7:15 AM	2	0	0	2	0	0	0	0	1	7	0	8	0	3	0	3	13
7:20 AM	0	0	0	0	1	0	0	1	0	5	0	5	0	4	0	4	10
7:25 AM	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7
7:30 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3
7:35 AM	0	0	0	0	0	0	0	0	1	3	0	4	0	2	0	2	6
7:40 AM	0	0	0	0	1	0	0	1	0	10	0	10	0	4	0	4	15
7:45 AM	0	0	0	0	1	0	1	2	0	8	0	8	0	4	0	4	14
7:50 AM	0	0	0	0	1	0	1	2	0	9	1	10	0	1	0	1	13
7:55 AM	1	0	0	1	0	0	0	0	0	9	0	9	0	4	0	4	14
8:00 AM	0	0	0	0	0	0	0	0	0	7	0	7	0	4	0	4	11
8:05 AM	0	0	0	0	0	0	1	1	0	5	1	6	0	5	0	5	12
8:10 AM	0	0	0	0	0	0	0	0	0	5	0	5	0	7	0	7	12
8:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	5	0	5	7
8:20 AM	1	0	0	1	0	0	0	0	0	2	0	2	0	8	0	8	11
8:25 AM	0	0	1	1	0	0	0	0	0	8	0	8	0	6	0	6	15
8:30 AM	1	0	0	1	1	0	0	1	0	3	0	3	1	11	0	12	17
8:35 AM	1	0	0	1	0	0	1	1	1	3	0	4	0	2	1	3	9
8:40 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6
8:45 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7
8:50 AM	0	0	0	0	0	0	2	2	0	6	1	7	0	5	0	5	14
8:55 AM	0	0	0	0	0	0	0	0	0	8	0	8	0	3	0	3	11
Total Survey	8	0	1	9	6	0	6	12	4	141	4	149	1	97	1	99	269

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	2	0	0	2	1	0	0	1	0	27	1	28	0	11	0	11	42
7:15 AM	2	0	0	2	1	0	0	1	1	17	0	18	0	9	0	9	30
7:30 AM	0	0	0	0	1	0	0	1	2	15	0	17	0	6	0	6	24
7:45 AM	1	0	0	1	2	0	2	4	0	26	1	27	0	9	0	9	41
8:00 AM	0	0	0	0	0	0	1	1	0	17	1	18	0	16	0	16	35
8:15 AM	1	0	1	2	0	0	0	0	0	12	0	12	0	19	0	19	33
8:30 AM	2	0	0	2	1	0	1	2	1	9	0	10	1	16	1	18	32
8:45 AM	0	0	0	0	0	0	2	2	0	18	1	19	0	11	0	11	32
Total Survey	8	0	1	9	6	0	6	12	4	141	4	149	1	97	1	99	269

Heavy Vehicle Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound Ten Eyck Rd			Southbound Ten Eyck Rd			Eastbound Hwy 26			Westbound Hwy 26			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	5	2	7	7	3	10	90	42	132	35	90	125	137
PHF	0.42			0.35			0.80			0.80			0.82

By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	5	0	0	5	5	0	2	7	3	85	2	90	0	35	0	35	137
PHF	0.42	0.00	0.00	0.42	0.42	0.00	0.25	0.35	0.38	0.79	0.50	0.80	0.00	0.80	0.00	0.80	0.82

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

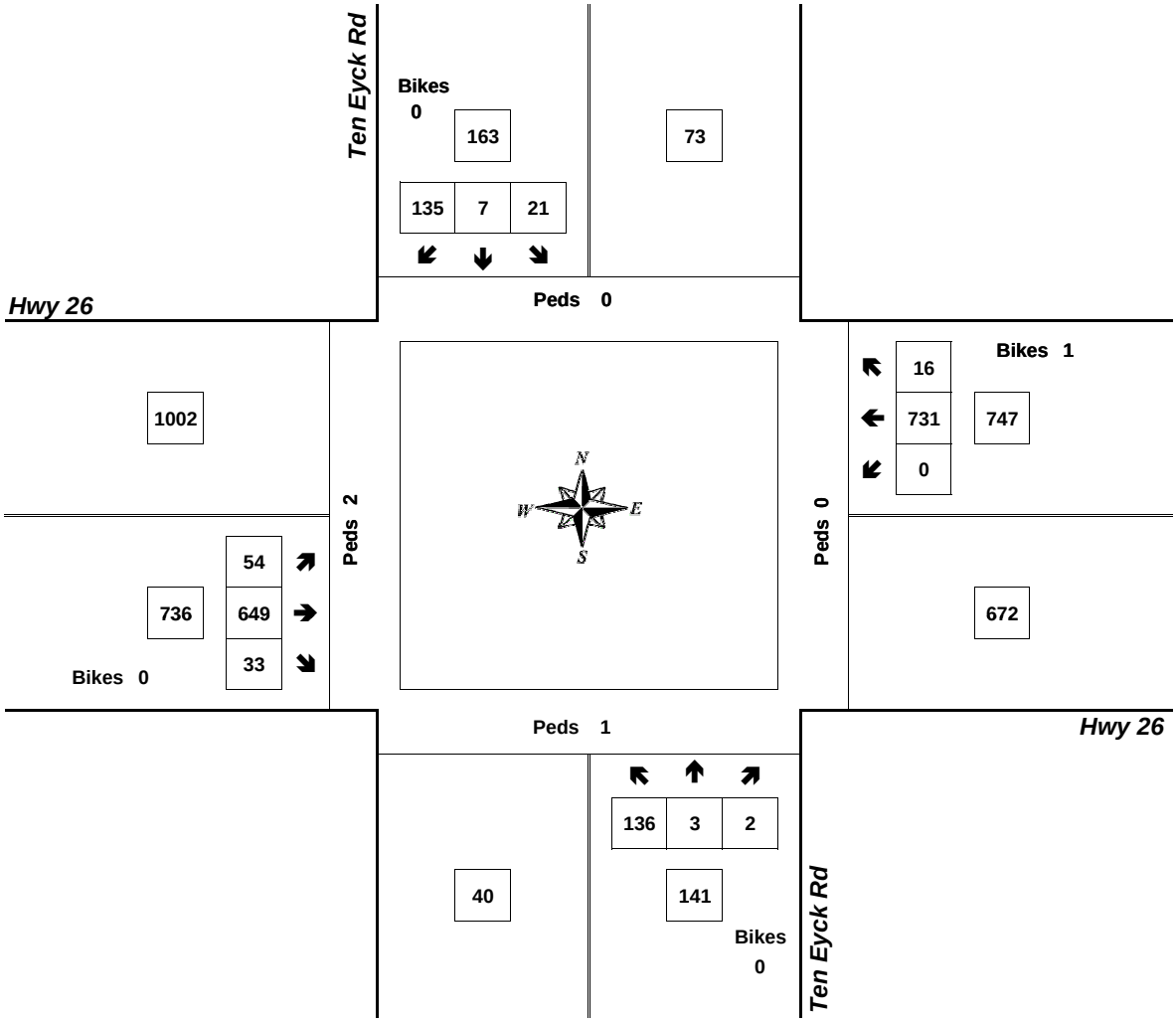
Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	5	0	0	5	5	0	2	7	3	85	2	90	0	35	0	35	137
7:15 AM	3	0	0	3	4	0	3	7	3	75	2	80	0	40	0	40	130
7:30 AM	2	0	1	3	3	0	3	6	2	70	2	74	0	50	0	50	133
7:45 AM	4	0	1	5	3	0	4	7	1	64	2	67	1	60	1	62	141
8:00 AM	3	0	1	4	1	0	4	5	1	56	2	59	1	62	1	64	132

Peak Hour Summary

Clay Carney
(503) 833-2740

Ten Eyck Rd & Hwy 26

7:00 AM to 8:00 AM
Wednesday, February 19, 2020

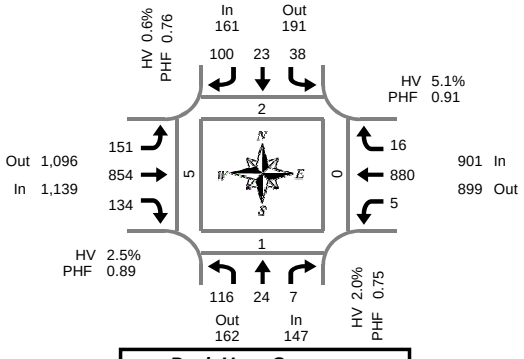


Approach	PHF	HV%	Volume
EB	0.70	12.2%	736
WB	0.75	4.7%	747
NB	0.67	3.5%	141
SB	0.74	4.3%	163
Intersection	0.92	7.7%	1,787

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:20 PM to 5:20 PM

Ten Eyck Rd & Hwy 26

Wednesday, February 19, 2020
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	5	4	0	0	2	2	14	0	11	55	19	0	1	76	2	0	191	0	0	0	1
4:05 PM	10	2	1	0	4	2	6	0	17	78	5	0	0	48	4	0	177	0	0	0	0
4:10 PM	4	3	0	0	0	1	7	0	13	73	12	0	0	68	1	0	182	4	0	0	2
4:15 PM	4	3	0	0	5	0	5	0	9	67	12	0	0	81	3	0	189	1	0	0	0
4:20 PM	6	2	0	0	1	1	5	0	11	73	8	0	0	81	0	0	188	2	0	0	0
4:25 PM	11	0	1	0	4	1	8	0	8	60	11	0	0	72	0	0	176	0	0	0	0
4:30 PM	6	2	0	0	3	0	4	0	9	70	17	0	0	64	2	0	177	0	0	0	0
4:35 PM	14	2	0	0	2	4	6	0	13	70	6	0	0	83	1	0	201	0	0	0	0
4:40 PM	11	2	0	0	0	6	10	0	19	80	12	0	1	75	1	0	217	0	0	0	0
4:45 PM	10	1	2	0	2	0	4	0	18	85	18	0	1	63	2	0	206	0	0	0	3
4:50 PM	12	6	0	0	3	2	15	0	11	55	12	0	1	61	3	0	181	0	1	0	1
4:55 PM	11	1	2	0	4	2	6	0	9	52	14	0	1	89	3	0	194	0	0	0	0
5:00 PM	12	4	1	0	4	2	9	0	18	60	7	0	1	85	0	0	203	0	0	0	0
5:05 PM	7	2	0	0	4	2	14	0	13	99	7	0	0	67	1	0	216	0	0	0	0
5:10 PM	7	1	0	0	6	2	7	0	8	72	13	0	0	71	3	0	190	0	0	0	1
5:15 PM	9	1	1	0	5	1	12	0	14	78	9	0	0	69	0	0	199	0	0	0	0
5:20 PM	8	1	0	0	4	1	4	0	12	59	8	0	1	68	1	0	167	0	0	0	0
5:25 PM	6	2	0	0	5	0	7	0	11	71	7	0	1	73	0	0	183	1	0	0	0
5:30 PM	4	0	0	0	1	3	9	0	14	77	10	0	0	62	2	0	182	0	0	0	0
5:35 PM	8	2	1	0	1	0	6	0	18	80	10	0	0	36	0	0	162	0	1	0	0
5:40 PM	5	1	0	0	4	1	10	0	16	57	4	0	0	48	0	0	146	1	0	0	0
5:45 PM	7	3	1	0	3	0	7	0	12	65	9	0	0	62	1	0	170	0	0	0	1
5:50 PM	12	1	0	0	2	0	8	0	13	72	5	0	0	63	1	0	177	1	0	0	2
5:55 PM	4	2	1	0	3	1	9	0	17	63	14	0	0	48	1	0	163	0	0	0	0
Total Survey	193	48	11	0	72	34	192	0	314	1,671	249	0	8	1,613	32	0	4,437	10	2	0	11

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	19	9	1	0	6	5	27	0	41	206	36	0	1	192	7	0	550	4	0	0	3
4:15 PM	21	5	1	0	10	2	18	0	28	200	31	0	0	234	3	0	553	3	0	0	0
4:30 PM	31	6	0	0	5	10	20	0	41	220	35	0	1	222	4	0	595	0	0	0	0
4:45 PM	33	8	4	0	9	4	25	0	38	192	44	0	3	213	8	0	581	0	1	0	4
5:00 PM	26	7	1	0	14	6	30	0	39	231	27	0	1	223	4	0	609	0	0	0	1
5:15 PM	23	4	1	0	14	2	23	0	37	208	24	0	2	210	1	0	549	1	0	0	0
5:30 PM	17	3	1	0	6	4	25	0	48	214	24	0	0	146	2	0	490	1	1	0	0
5:45 PM	23	6	2	0	8	1	24	0	42	200	28	0	0	173	3	0	510	1	0	0	3
Total Survey	193	48	11	0	72	34	192	0	314	1,671	249	0	8	1,613	32	0	4,437	10	2	0	11

Peak Hour Summary
4:20 PM to 5:20 PM

By Approach	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	147	162	309	0	161	191	352	0	1,139	1,096	2,235	0	901	899	1,800	0	2,348	2	1	0	5
%HV	2.0%				0.6%				2.5%				5.1%				3.4%				
PHF	0.75				0.76				0.89				0.91				0.94				

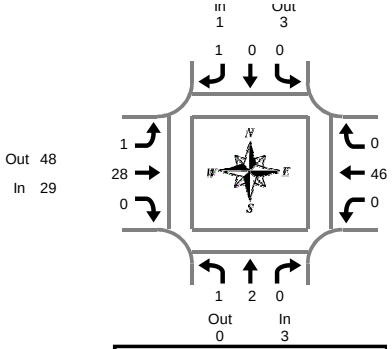
By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	116	24	7	147	38	23	100	161	151	854	134	1,139	5	880	16	901	2,348
%HV	0.9%	8.3%	0.0%	2.0%	0.0%	0.0%	1.0%	0.6%	0.7%	3.3%	0.0%	2.5%	0.0%	5.2%	0.0%	5.1%	3.4%
PHF	0.83	0.55	0.44	0.75	0.63	0.58	0.76	0.76	0.76	0.86	0.76	0.89	0.42	0.91	0.50	0.91	0.94

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	104	28	6	0	30	21	90	0	148	818	146	0	5	861	22	0	2,279	7	1	0	7
4:15 PM	111	26	6	0	38	22	93	0	146	843	137	0	5	892	19	0	2,338	3	1	0	5
4:30 PM	113	25	6	0	42	22	98	0	155	851	130	0	7	868	17	0	2,334	1	1	0	5
4:45 PM	99	22	7	0	43	16	103	0	162	845	119	0	6	792	15	0	2,229	2	2	0	5
5:00 PM	89	20	5	0	42	13	102	0	166	853	103	0	3	752	10	0	2,158	3	1	0	4

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Ten Eyck Rd & Hwy 26

Wednesday, February 19, 2020
4:00 PM to 6:00 PM

Peak Hour Summary
4:20 PM to 5:20 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	0	1	0	0	2	2	0	3	0	3	0	4	1	5	11
4:05 PM	0	0	0	0	0	0	0	0	0	8	0	8	0	4	0	4	12
4:10 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	5	0	5	7
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	6	1	7	10
4:20 PM	0	0	0	0	0	0	0	0	0	8	0	8	0	6	0	6	14
4:25 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	5	0	5	9
4:30 PM	1	2	0	3	0	0	0	0	0	2	0	2	0	3	0	3	8
4:35 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4	6
4:40 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4	6
4:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
4:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	7	0	7	8
5:00 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7
5:05 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	5	0	5	6
5:10 PM	0	0	0	0	0	0	1	1	0	2	0	2	0	2	0	2	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
5:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
5:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
5:40 PM	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	2	4
5:50 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Survey	3	2	0	5	0	0	3	3	2	54	0	56	0	81	2	83	147

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	0	1	0	0	2	2	0	13	0	13	0	13	1	14	30
4:15 PM	0	0	0	0	0	0	0	0	0	15	0	15	0	17	1	18	33
4:30 PM	1	2	0	3	0	0	0	0	0	6	0	6	0	10	0	10	19
4:45 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	14	0	14	18
5:00 PM	0	0	0	0	0	0	1	1	1	6	0	7	0	10	0	10	18
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	6	0	6	7
5:30 PM	1	0	0	1	0	0	0	0	0	4	0	4	0	4	0	4	9
5:45 PM	0	0	0	0	0	0	0	0	1	5	0	6	0	7	0	7	13
Total Survey	3	2	0	5	0	0	3	3	2	54	0	56	0	81	2	83	147

Heavy Vehicle Peak Hour Summary
4:20 PM to 5:20 PM

By Approach	Northbound Ten Eyck Rd			Southbound Ten Eyck Rd			Eastbound Hwy 26			Westbound Hwy 26			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	0	3	1	3	4	29	48	77	46	28	74	79
PHF	0.25			0.25			0.52			0.77			0.64

By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	2	0	3	0	0	1	1	1	28	0	29	0	46	0	46	79
PHF	0.25	0.25	0.00	0.25	0.00	0.00	0.25	0.25	0.25	0.50	0.00	0.52	0.00	0.77	0.00	0.77	0.64

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Hwy 26				Westbound Hwy 26				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	2	2	0	4	0	0	2	2	0	38	0	38	0	54	2	56	100
4:15 PM	1	2	0	3	0	0	1	1	1	31	0	32	0	51	1	52	88
4:30 PM	1	2	0	3	0	0	1	1	1	17	0	18	0	40	0	40	62
4:45 PM	1	0	0	1	0	0	1	1	1	15	0	16	0	34	0	34	52
5:00 PM	1	0	0	1	0	0	1	1	2	16	0	18	0	27	0	27	47

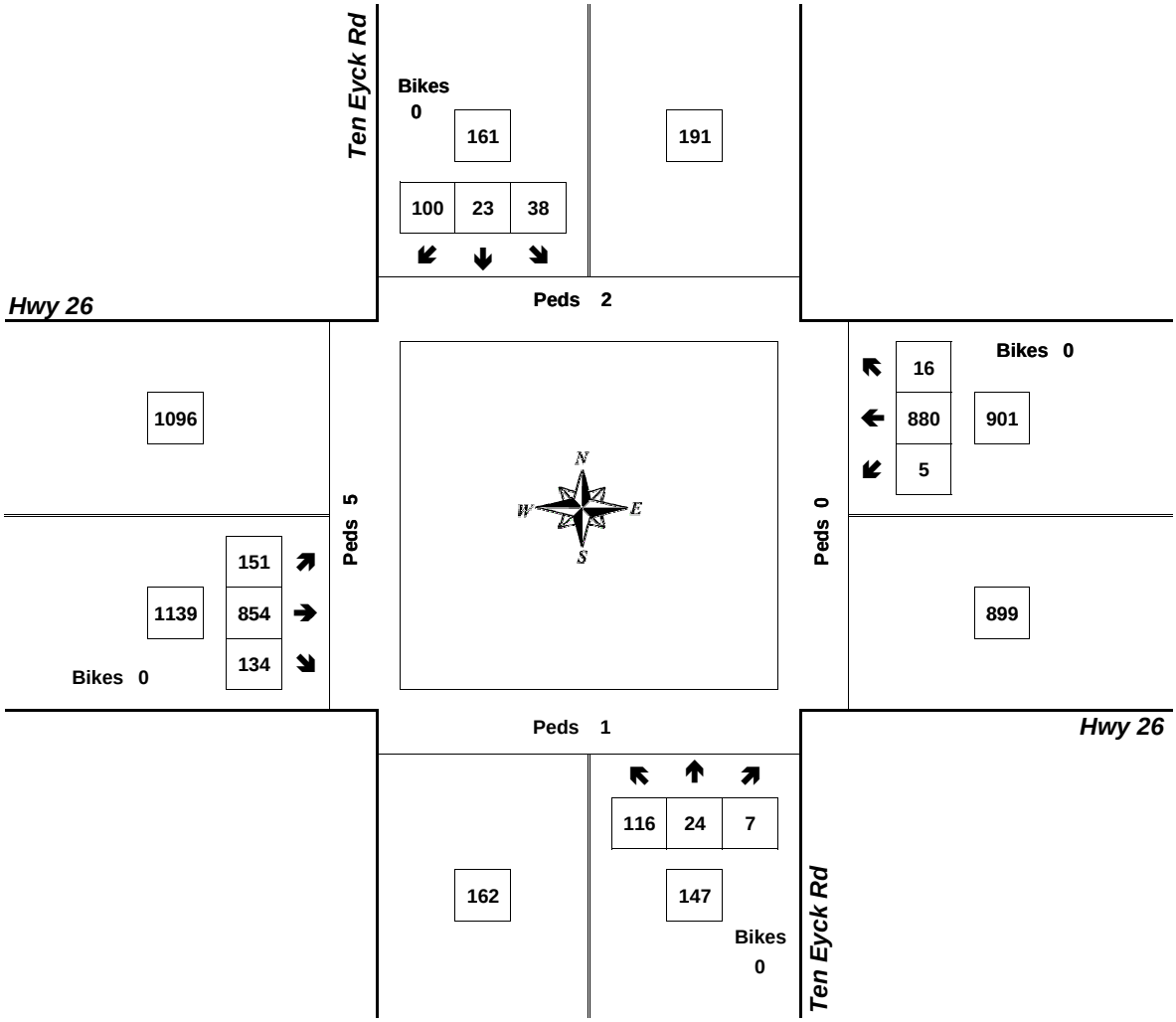
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Ten Eyck Rd & Hwy 26

4:20 PM to 5:20 PM
Wednesday, February 19, 2020

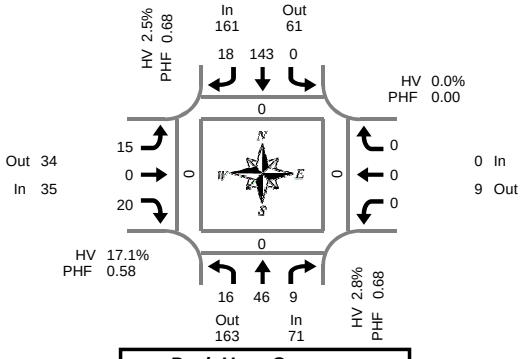


Approach	PHF	HV%	Volume
EB	0.89	2.5%	1,139
WB	0.91	5.1%	901
NB	0.75	2.0%	147
SB	0.76	0.6%	161
Intersection	0.94	3.4%	2,348

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:00 AM to 8:00 AM

Ten Eyck Rd & Pleasant St

Wednesday, February 19, 2020
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	1	5	2	0	0	11	0	0	0	0	1	0	0	0	0	0	20	0	0	0	0
7:05 AM	1	2	0	0	0	15	1	0	0	0	1	0	0	0	0	0	20	0	0	0	0
7:10 AM	1	0	0	0	0	18	1	0	0	0	1	0	0	0	0	0	21	0	0	0	0
7:15 AM	2	3	1	0	0	19	4	0	0	0	2	0	0	0	0	0	31	0	0	0	0
7:20 AM	3	1	1	0	0	16	1	0	0	0	1	0	0	0	0	0	23	0	0	0	0
7:25 AM	3	4	0	0	0	11	1	0	4	0	2	0	0	0	0	0	25	0	0	0	0
7:30 AM	1	6	2	0	0	9	3	0	0	0	2	0	0	0	0	0	23	0	0	0	0
7:35 AM	1	4	0	0	0	9	2	0	4	0	3	0	0	0	0	0	23	0	0	0	0
7:40 AM	0	11	1	0	0	10	0	0	2	0	1	0	0	0	0	0	25	0	0	0	0
7:45 AM	1	3	0	0	0	13	2	0	3	0	1	0	0	0	0	0	23	0	0	0	0
7:50 AM	1	4	1	0	0	4	1	0	1	0	5	0	0	0	0	0	17	0	0	0	0
7:55 AM	1	3	1	0	0	8	2	0	1	0	0	0	0	0	0	0	16	0	0	0	0
8:00 AM	0	1	2	0	0	6	1	0	3	0	1	0	0	0	0	0	14	0	0	0	0
8:05 AM	0	2	1	0	0	6	1	0	0	0	1	0	1	0	0	0	12	0	0	0	0
8:10 AM	0	3	0	0	0	13	0	0	1	0	0	0	0	0	0	0	17	0	0	0	0
8:15 AM	0	5	1	0	0	12	2	0	1	0	2	0	0	1	0	0	24	0	0	0	0
8:20 AM	0	6	0	0	0	8	1	0	0	0	1	0	0	0	0	0	16	0	0	0	0
8:25 AM	2	3	1	0	0	13	1	0	1	0	0	0	0	0	0	0	21	0	0	0	0
8:30 AM	0	5	2	0	0	13	0	0	2	0	3	0	0	0	0	0	25	0	0	0	0
8:35 AM	0	4	0	0	0	8	0	0	0	0	0	0	1	0	0	0	13	0	0	0	0
8:40 AM	1	4	1	0	1	15	2	0	0	1	4	0	0	0	1	0	30	0	0	0	0
8:45 AM	0	6	1	0	0	11	2	0	0	0	3	0	0	0	0	0	23	0	0	0	0
8:50 AM	0	6	1	0	0	10	0	0	0	1	2	0	2	0	0	0	22	0	0	0	0
8:55 AM	0	3	0	0	0	10	0	0	0	1	1	0	0	0	0	0	15	0	0	0	0
Total Survey	19	94	19	0	1	268	28	0	23	3	38	0	4	1	1	0	499	0	0	0	0

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	3	7	2	0	0	44	2	0	0	0	3	0	0	0	0	0	61	0	0	0	0
7:15 AM	8	8	2	0	0	46	6	0	4	0	5	0	0	0	0	0	79	0	0	0	0
7:30 AM	2	21	3	0	0	28	5	0	6	0	6	0	0	0	0	0	71	0	0	0	0
7:45 AM	3	10	2	0	0	25	5	0	5	0	6	0	0	0	0	0	56	0	0	0	0
8:00 AM	0	6	3	0	0	25	2	0	4	0	2	0	1	0	0	0	43	0	0	0	0
8:15 AM	2	14	2	0	0	33	4	0	2	0	3	0	0	1	0	0	61	0	0	0	0
8:30 AM	1	13	3	0	1	36	2	0	2	1	7	0	1	0	1	0	68	0	0	0	0
8:45 AM	0	15	2	0	0	31	2	0	0	2	6	0	2	0	0	0	60	0	0	0	0
Total Survey	19	94	19	0	1	268	28	0	23	3	38	0	4	1	1	0	499	0	0	0	0

Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	71	163	234	0	161	61	222	0	35	34	69	0	0	9	9	0	267	0	0	0	0
%HV	2.8%				2.5%				17.1%				0.0%				4.5%				
PHF	0.68				0.68				0.58				0.00				0.84				

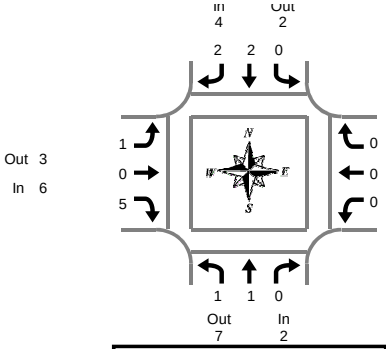
By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	16	46	9	71	0	143	18	161	15	0	20	35	0	0	0	0	267
%HV	6.3%	2.2%	0.0%	2.8%	0.0%	1.4%	11.1%	2.5%	6.7%	0.0%	25.0%	17.1%	0.0%	0.0%	0.0%	0.0%	4.5%
PHF	0.50	0.55	0.75	0.68	0.00	0.67	0.75	0.68	0.42	0.00	0.71	0.58	0.00	0.00	0.00	0.00	0.84

Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	16	46	9	0	0	143	18	0	15	0	20	0	0	0	0	0	267	0	0	0	0
7:15 AM	13	45	10	0	0	124	18	0	19	0	19	0	1	0	0	0	249	0	0	0	0
7:30 AM	7	51	10	0	0	111	16	0	17	0	17	0	1	1	0	0	231	0	0	0	0
7:45 AM	6	43	10	0	1	119	13	0	13	1	18	0	2	1	1	0	228	0	0	0	0
8:00 AM	3	48	10	0	1	125	10	0	8	3	18	0	4	1	1	0	232	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Ten Eyck Rd & Pleasant St

Wednesday, February 19, 2020
7:00 AM to 9:00 AM

Peak Hour Summary
7:00 AM to 8:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
7:10 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
7:35 AM	0	0	0	0	0	1	1	2	1	0	1	2	0	0	0	0	4
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	2
7:50 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	2	2	1	0	0	1	0	0	0	0	3
8:20 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0	0	3
8:35 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:50 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	1	4	0	5	0	6	4	10	3	0	6	9	0	0	0	0	24

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
7:30 AM	0	1	0	1	0	1	2	3	1	0	1	2	0	0	0	0	6
7:45 AM	0	0	0	0	0	1	0	1	0	0	2	2	0	0	0	0	3
8:00 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
8:15 AM	0	1	0	1	0	0	2	2	1	0	0	1	0	0	0	0	4
8:30 AM	0	2	0	2	0	1	0	1	0	0	1	1	0	0	0	0	4
8:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Survey	1	4	0	5	0	6	4	10	3	0	6	9	0	0	0	0	24

Heavy Vehicle Peak Hour Summary
7:00 AM to 8:00 AM

By Approach	Northbound Ten Eyck Rd			Southbound Ten Eyck Rd			Eastbound Pleasant St			Westbound Pleasant St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	7	9	4	2	6	6	3	9	0	0	0	12
PHF	0.50			0.33			0.50			0.00			0.50

By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	1	0	2	0	2	2	4	1	0	5	6	0	0	0	0	12
PHF	0.25	0.25	0.00	0.50	0.00	0.25	0.25	0.33	0.25	0.00	0.63	0.50	0.00	0.00	0.00	0.00	0.50

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

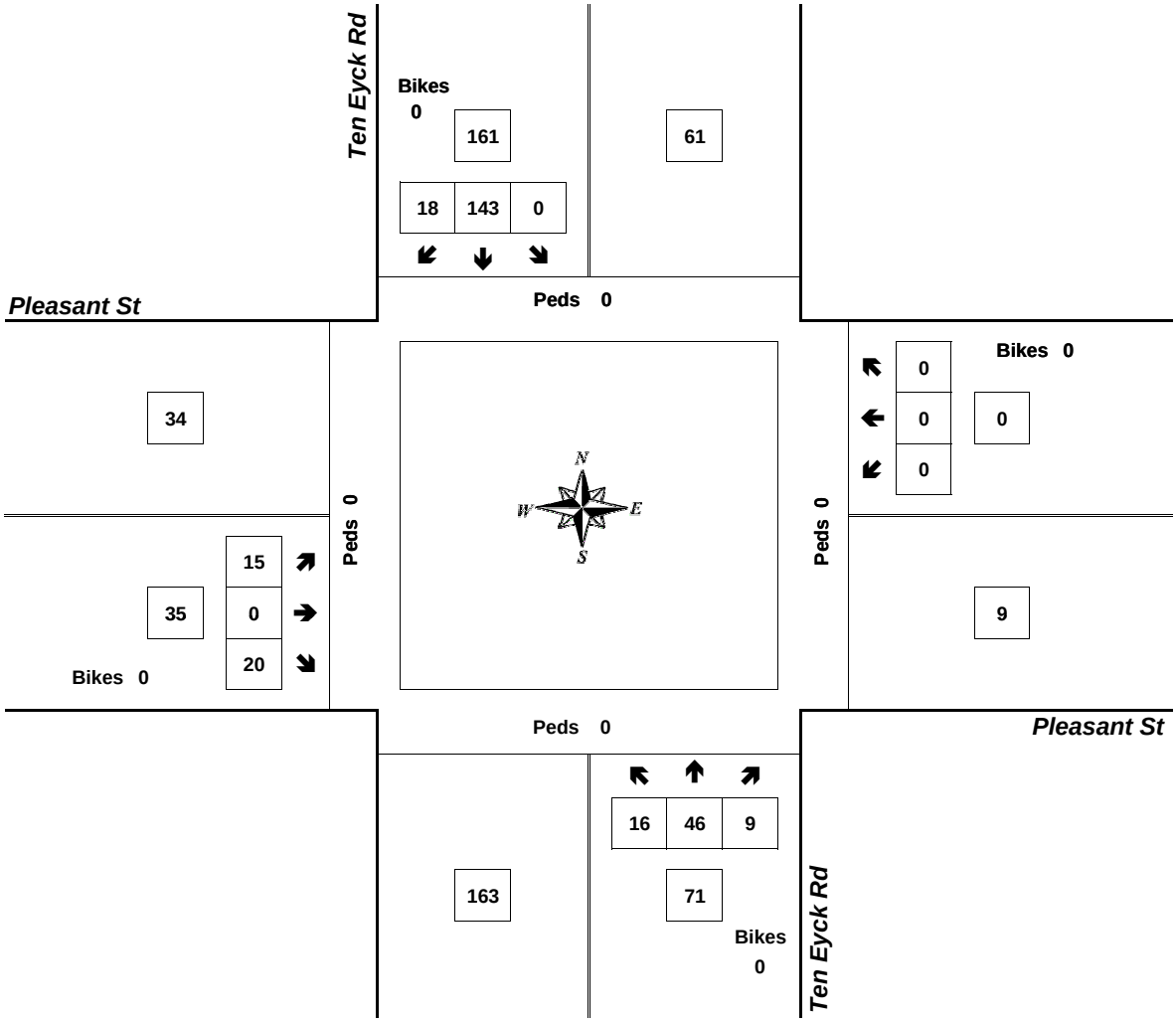
Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	1	0	2	0	2	2	4	1	0	5	6	0	0	0	0	12
7:15 AM	0	1	0	1	0	3	2	5	2	0	4	6	0	0	0	0	12
7:30 AM	0	2	0	2	0	3	4	7	3	0	3	6	0	0	0	0	15
7:45 AM	0	3	0	3	0	3	2	5	2	0	3	5	0	0	0	0	13
8:00 AM	0	3	0	3	0	4	2	6	2	0	1	3	0	0	0	0	12

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Ten Eyck Rd & Pleasant St

7:00 AM to 8:00 AM
Wednesday, February 19, 2020

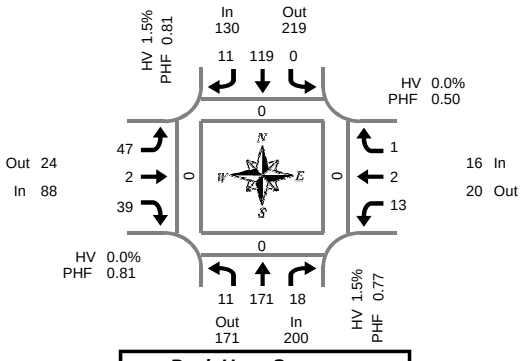


Approach	PHF	HV%	Volume
EB	0.58	17.1%	35
WB	0.00	0.0%	0
NB	0.68	2.8%	71
SB	0.68	2.5%	161
Intersection	0.84	4.5%	267

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:25 PM to 5:25 PM

Ten Eyck Rd & Pleasant St

Wednesday, February 19, 2020
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	9	1	0	0	9	1	0	2	0	4	0	2	0	0	0	28	0	0	0	0
4:05 PM	1	20	2	0	0	5	2	0	1	0	2	0	0	2	2	0	37	0	0	0	0
4:10 PM	1	10	2	0	0	7	2	0	5	0	3	0	1	0	1	0	32	0	0	0	0
4:15 PM	2	11	1	0	0	8	0	0	4	1	1	0	0	2	0	0	30	0	0	0	0
4:20 PM	1	9	2	0	0	7	0	0	2	1	1	0	0	1	0	0	24	0	0	0	0
4:25 PM	0	11	0	0	0	8	0	0	7	0	4	0	1	0	0	0	31	0	0	0	0
4:30 PM	1	14	1	0	0	7	0	0	5	0	3	0	0	0	0	0	31	0	0	0	0
4:35 PM	1	16	3	0	0	12	0	0	4	0	1	0	0	0	0	0	37	0	0	0	0
4:40 PM	0	22	1	0	0	6	4	0	1	0	2	0	1	0	0	0	37	0	0	0	0
4:45 PM	4	17	1	0	0	9	0	0	5	0	1	0	2	0	1	0	40	0	0	0	0
4:50 PM	1	12	2	0	0	18	0	0	3	0	6	0	2	2	0	0	46	0	0	0	0
4:55 PM	0	11	0	0	0	10	2	0	3	0	5	0	0	0	0	0	31	0	0	0	0
5:00 PM	0	19	1	0	0	10	0	0	4	1	5	0	1	0	0	0	41	0	0	0	0
5:05 PM	1	12	4	0	0	14	2	0	5	0	4	0	0	0	0	0	42	0	0	0	0
5:10 PM	0	14	2	0	0	10	3	0	3	0	3	0	3	0	0	0	38	0	0	0	0
5:15 PM	2	9	1	0	0	6	0	0	3	1	3	0	0	0	0	0	25	0	0	0	0
5:20 PM	1	14	2	0	0	9	0	0	4	0	2	0	3	0	0	0	35	0	0	0	0
5:25 PM	0	14	0	0	0	7	1	0	1	0	2	0	0	0	0	0	25	0	0	0	0
5:30 PM	0	17	1	0	0	12	0	0	2	0	1	0	0	0	0	0	33	0	0	0	0
5:35 PM	0	14	2	0	0	4	0	0	3	0	2	0	2	0	0	0	27	0	0	0	0
5:40 PM	1	16	2	0	1	10	0	0	1	0	4	0	1	0	0	0	36	0	0	0	0
5:45 PM	0	12	1	0	0	8	1	0	2	0	1	0	0	0	0	0	25	0	0	0	0
5:50 PM	0	12	2	0	0	8	1	0	1	0	4	0	1	1	1	0	31	0	0	0	0
5:55 PM	0	13	2	0	0	7	1	0	3	0	4	0	1	0	0	0	31	0	0	0	0
Total Survey	17	328	36	0	1	211	20	0	74	4	68	0	21	8	5	0	793	0	0	0	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	2	39	5	0	0	21	5	0	8	0	9	0	3	2	3	0	97	0	0	0	0
4:15 PM	3	31	3	0	0	23	0	0	13	2	6	0	1	3	0	0	85	0	0	0	0
4:30 PM	2	52	5	0	0	25	4	0	10	0	6	0	1	0	0	0	105	0	0	0	0
4:45 PM	5	40	3	0	0	37	2	0	11	0	12	0	4	2	1	0	117	0	0	0	0
5:00 PM	1	45	7	0	0	34	5	0	12	1	12	0	4	0	0	0	121	0	0	0	0
5:15 PM	3	37	3	0	0	22	1	0	8	1	7	0	3	0	0	0	85	0	0	0	0
5:30 PM	1	47	5	0	1	26	0	0	6	0	7	0	3	0	0	0	96	0	0	0	0
5:45 PM	0	37	5	0	0	23	3	0	6	0	9	0	2	1	1	0	87	0	0	0	0
Total Survey	17	328	36	0	1	211	20	0	74	4	68	0	21	8	5	0	793	0	0	0	0

Peak Hour Summary
4:25 PM to 5:25 PM

By Approach	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	200	171	371	0	130	219	349	0	88	24	112	0	16	20	36	0	434	0	0	0	0
%HV	1.5%				1.5%				0.0%				0.0%				1.2%				
PHF	0.77				0.81				0.81				0.50				0.88				

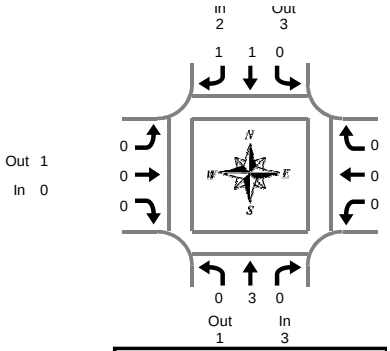
By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	11	171	18	200	0	119	11	130	47	2	39	88	13	2	1	16	434
%HV	0.0%	1.8%	0.0%	1.5%	0.0%	0.8%	9.1%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%
PHF	0.55	0.78	0.64	0.77	0.00	0.78	0.55	0.81	0.73	0.50	0.61	0.81	0.54	0.25	0.25	0.50	0.88

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	12	162	16	0	0	106	11	0	42	2	33	0	9	7	4	0	404	0	0	0	0
4:15 PM	11	168	18	0	0	119	11	0	46	3	36	0	10	5	1	0	428	0	0	0	0
4:30 PM	11	174	18	0	0	118	12	0	41	2	37	0	12	2	1	0	428	0	0	0	0
4:45 PM	10	169	18	0	1	119	8	0	37	2	38	0	14	2	1	0	419	0	0	0	0
5:00 PM	5	166	20	0	1	105	9	0	32	2	35	0	12	1	1	0	389	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Ten Eyck Rd & Pleasant St

Wednesday, February 19, 2020
4:00 PM to 6:00 PM

Peak Hour Summary
4:25 PM to 5:25 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	5	0	5	0	5	1	6	0	0	0	0	0	0	0	0	11

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	2	0	2	0	0	1	1	0	0	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Survey	0	5	0	5	0	5	1	6	0	0	0	0	0	0	0	0	11

Heavy Vehicle Peak Hour Summary
4:25 PM to 5:25 PM

By Approach	Northbound Ten Eyck Rd			Southbound Ten Eyck Rd			Eastbound Pleasant St			Westbound Pleasant St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	1	4	2	3	5	0	1	1	0	0	0	5
PHF	0.38			0.50			0.00			0.00			0.42

By Movement	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	3	0	3	0	1	1	2	0	0	0	0	0	0	0	0	5
PHF	0.00	0.38	0.00	0.38	0.00	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

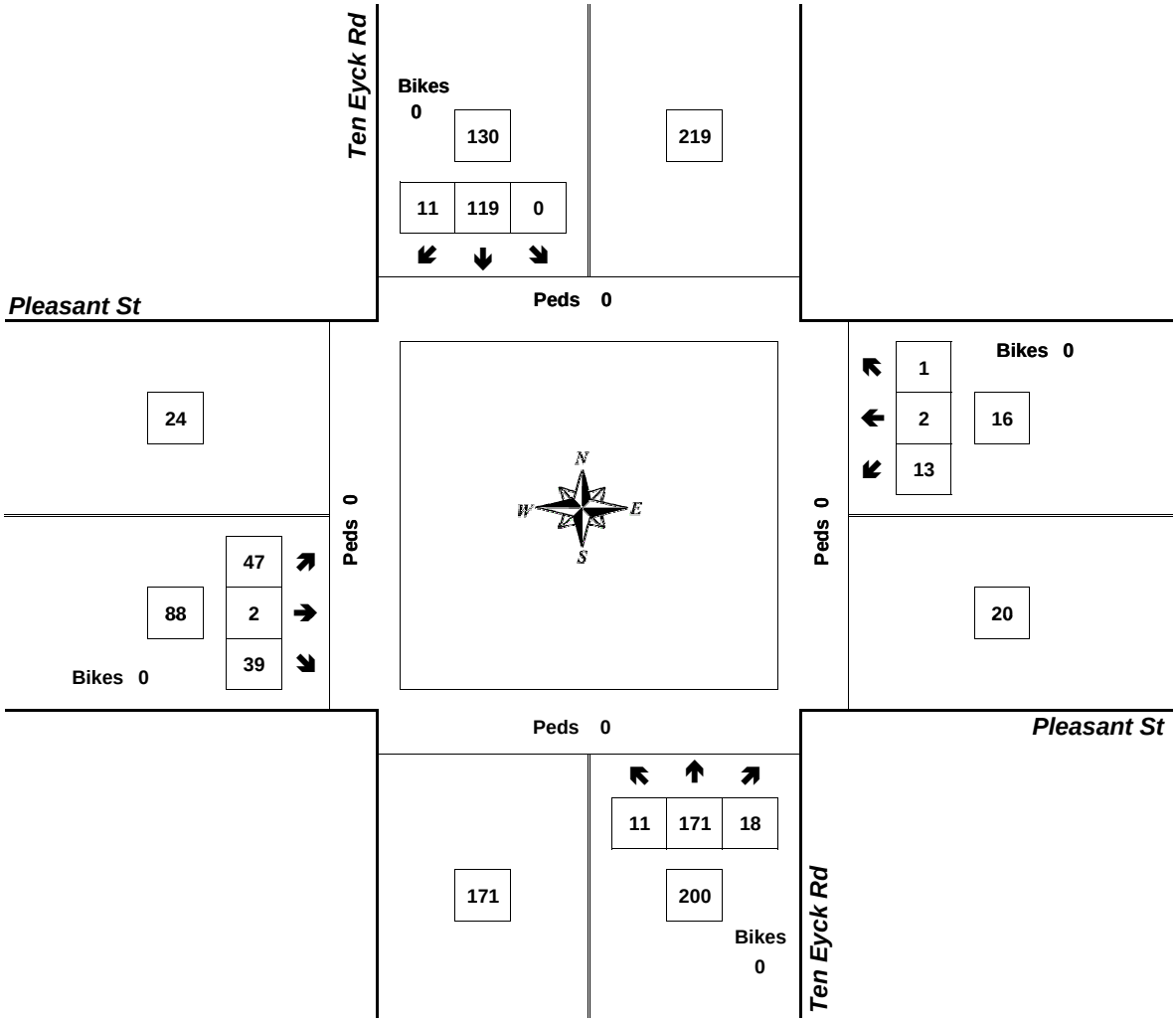
Interval Start Time	Northbound Ten Eyck Rd				Southbound Ten Eyck Rd				Eastbound Pleasant St				Westbound Pleasant St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	3	0	3	0	4	1	5	0	0	0	0	0	0	0	0	8
4:15 PM	0	3	0	3	0	2	1	3	0	0	0	0	0	0	0	0	6
4:30 PM	0	3	0	3	0	1	1	2	0	0	0	0	0	0	0	0	5
4:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:00 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

Ten Eyck Rd & Pleasant St

4:25 PM to 5:25 PM
Wednesday, February 19, 2020



Approach	PHF	HV%	Volume
EB	0.81	0.0%	88
WB	0.50	0.0%	16
NB	0.77	1.5%	200
SB	0.81	1.5%	130
Intersection	0.88	1.2%	434

Count Period: 4:00 PM to 6:00 PM

Mt. Hood Highway No. 26 (US 26) **ODOT TVT Data**

MP	Location	2013	2014	2015	2016	2017	2018
24.59	EB, just west of Ten Eyck Rd	12,500	12,600	11,200	11,500	11,400	12,500
24.61	WB, just west of Ten Eyck Rd	11,600	11,700	11,700	12,100	12,000	12,600
25.10	EB+WB, just west of Langensand Rd	16,900	17,100	18,000	18,500	18,400	20,700
	Totals	41,000	41,400	40,900	42,100	41,800	45,800
	Annual Growth from 2013	n/a	1.0%	-0.1%	0.9%	0.5%	2.3%

SEASONAL TREND TABLE (Updated: 6/26/19)				
TREND	**1-Feb**	**15-Feb**	**1-Mar**	**Seasonal Trend Peak Period Factor**
COMMUTER	1.08	1.06	1.04	0.94
RECREATIONAL SUMMER WINTER	1.02	1.04	1.05	0.70
SUMMER	1.24	1.21	1.15	0.83

***Seasonal Trend Table factors are based on previous year ATR data. The table is updated yearly.**
***Grey shading indicates months were seasonal factor is greater than 30%.**

Commuter, Recreational Summer-Winter, & Summer	1.11	0.83	
	1.34		*<< Over 30%, so too high to be used*
Commuter & Summer	1.14	0.89	
	1.28		*<< This is an approved blend of trends, so this one is used.*
Recreational Summer-Winter only	1.04	0.70	
	1.49		*<< Over 30%, so too high to be used*
Commuter & Recreational Summer-Winter	1.05	0.82	
	1.28		*<< This is not an approved blend of trends, but it validates the number used above.*

Appendix B

Trip Generation Calculations

Detailed Land Use Data

For 9.6 1000 Sq. Ft. GFA of CLINIC 1

(630) Clinic

Open Date: 3/3/2020

Project: Sandy Medical Clinic

Analysis Date: 3/3/2020

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips	366	0	38.16	25.25	86.21	30.18	21	50	50	False		
Source : Trip Generation Manual 10th Edition												
Weekday AM Peak Hour of Adjacent Street Traffic	35	0	3.69	2.27	9.36	2.82	21	78	22	False		
Source : Trip Generation Manual 10th Edition												
Weekday PM Peak Hour of Adjacent Street Traffic	31	0	3.28	1.93	7	1.84	18	29	71	False	Ln(T) = 0.72 Ln(X) + 1.97	0.7
Source : Trip Generation Manual 10th Edition												

Detailed Land Use Data

For 6.3 1000 Sq. Ft. GFA of WAREHOUSE 1

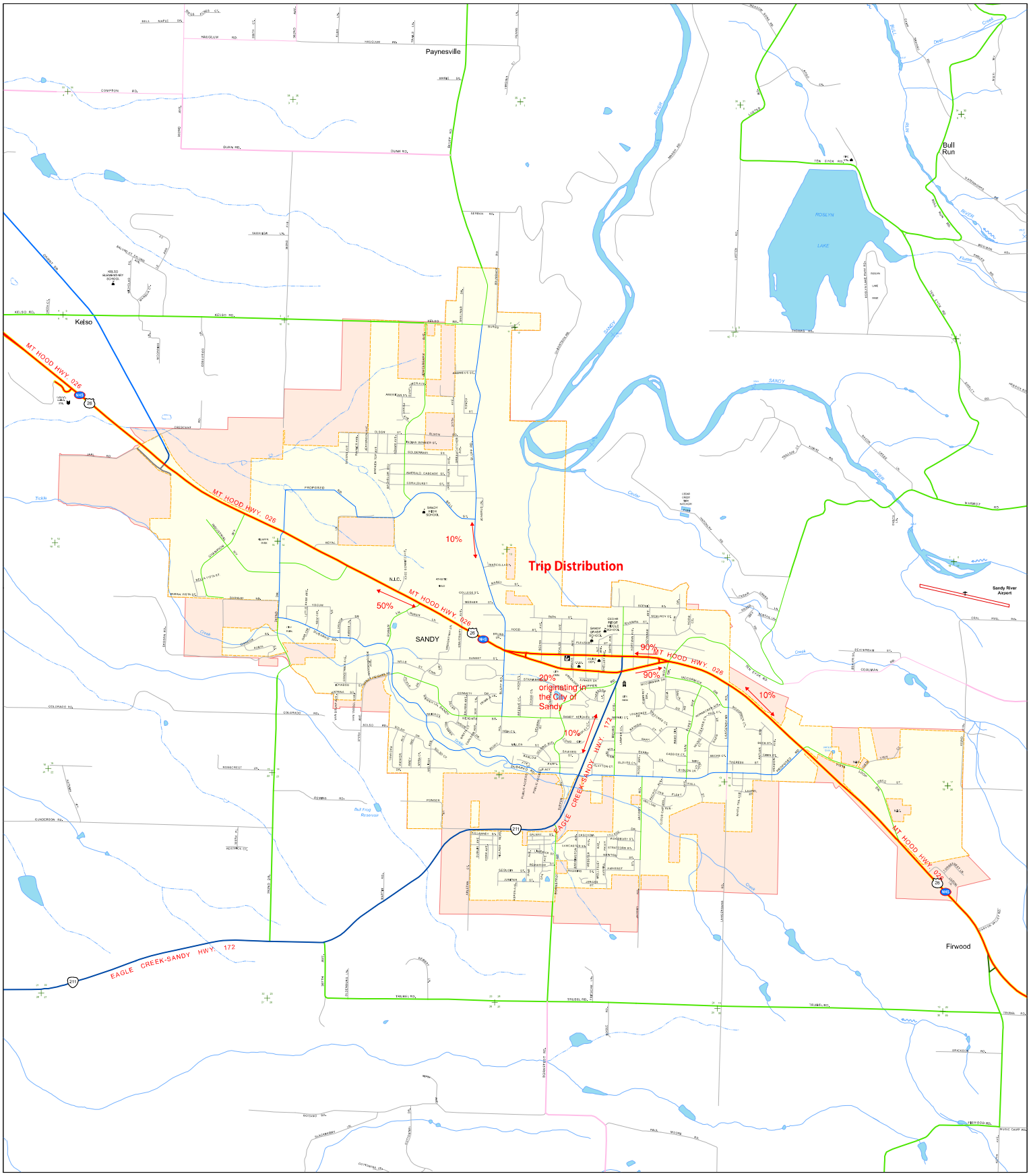
(150) Warehousing

Open Date: 3/3/2020

Project: Sandy Medical Clinic

Analysis Date: 3/3/2020

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips	11	0	1.74	0.15	16.93	1.55	285	50	50	False	T = 1.58(X) + 45.54	0.93
Source : Trip Generation Manual 10th Edition												
Weekday AM Peak Hour of Adjacent Street Traffic	1	0	0.17	0.02	1.93	0.2	451	77	23	False	T = 0.12(X) + 25.32	0.69
Source : Trip Generation Manual 10th Edition												
Weekday PM Peak Hour of Adjacent Street Traffic	1	0	0.19	0.01	1.8	0.18	400	27	73	False	T = 0.12(X) + 27.82	0.65
Source : Trip Generation Manual 10th Edition												



LEGEND

FUNCTIONAL CLASSIFICATION — STATE HWY / OTHER JURISDICTION

FOR FURTHER FUNCTIONAL CLASSIFICATION INFORMATION, CONTACT ODOT REGION OFFICE.

- INTERSTATE
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- LOCAL ROAD
- INTERSTATE - US. ROUTE - ORE. ROUTE
- NATIONAL HIGHWAY SYSTEM ROUTE
- CITY LIMIT
- URBAN GROWTH BOUNDARY
- RAILROAD - AMTRAK PASSENGER STATION
- GRAVEL PIT - QUARRY - ODOT STOCKPILE
- ODOT MAINTENANCE STATION
- PUBLIC BUILDING
- COURTHOUSE
- HOSPITAL
- CITY HALL
- ARMORY
- POST OFFICE
- SCHOOL
- LIBRARY
- SAFETY REST AREA
- WEIGH STATION
- PARK & RIDE LOCATION
- INTERCITY - CITY TRANSIT
- COMMERCIAL - GENERAL AVIATION
- PORT FACILITY

Published by

PREPARED DIGITALLY BY THE OREGON DEPARTMENT OF TRANSPORTATION IN COOPERATION WITH THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

NORTH

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SCALE

0 950 1,900 3,800 Feet

0 245 490 980 Meters

SANDY
POPULATION 10,990

T. 2-3 S. R. 4-5 E. W.M.

OREGON TRANSPORTATION MAP

Showing Federal Functional Classification of Roads
City of

SANDY

CLACKAMAS COUNTY
2019 Edition

PARK & RIDE · INTERBUS · AMTRAK
AVAILABLE TRANSPORTATION SERVICES SHOWN WITH YELLOW BACKGROUND

PORT · AIRPORT · COMM. AIR
AVAILABLE TRANSPORTATION SERVICES SHOWN WITH YELLOW BACKGROUND

Digital copies available from the Oregon Department of Transportation, Geographic Information Services Unit, https://www.oregon.gov/ODOT/Data/Pages/Maps.aspx. Email ODOTmaps@odot.state.or.us or write GIS Unit, Mill Creek Office Building, 555 13th St. NE, Salem, Oregon 97301
Population numbers are based on current Oregon Population Report, College of Urban and Public Affairs, Portland State University, https://pdx.edu/prc

John A. Manix

From: Wilson, James <jwilson2@clackamas.us>
Sent: Tuesday, February 18, 2020 3:18 PM
To: John A. Manix
Cc: Cockrell, Deborah; Kelly, Steve
Subject: RE: PBS Engineers - Traffic Study Question(s)

Hi John
Here are estimates for staff members:

25% trips originate from within the City limits of Sandy
50% trips originate from the west of Sandy
8% trips originate from the north of Sandy
8% trips originate from the east of Sandy
9% trips originate from the south of Sandy

James

From: John A. Manix <Manix@pbsusa.com>
Sent: Tuesday, February 18, 2020 10:52 AM
To: Wilson, James <jwilson2@clackamas.us>
Cc: Cockrell, Deborah <DCockrell@clackamas.us>; Kelly, Steve <SteveKel@clackamas.us>
Subject: RE: PBS Engineers - Traffic Study Question(s)

James: This is good. Thank you

I will assume that the origin of staff trips will be about the same. If you have anything similar for staff trips that will be helpful.

John Manix, PE | Senior Traffic Engineer | PBS Vancouver | 360.607.1854 (cell)

From: Wilson, James <jwilson2@clackamas.us>
Sent: Tuesday, February 18, 2020 10:36 AM
To: John A. Manix <Manix@pbsusa.com>
Cc: Cockrell, Deborah <DCockrell@clackamas.us>; Kelly, Steve <SteveKel@clackamas.us>
Subject: RE: PBS Engineers - Traffic Study Question(s)

Hi John
Here are estimates of where patients and clients of the new clinic will originate.
These are based on current patient demographics, information from the Health Resources and Services Administration (HRSA), and information from Medicaid / Oregon Health Plan insurance networks.

If you need anything more, please let me know.

45% trips originate from within the City limits of Sandy
8% trips originate from the west of Sandy (Kelso, Boring)
5% trips originate from the north of Sandy
12% trips originate from the east of Sandy (Mt Hood Village, and Mountain Communities)
30% trips originate from the south of Sandy (Estacada / Eagle Creek)

Have a great morning
James

JAMES WILSON
CHIEF OPERATIONS OFFICER
CLACKAMAS HEALTH CENTERS
503-655-8697

From: Cockrell, Deborah <DCockrell@clackamas.us>
Sent: Tuesday, February 18, 2020 9:30 AM
To: Wilson, James <jwilson2@clackamas.us>
Subject: FW: PBS Engineers - Traffic Study Question(s)

FYI data needed

From: John A. Manix [mailto:Manix@pbsusa.com]
Sent: Tuesday, February 18, 2020 8:39 AM
To: Cockrell, Deborah <DCockrell@clackamas.us>
Subject: RE: PBS Engineers - Traffic Study Question(s)

Deborah: I understand the data will not be easy to produce. If you or the staff can give me a rough estimate of the origin of patrons and/or staff, I would appreciate the effort. It would be best to revise my estimate below in the February 13, 2020 email.

John Manix, PE | Senior Traffic Engineer | PBS Vancouver | 360.607.1854 (cell)

From: Cockrell, Deborah <DCockrell@clackamas.us>
Sent: Monday, February 17, 2020 12:42 PM
To: John A. Manix <Manix@pbsusa.com>
Cc: Kelly, Steve <SteveKel@clackamas.us>; Wilson, James <jwilson2@clackamas.us>
Subject: RE: PBS Engineers - Traffic Study Question(s)

Unfortunately this data will not be easy to produce. We will have to survey staff. JAMES: Can you pull this data for us?
Also, dental is the only new traffic. BH and PC already have a presence in Sandy

---

From: John A. Mani]
Sent: Thursday, February 13, 2020 8:59 AM
To: Cockrell, Deborah <DCockrell@clackamas.us>
Cc: Kelly, Steve <SteveKel@clackamas.us>
Subject: RE: PBS Engineers - Traffic Study Question(s)

Deborah: Thank you. This is good information but more important is the were in the community do the trips to your clinic come from. Please edit my estimate below based on your experience.

For example do most patients and staff live in the Sandy or do they live north, east, west or south of town. This is not an exact process but based on residential density and my experience with the community, here is my estimate:

50% trips originate from within the City limits of Sandy,
10% trips originate from the west of Sandy
10% trips originate from the north of Sandy
20% trips originate from the east of Sandy
10% trips originate from the south of Sandy

For the proposed clinic at Hwy 26 and Ten Eyke Road, I need to know which direction the staff and patience approach the clinic. Feel free to call if you have questions.

Thanks

John Manix, PE
Senior Traffic Engineer

PBS
415 W 6th St., Suite 601, Vancouver, WA 98660
office: 360.695.3488 | direct: 360.567.2117 | cell: 360.607.1854
john.manix@pbsusa.com
pbsusa.com

From: Kelly, Steve <SteveKel@clackamas.us>
Sent: Wednesday, February 12, 2020 1:20 PM
To: John A. Manix <Manix@pbsusa.com>
Subject: FW: PBS Engineers - Traffic Study Question(s)

John,
Here is what I got from the Director of all of County Health Clinics.
See below, sir.

Steve Kelly, Project Coordinator
Clackamas County Community Development
2051 Kaen Road, Suite 245
Oregon City, OR 97045

503 . 650 . 5665
stevekel@clackamas.us

From: Cockrell, Deborah <DCockrell@clackamas.us>
Sent: Tuesday, February 11, 2020 1:08 PM
To: Kelly, Steve <SteveKel@clackamas.us>
Subject: RE: PBS Engineers - Traffic Study Question(s)

MD will see 18 people per day, 4 days a week.
DMD will see 14 people per day, 4 days a week.
Probably 40 people per day for the therapists.

From: Kelly, Steve
Sent: Tuesday, February 11, 2020 11:33 AM
To: Cockrell, Deborah <DCockrell@clackamas.us>
Subject: PBS Engineers - Traffic Study Question(s)
Importance: High

John Manix of PBS.

Wants to know if we have information of any kind that determines visitors (patients) that are driven to the sites in Sandy. He would need them if they are available for counts for vehicular usage to both clinic sites presently (high school and other location). I am assuming someone else has these numbers or data.

He is getting me a letter with a price today he said.
I will provide him our Professional Services Contract and use his letter as an Exhibit A.

Thanks.

Steve Kelly, Project Coordinator
Clackamas County Community Development
2051 Kaen Road, Suite 245
Oregon City, OR 97045

503 . 650 . 5665
stevekel@clackamas.us

Appendix C
Level of Service Calculations

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2020 Existing Conditions	Weekday AM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	59	904	0	1034	152	69
Sat Flow (veh/h)	1589	2988	1667	3269	1469	1618
Critical Flow Ratios	0.04	0.30	0.00	0.32	0.10	0.04
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.46	
Cycle Length	64.4	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.56

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2022 Without Project	Weekday AM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	61	940	0	1076	157	70
Sat Flow (veh/h)	1589	2988	1641	3269	1444	1593
Critical Flow Ratios	0.04	0.31	0.00	0.33	0.11	0.04
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.48	
Cycle Length	69.3	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.58

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2022 With Project Trips	Weekday AM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	87	940	0	1080	157	73
Sat Flow (veh/h)	1589	2988	1641	3267	1447	1595
Critical Flow Ratios	0.05	0.31	0.00	0.33	0.11	0.05
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.49	
Cycle Length	71.7	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.59

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2029 Without Project	Weekday AM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	70	1067	0	1222	179	75
Sat Flow (veh/h)	1589	2988	1641	3268	1438	1604
Critical Flow Ratios	0.04	0.36	0.00	0.37	0.12	0.05
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.54	
Cycle Length	76.8	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.64

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2029 With Project Trips	Weekday AM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	96	1067	0	1225	179	76
Sat Flow (veh/h)	1589	2988	1641	3266	1439	1606
Critical Flow Ratios	0.06	0.36	0.00	0.38	0.12	0.05
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.56	
Cycle Length	78.3	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.66

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2029 With Project Trips with WB Right-Turn Lane	Weekday AM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBT	NBLTR	SBLTR
Adj Flow Rate (veh/h)	96	1067	0	1202	179	78
Sat Flow (veh/h)	1589	2988	1641	3195	1440	1604
Critical Flow Ratios	0.06	0.36	0.00	0.38	0.12	0.05
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.56	
Cycle Length	77.3	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.66

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2020 Existing Conditions	Weekday PM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	161	1165	5	1216	154	114
Sat Flow (veh/h)	1654	3247	1667	3272	1219	1587
Critical Flow Ratios	0.10	0.36	0.00	0.37	0.13	0.07
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.60	
Cycle Length	110	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.67

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2022 Without Project	Weekday PM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	167	1212	5	1265	161	127
Sat Flow (veh/h)	1641	3247	1641	3271	1174	1575
Critical Flow Ratios	0.10	0.37	0.00	0.39	0.14	0.08
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.63	
Cycle Length	110	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.70

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2022 With Project Trips	Weekday PM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	176	1212	5	1266	161	143
Sat Flow (veh/h)	1641	3247	1641	3270	1121	1577
Critical Flow Ratios	0.11	0.37	0.00	0.39	0.14	0.09
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.64	
Cycle Length	110	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.72

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2029 Without Project	Weekday PM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	189	1374	6	1435	183	149
Sat Flow (veh/h)	1641	3247	1641	3271	1119	1578
Critical Flow Ratios	0.12	0.42	0.00	0.44	0.16	0.09
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.72	
Cycle Length	110	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.81

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2029 With Project Trips	Weekday PM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBTR	NBLTR	SBLTR
Adj Flow Rate (veh/h)	198	1374	6	1436	183	163
Sat Flow (veh/h)	1630	3228	1630	3160	1065	1587
Critical Flow Ratios	0.12	0.43	0.00	0.45	0.17	0.10
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.75	
Cycle Length	110	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.84

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

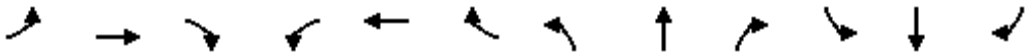
Critical Intersection Volume-to-Capacity Ratio	
Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)	
2029 With Project Trips with WB Right-Turn Lane	Weekday PM Peak Hour

	EB		WB		NB	SB
Lane Group	EBL	EBT	WBL	WBT	NBLTR	SBLTR
Adj Flow Rate (veh/h)	198	1374	6	1416	183	163
Sat Flow (veh/h)	1641	3247	1641	3195	1065	1587
Critical Flow Ratios	0.12	0.42	0.00	0.44	0.17	0.10
	critical			*critical*	*critical*	

Sum of Critical Flow Ratios	0.74	
Cycle Length	110	seconds
Lost Time per Phase	4	seconds
Total Lost Time	12	seconds

Critical Intersection V/C Ratio: 0.83

Method follows ODOT Analysis Procedures Manual, Version 2, Chapter 13.4.4.

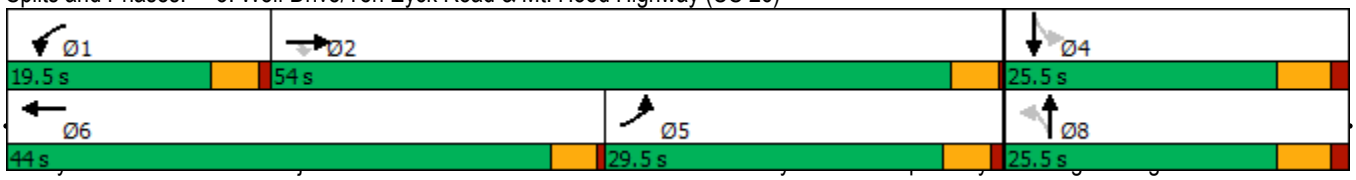


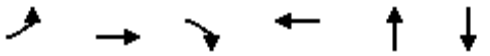
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	832	33	0	937	16	136	3	2	21	7	135
Future Volume (vph)	54	832	33	0	937	16	136	3	2	21	7	135
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00			1.00			0.99	
Frt			0.850		0.998			0.998			0.889	
Flt Protected	0.950							0.954			0.994	
Satd. Flow (prot)	1568	2942	1403	1750	3162	0	0	1604	0	0	1458	0
Flt Permitted	0.950							0.592			0.953	
Satd. Flow (perm)	1568	2942	1372	1750	3162	0	0	994	0	0	1398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77		2			1			147	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	13%	6%	0%	5%	0%	4%	0%	0%	24%	0%	2%
Adj. Flow (vph)	59	904	36	0	1018	17	148	3	2	23	8	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	904	36	0	1035	0	0	153	0	0	178	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	29.5	54.0	54.0	19.5	44.0		25.5	25.5		25.5	25.5	
Total Split (%)	29.8%	54.5%	54.5%	19.7%	44.4%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	25.0	50.0	50.0	15.0	40.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	8.3	35.2	35.2		28.3			20.5			20.5	
Actuated g/C Ratio	0.13	0.55	0.55		0.44			0.32			0.32	
v/c Ratio	0.29	0.56	0.05		0.74			0.48			0.33	
Control Delay	34.6	10.3	0.4		19.9			29.4			8.8	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	34.6	10.3	0.4		19.9			29.4			8.8	
LOS	C	B	A		B			C			A	
Approach Delay		11.4			19.9			29.4			8.8	
Approach LOS		B			B			C			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 99			
Actuated Cycle Length: 64.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)





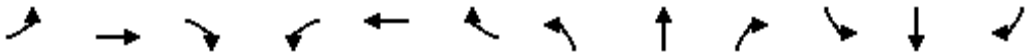
Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	59	904	36	1035	153	178
v/c Ratio	0.29	0.56	0.05	0.74	0.48	0.33
Control Delay	34.6	10.3	0.4	19.9	29.4	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	10.3	0.4	19.9	29.4	8.8
Queue Length 50th (ft)	24	112	0	200	54	10
Queue Length 95th (ft)	65	151	2	290	#142	64
Internal Link Dist (ft)		388		222	285	130
Turn Bay Length (ft)	115		100			
Base Capacity (vph)	675	2332	1103	2100	361	601
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.39	0.03	0.49	0.42	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	832	33	0	937	16	136	3	2	21	7	135
Future Volume (vph)	54	832	33	0	937	16	136	3	2	21	7	135
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.89	
Flt Protected	0.95	1.00	1.00		1.00			0.95			0.99	
Satd. Flow (prot)	1568	2942	1373		3160			1602			1458	
Flt Permitted	0.95	1.00	1.00		1.00			0.59			0.95	
Satd. Flow (perm)	1568	2942	1373		3160			994			1398	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	904	36	0	1018	17	148	3	2	23	8	147
RTOR Reduction (vph)	0	0	16	0	1	0	0	1	0	0	101	0
Lane Group Flow (vph)	59	904	20	0	1034	0	0	152	0	0	77	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	13%	6%	0%	5%	0%	4%	0%	0%	24%	0%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	4.6	37.4	37.4		28.3			18.9			18.9	
Effective Green, g (s)	5.1	37.4	37.4		28.3			20.4			20.4	
Actuated g/C Ratio	0.08	0.57	0.57		0.43			0.31			0.31	
Clearance Time (s)	4.5	4.0	4.0		4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8		5.8			2.5			2.5	
Lane Grp Cap (vph)	121	1672	780		1359			308			433	
v/s Ratio Prot	0.04	c0.31			c0.33							
v/s Ratio Perm			0.01					c0.15			0.05	
v/c Ratio	0.49	0.54	0.03		0.76			0.49			0.18	
Uniform Delay, d1	29.1	8.8	6.2		15.9			18.5			16.6	
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2	1.8	0.8	0.0		3.3			0.9			0.1	
Delay (s)	30.9	9.6	6.3		19.1			19.4			16.7	
Level of Service	C	A	A		B			B			B	
Approach Delay (s)		10.8			19.1			19.4			16.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	832	33	0	937	16	136	3	2	21	7	135
Future Volume (veh/h)	54	832	33	0	937	16	136	3	2	21	7	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1668	1750	1682	1682	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	59	904	0	0	1018	16	148	3	1	23	8	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	13	6	0	5	5	0	0	0	0	0	0
Cap, veh/h	86	2069	979	3	1853	29	350	5	2	140	59	139
Arrive On Green	0.05	0.69	0.00	0.00	0.58	0.58	0.13	0.16	0.13	0.13	0.16	0.13
Sat Flow, veh/h	1589	2988	1414	1667	3218	51	1430	29	10	349	378	891
Grp Volume(v), veh/h	59	904	0	0	505	529	152	0	0	69	0	0
Grp Sat Flow(s),veh/h/ln	1589	1494	1414	1667	1598	1671	1469	0	0	1618	0	0
Q Serve(g_s), s	2.0	7.5	0.0	0.0	11.0	11.0	3.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	7.5	0.0	0.0	11.0	11.0	5.5	0.0	0.0	2.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.97		0.01	0.33		0.55
Lane Grp Cap(c), veh/h	86	2069	979	3	920	963	316	0	0	294	0	0
V/C Ratio(X)	0.69	0.44	0.00	0.00	0.55	0.55	0.48	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	725	2673	1265	462	1144	1196	633	0	0	635	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.0	3.8	0.0	0.0	7.4	7.4	22.8	0.0	0.0	21.4	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.5	0.0	0.0	1.7	1.6	0.8	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.5	0.0	0.0	3.3	3.5	2.0	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	4.3	0.0	0.0	9.0	8.9	23.7	0.0	0.0	21.7	0.0	0.0
LnGrp LOS	C	A	A	A	A	A	C	A	A	C	A	A
Approach Vol, veh/h		963			1034			152			69	
Approach Delay, s/veh		6.0			9.0			23.7			21.7	
Approach LOS		A			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	43.2		12.7	7.0	36.2		12.7				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	15.0	* 50		20.0	25.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	0.0	9.5		4.2	4.0	13.0		7.5				
Green Ext Time (p_c), s	0.0	23.0		0.2	0.1	19.2		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

Notes

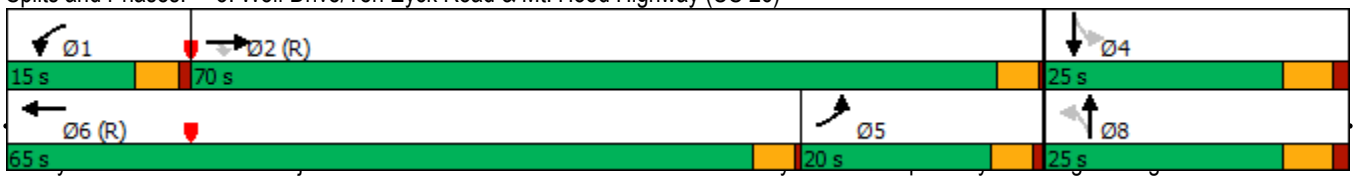
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	1095	134	5	1128	16	116	24	7	38	23	100
Future Volume (vph)	151	1095	134	5	1128	16	116	24	7	38	23	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00			1.00			0.99	
Frt			0.850		0.998			0.994			0.916	
Flt Protected	0.950			0.950				0.962			0.988	
Satd. Flow (prot)	1646	3228	1488	1662	3161	0	0	1639	0	0	1553	0
Flt Permitted	0.950			0.950				0.548			0.910	
Satd. Flow (perm)	1645	3228	1454	1662	3161	0	0	930	0	0	1431	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		2			2			67	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)	2		1	1		2	5					5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	3%	0%	0%	5%	0%	1%	8%	0%	0%	0%	1%
Adj. Flow (vph)	161	1165	143	5	1200	17	123	26	7	40	24	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	1165	143	5	1217	0	0	156	0	0	170	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	20.0	70.0	70.0	15.0	65.0		25.0	25.0		25.0	25.0	
Total Split (%)	18.2%	63.6%	63.6%	13.6%	59.1%		22.7%	22.7%		22.7%	22.7%	
Maximum Green (s)	15.5	66.0	66.0	10.5	61.0		19.5	19.5		19.5	19.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	15.0	76.5	76.5	5.8	59.7			23.3			23.3	
Actuated g/C Ratio	0.14	0.70	0.70	0.05	0.54			0.21			0.21	
v/c Ratio	0.72	0.52	0.14	0.06	0.71			0.78			0.48	
Control Delay	63.6	9.5	2.8	50.6	22.2			68.1			27.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	63.6	9.5	2.8	50.6	22.2			68.1			27.7	
LOS	E	A	A	D	C			E			C	
Approach Delay		14.8			22.3			68.1			27.7	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	161	1165	143	5	1217	156	170
v/c Ratio	0.72	0.52	0.14	0.06	0.71	0.78	0.48
Control Delay	63.6	9.5	2.8	50.6	22.2	68.1	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.6	9.5	2.8	50.6	22.2	68.1	27.7
Queue Length 50th (ft)	109	205	11	3	366	97	58
Queue Length 95th (ft)	#182	280	35	16	396	#233	136
Internal Link Dist (ft)		388			222	285	130
Turn Bay Length (ft)	115		100	105			
Base Capacity (vph)	248	2246	1040	166	1799	202	361
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.52	0.14	0.03	0.68	0.77	0.47

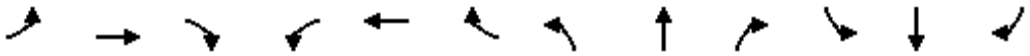
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	1095	134	5	1128	16	116	24	7	38	23	100
Future Volume (vph)	151	1095	134	5	1128	16	116	24	7	38	23	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.99			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1646	3228	1454	1662	3161			1632			1554	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.55			0.91	
Satd. Flow (perm)	1646	3228	1454	1662	3161			930			1430	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	161	1165	143	5	1200	17	123	26	7	40	24	106
RTOR Reduction (vph)	0	0	32	0	1	0	0	2	0	0	53	0
Lane Group Flow (vph)	161	1165	111	5	1216	0	0	154	0	0	117	0
Confl. Peds. (#/hr)	2		1	1		2	5					5
Heavy Vehicles (%)	1%	3%	0%	0%	5%	0%	1%	8%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	18.0	73.0	73.0	1.2	56.2			21.8			21.8	
Effective Green, g (s)	18.5	73.0	73.0	1.7	56.2			23.3			23.3	
Actuated g/C Ratio	0.17	0.66	0.66	0.02	0.51			0.21			0.21	
Clearance Time (s)	4.5	4.0	4.0	4.5	4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8			2.5			2.5	
Lane Grp Cap (vph)	276	2142	964	25	1614			196			302	
v/s Ratio Prot	0.10	c0.36		0.00	c0.38							
v/s Ratio Perm			0.08					c0.17			0.08	
v/c Ratio	0.58	0.54	0.12	0.20	0.75			0.79			0.39	
Uniform Delay, d1	42.2	9.7	6.7	53.5	21.4			41.0			37.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.4	1.0	0.2	2.3	3.3			18.0			0.6	
Delay (s)	44.6	10.7	7.0	55.8	24.7			59.0			37.8	
Level of Service	D	B	A	E	C			E			D	
Approach Delay (s)		14.1			24.8			59.0			37.8	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



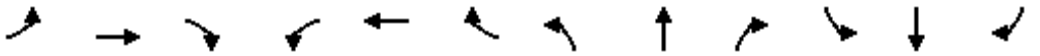
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	1095	134	5	1128	16	116	24	7	38	23	100
Future Volume (veh/h)	151	1095	134	5	1128	16	116	24	7	38	23	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1736	1709	1750	1750	1682	1682	1641	1641	1641	1750	1750	1750
Adj Flow Rate, veh/h	161	1165	112	5	1200	16	123	26	5	40	24	50
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	3	0	0	5	5	8	8	8	0	0	0
Cap, veh/h	375	2335	1065	16	1636	22	210	35	6	112	73	110
Arrive On Green	0.23	0.72	0.72	0.01	0.51	0.51	0.14	0.16	0.14	0.14	0.16	0.14
Sat Flow, veh/h	1654	3247	1481	1667	3229	43	958	221	40	432	464	700
Grp Volume(v), veh/h	161	1165	112	5	594	622	154	0	0	114	0	0
Grp Sat Flow(s),veh/h/ln	1654	1624	1481	1667	1598	1674	1219	0	0	1596	0	0
Q Serve(g_s), s	9.2	17.3	2.5	0.3	32.1	32.1	6.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.2	17.3	2.5	0.3	32.1	32.1	13.8	0.0	0.0	7.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.80		0.03	0.35		0.44
Lane Grp Cap(c), veh/h	375	2335	1065	16	810	848	234	0	0	274	0	0
V/C Ratio(X)	0.43	0.50	0.11	0.31	0.73	0.73	0.66	0.00	0.00	0.42	0.00	0.00
Avail Cap(c_a), veh/h	375	2335	1065	167	886	928	278	0	0	324	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.5	6.8	4.7	54.1	21.3	21.3	45.7	0.0	0.0	42.6	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.8	0.2	6.4	5.8	5.6	3.6	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	5.6	0.8	0.2	13.0	13.6	4.4	0.0	0.0	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	7.5	4.9	60.5	27.1	26.9	49.3	0.0	0.0	43.3	0.0	0.0
LnGrp LOS	D	A	A	E	C	C	D	A	A	D	A	A
Approach Vol, veh/h		1438			1221			154			114	
Approach Delay, s/veh		10.6			27.1			49.3			43.3	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	83.6		21.3	28.9	59.8		21.3				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	10.5	* 66		19.5	15.5	61.0		19.5				
Max Q Clear Time (g_c+I1), s	2.3	19.3		9.2	11.2	34.1		15.8				
Green Ext Time (p_c), s	0.0	34.8		0.3	0.2	21.7		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

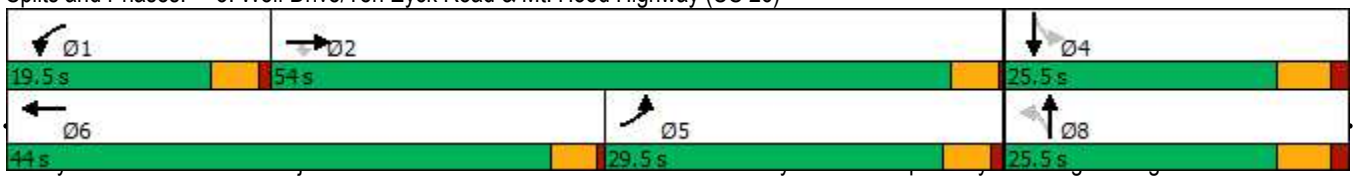


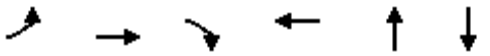
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	865	34	0	974	17	141	3	2	22	7	140
Future Volume (vph)	56	865	34	0	974	17	141	3	2	22	7	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00			1.00			0.99	
Frt			0.850		0.997			0.998			0.888	
Flt Protected	0.950							0.954			0.994	
Satd. Flow (prot)	1568	2942	1403	1716	3158	0	0	1603	0	0	1454	0
Flt Permitted	0.950							0.572			0.951	
Satd. Flow (perm)	1568	2942	1372	1716	3158	0	0	959	0	0	1391	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77		2			1			152	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Adj. Flow (vph)	61	940	37	0	1059	18	153	3	2	24	8	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	940	37	0	1077	0	0	158	0	0	184	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	29.5	54.0	54.0	19.5	44.0		25.5	25.5		25.5	25.5	
Total Split (%)	29.8%	54.5%	54.5%	19.7%	44.4%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	25.0	50.0	50.0	15.0	40.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	8.3	39.6	39.6		30.0			21.2			21.2	
Actuated g/C Ratio	0.12	0.57	0.57		0.43			0.31			0.31	
v/c Ratio	0.32	0.56	0.05		0.79			0.54			0.35	
Control Delay	36.8	10.1	0.4		22.3			33.3			9.1	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	36.8	10.1	0.4		22.3			33.3			9.1	
LOS	D	B	A		C			C			A	
Approach Delay		11.3			22.3			33.3			9.1	
Approach LOS		B			C			C			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 99			
Actuated Cycle Length: 69.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 66.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)





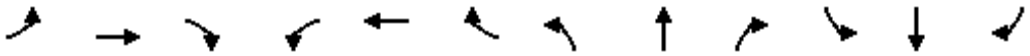
Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	61	940	37	1077	158	184
v/c Ratio	0.32	0.56	0.05	0.79	0.54	0.35
Control Delay	36.8	10.1	0.4	22.3	33.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	10.1	0.4	22.3	33.3	9.1
Queue Length 50th (ft)	26	118	0	213	59	10
Queue Length 95th (ft)	67	160	2	309	#160	65
Internal Link Dist (ft)		388		222	285	130
Turn Bay Length (ft)	115		100			
Base Capacity (vph)	613	2189	1040	1940	317	560
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.04	0.56	0.50	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	865	34	0	974	17	141	3	2	22	7	140
Future Volume (vph)	56	865	34	0	974	17	141	3	2	22	7	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.89	
Flt Protected	0.95	1.00	1.00		1.00			0.95			0.99	
Satd. Flow (prot)	1568	2942	1373		3159			1601			1456	
Flt Permitted	0.95	1.00	1.00		1.00			0.57			0.95	
Satd. Flow (perm)	1568	2942	1373		3159			960			1394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	940	37	0	1059	18	153	3	2	24	8	152
RTOR Reduction (vph)	0	0	15	0	1	0	0	1	0	0	106	0
Lane Group Flow (vph)	61	940	22	0	1076	0	0	157	0	0	78	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	6.2	40.7	40.7		30.0			19.6			19.6	
Effective Green, g (s)	6.7	40.7	40.7		30.0			21.1			21.1	
Actuated g/C Ratio	0.10	0.58	0.58		0.43			0.30			0.30	
Clearance Time (s)	4.5	4.0	4.0		4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8		5.8			2.5			2.5	
Lane Grp Cap (vph)	150	1715	800		1357			290			421	
v/s Ratio Prot	0.04	c0.32			c0.34							
v/s Ratio Perm			0.02					c0.16			0.06	
v/c Ratio	0.41	0.55	0.03		0.79			0.54			0.19	
Uniform Delay, d1	29.7	8.9	6.2		17.2			20.3			18.0	
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2	1.0	0.8	0.0		3.9			1.6			0.2	
Delay (s)	30.7	9.7	6.2		21.1			22.0			18.2	
Level of Service	C	A	A		C			C			B	
Approach Delay (s)		10.8			21.1			22.0			18.2	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	865	34	0	974	17	141	3	2	22	7	140
Future Volume (veh/h)	56	865	34	0	974	17	141	3	2	22	7	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1668	1723	1682	1682	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	61	940	1	0	1059	17	153	3	1	24	8	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	13	6	2	5	5	2	2	2	2	2	2
Cap, veh/h	88	2069	978	3	1854	30	349	4	1	140	61	139
Arrive On Green	0.06	0.69	0.69	0.00	0.58	0.58	0.13	0.16	0.13	0.13	0.16	0.13
Sat Flow, veh/h	1589	2988	1413	1641	3217	52	1407	28	9	350	378	865
Grp Volume(v), veh/h	61	940	1	0	526	550	157	0	0	70	0	0
Grp Sat Flow(s),veh/h/ln	1589	1494	1413	1641	1598	1671	1444	0	0	1594	0	0
Q Serve(g_s), s	2.2	8.1	0.0	0.0	12.0	12.0	3.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	8.1	0.0	0.0	12.0	12.0	6.0	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.97		0.01	0.34		0.54
Lane Grp Cap(c), veh/h	88	2069	978	3	921	963	317	0	0	298	0	0
V/C Ratio(X)	0.69	0.45	0.00	0.00	0.57	0.57	0.50	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	702	2590	1225	441	1108	1159	606	0	0	609	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.8	4.0	2.7	0.0	7.7	7.7	23.4	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	5.8	0.5	0.0	0.0	1.8	1.7	0.9	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.7	0.0	0.0	3.7	3.9	2.1	0.0	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	4.5	2.7	0.0	9.5	9.4	24.3	0.0	0.0	22.2	0.0	0.0
LnGrp LOS	C	A	A	A	A	A	C	A	A	C	A	A
Approach Vol, veh/h		1002			1076			157			70	
Approach Delay, s/veh		6.2			9.5			24.3			22.2	
Approach LOS		A			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	44.4		13.2	7.2	37.2		13.2				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	15.0	* 50		20.0	25.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	0.0	10.1		4.3	4.2	14.0		8.0				
Green Ext Time (p_c), s	0.0	23.7		0.2	0.2	19.3		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

Notes

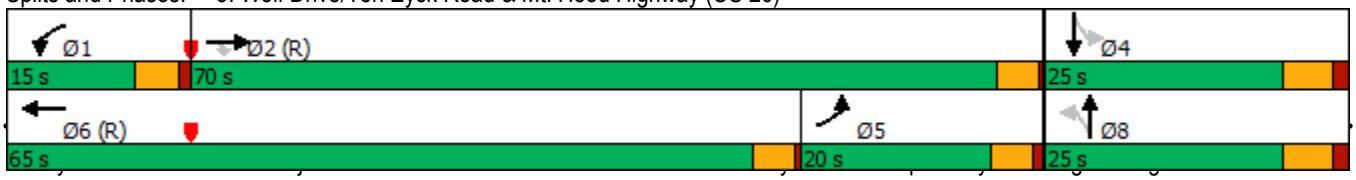
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	1139	139	5	1173	17	121	25	7	40	24	104
Future Volume (vph)	157	1139	139	5	1173	17	121	25	7	40	24	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00			1.00			0.99	
Frt			0.850		0.998			0.994			0.917	
Flt Protected	0.950			0.950				0.962			0.988	
Satd. Flow (prot)	1630	3228	1458	1630	3161	0	0	1625	0	0	1534	0
Flt Permitted	0.950			0.950				0.549			0.906	
Satd. Flow (perm)	1629	3228	1426	1629	3161	0	0	924	0	0	1407	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		2			2			65	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)	2		1	1		2	5					5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Adj. Flow (vph)	167	1212	148	5	1248	18	129	27	7	43	26	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	1212	148	5	1266	0	0	163	0	0	180	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	20.0	70.0	70.0	15.0	65.0		25.0	25.0		25.0	25.0	
Total Split (%)	18.2%	63.6%	63.6%	13.6%	59.1%		22.7%	22.7%		22.7%	22.7%	
Maximum Green (s)	15.5	66.0	66.0	10.5	61.0		19.5	19.5		19.5	19.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	15.2	74.6	74.6	5.8	57.5			25.3			25.3	
Actuated g/C Ratio	0.14	0.68	0.68	0.05	0.52			0.23			0.23	
v/c Ratio	0.74	0.55	0.15	0.06	0.77			0.76			0.48	
Control Delay	65.3	10.5	2.9	50.6	24.8			64.2			28.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	65.3	10.5	2.9	50.6	24.8			64.2			28.9	
LOS	E	B	A	D	C			E			C	
Approach Delay		15.8			24.9			64.2			28.9	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	167	1212	148	5	1266	163	180
v/c Ratio	0.74	0.55	0.15	0.06	0.77	0.76	0.48
Control Delay	65.3	10.5	2.9	50.6	24.8	64.2	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	10.5	2.9	50.6	24.8	64.2	28.9
Queue Length 50th (ft)	113	218	12	3	397	102	66
Queue Length 95th (ft)	#207	297	37	16	416	#245	147
Internal Link Dist (ft)		388			222	285	130
Turn Bay Length (ft)	115		100	105			
Base Capacity (vph)	247	2189	997	163	1758	214	373
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.55	0.15	0.03	0.72	0.76	0.48

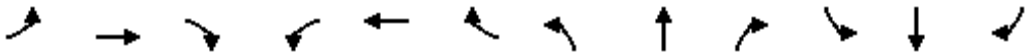
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	1139	139	5	1173	17	121	25	7	40	24	104
Future Volume (vph)	157	1139	139	5	1173	17	121	25	7	40	24	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.99			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1630	3228	1426	1630	3160			1618			1534	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.55			0.91	
Satd. Flow (perm)	1630	3228	1426	1630	3160			924			1406	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	167	1212	148	5	1248	18	129	27	7	43	26	111
RTOR Reduction (vph)	0	0	34	0	1	0	0	2	0	0	50	0
Lane Group Flow (vph)	167	1212	114	5	1265	0	0	161	0	0	130	0
Confl. Peds. (#/hr)	2		1	1		2	5					5
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	18.3	71.0	71.0	1.2	53.9			23.8			23.8	
Effective Green, g (s)	18.8	71.0	71.0	1.7	53.9			25.3			25.3	
Actuated g/C Ratio	0.17	0.65	0.65	0.02	0.49			0.23			0.23	
Clearance Time (s)	4.5	4.0	4.0	4.5	4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8			2.5			2.5	
Lane Grp Cap (vph)	278	2083	920	25	1548			212			323	
v/s Ratio Prot	0.10	c0.38		0.00	c0.40							
v/s Ratio Perm			0.08					c0.17			0.09	
v/c Ratio	0.60	0.58	0.12	0.20	0.82			0.76			0.40	
Uniform Delay, d1	42.1	11.1	7.5	53.5	23.9			39.5			35.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.8	1.2	0.3	2.3	4.9			14.3			0.6	
Delay (s)	45.0	12.3	7.8	55.8	28.8			53.8			36.5	
Level of Service	D	B	A	E	C			D			D	
Approach Delay (s)		15.4			28.9			53.8			36.5	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



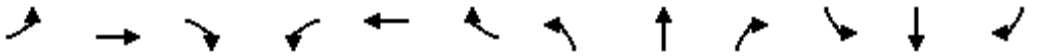
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	1139	139	5	1173	17	121	25	7	40	24	104
Future Volume (veh/h)	157	1139	139	5	1173	17	121	25	7	40	24	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1709	1723	1723	1682	1682	1641	1641	1641	1723	1723	1723
Adj Flow Rate, veh/h	167	1212	116	5	1248	17	129	27	5	43	26	58
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	3	2	2	5	5	8	8	8	2	2	2
Cap, veh/h	339	2299	1032	16	1665	23	215	36	6	114	74	121
Arrive On Green	0.21	0.71	0.71	0.01	0.52	0.52	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	1641	3247	1458	1641	3227	44	924	214	36	414	442	719
Grp Volume(v), veh/h	167	1212	116	5	618	647	161	0	0	127	0	0
Grp Sat Flow(s),veh/h/ln	1641	1624	1458	1641	1598	1674	1174	0	0	1574	0	0
Q Serve(g_s), s	9.9	19.1	2.8	0.3	33.6	33.6	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.9	19.1	2.8	0.3	33.6	33.6	15.0	0.0	0.0	8.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.80		0.03	0.34		0.46
Lane Grp Cap(c), veh/h	339	2299	1032	16	824	864	241	0	0	288	0	0
V/C Ratio(X)	0.49	0.53	0.11	0.31	0.75	0.75	0.67	0.00	0.00	0.44	0.00	0.00
Avail Cap(c_a), veh/h	339	2299	1032	164	886	928	270	0	0	320	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	38.6	7.5	5.1	54.1	21.0	21.0	45.3	0.0	0.0	41.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.9	0.2	6.7	6.2	5.9	4.7	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	6.3	0.9	0.2	13.6	14.2	4.7	0.0	0.0	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	8.3	5.3	60.8	27.2	26.9	50.0	0.0	0.0	42.7	0.0	0.0
LnGrp LOS	D	A	A	E	C	C	D	A	A	D	A	A
Approach Vol, veh/h		1495			1270			161			127	
Approach Delay, s/veh		11.6			27.2			50.0			42.7	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	82.4		22.5	26.7	60.8		22.5				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	10.5	* 66		19.5	15.5	61.0		19.5				
Max Q Clear Time (g_c+I1), s	2.3	21.1		10.1	11.9	35.6		17.0				
Green Ext Time (p_c), s	0.0	34.9		0.3	0.2	21.2		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

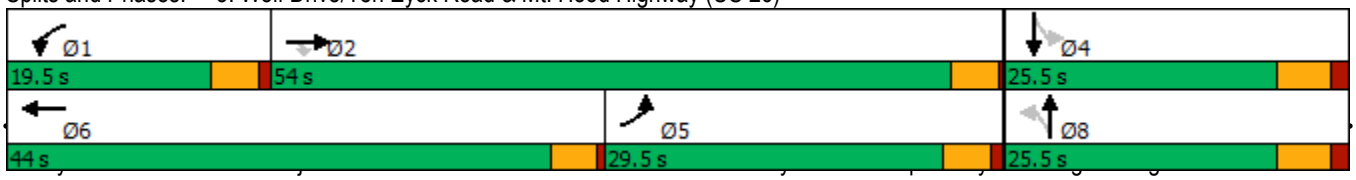


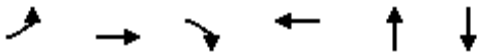
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	865	34	0	974	20	141	3	2	23	7	147
Future Volume (vph)	80	865	34	0	974	20	141	3	2	23	7	147
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00			1.00			0.99	
Frt			0.850		0.997			0.998			0.888	
Flt Protected	0.950							0.954			0.994	
Satd. Flow (prot)	1568	2942	1403	1716	3158	0	0	1603	0	0	1455	0
Flt Permitted	0.950							0.555			0.951	
Satd. Flow (perm)	1568	2942	1372	1716	3158	0	0	931	0	0	1392	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77		2			1			160	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Adj. Flow (vph)	87	940	37	0	1059	22	153	3	2	25	8	160
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	940	37	0	1081	0	0	158	0	0	193	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	29.5	54.0	54.0	19.5	44.0		25.5	25.5		25.5	25.5	
Total Split (%)	29.8%	54.5%	54.5%	19.7%	44.4%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	25.0	50.0	50.0	15.0	40.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	9.6	41.4	41.4		30.6			21.9			21.9	
Actuated g/C Ratio	0.13	0.58	0.58		0.43			0.31			0.31	
v/c Ratio	0.42	0.55	0.04		0.80			0.55			0.36	
Control Delay	38.3	10.0	0.4		23.7			35.6			9.2	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	38.3	10.0	0.4		23.7			35.6			9.2	
LOS	D	A	A		C			D			A	
Approach Delay		11.9			23.7			35.6			9.2	
Approach LOS		B			C			D			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 99			
Actuated Cycle Length: 71.7			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)





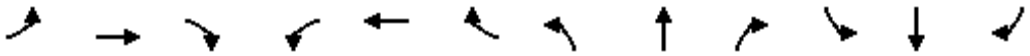
Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	87	940	37	1081	158	193
v/c Ratio	0.42	0.55	0.04	0.80	0.55	0.36
Control Delay	38.3	10.0	0.4	23.7	35.6	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	10.0	0.4	23.7	35.6	9.2
Queue Length 50th (ft)	38	118	0	223	63	11
Queue Length 95th (ft)	88	160	2	327	#171	69
Internal Link Dist (ft)		388		222	285	130
Turn Bay Length (ft)	115		100			
Base Capacity (vph)	587	2179	1036	1858	295	549
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.43	0.04	0.58	0.54	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	865	34	0	974	20	141	3	2	23	7	147
Future Volume (vph)	80	865	34	0	974	20	141	3	2	23	7	147
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.89	
Flt Protected	0.95	1.00	1.00		1.00			0.95			0.99	
Satd. Flow (prot)	1568	2942	1373		3157			1601			1455	
Flt Permitted	0.95	1.00	1.00		1.00			0.55			0.95	
Satd. Flow (perm)	1568	2942	1373		3157			931			1393	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	940	37	0	1059	22	153	3	2	25	8	160
RTOR Reduction (vph)	0	0	15	0	1	0	0	1	0	0	112	0
Lane Group Flow (vph)	87	940	22	0	1080	0	0	157	0	0	81	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	7.4	42.5	42.5		30.6			20.3			20.3	
Effective Green, g (s)	7.9	42.5	42.5		30.6			21.8			21.8	
Actuated g/C Ratio	0.11	0.59	0.59		0.42			0.30			0.30	
Clearance Time (s)	4.5	4.0	4.0		4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8		5.8			2.5			2.5	
Lane Grp Cap (vph)	171	1729	807		1336			280			420	
v/s Ratio Prot	0.06	c0.32			c0.34							
v/s Ratio Perm			0.02					c0.17			0.06	
v/c Ratio	0.51	0.54	0.03		0.81			0.56			0.19	
Uniform Delay, d1	30.4	9.0	6.2		18.3			21.2			18.7	
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2	1.4	0.8	0.0		4.4			2.1			0.2	
Delay (s)	31.8	9.8	6.3		22.7			23.3			18.9	
Level of Service	C	A	A		C			C			B	
Approach Delay (s)		11.5			22.7			23.3			18.9	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	865	34	0	974	20	141	3	2	23	7	147
Future Volume (veh/h)	80	865	34	0	974	20	141	3	2	23	7	147
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1668	1723	1682	1682	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	87	940	2	0	1059	21	153	3	1	25	8	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	13	6	2	5	5	2	2	2	2	2	2
Cap, veh/h	124	2090	988	3	1803	36	342	4	1	137	58	139
Arrive On Green	0.08	0.70	0.70	0.00	0.56	0.56	0.13	0.16	0.13	0.13	0.16	0.13
Sat Flow, veh/h	1589	2988	1413	1641	3203	64	1410	28	9	354	367	874
Grp Volume(v), veh/h	87	940	2	0	528	552	157	0	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1589	1494	1413	1641	1598	1669	1447	0	0	1594	0	0
Q Serve(g_s), s	3.2	8.3	0.0	0.0	12.9	12.9	3.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.2	8.3	0.0	0.0	12.9	12.9	6.2	0.0	0.0	2.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	0.97		0.01	0.34		0.55
Lane Grp Cap(c), veh/h	124	2090	988	3	900	939	312	0	0	294	0	0
V/C Ratio(X)	0.70	0.45	0.00	0.00	0.59	0.59	0.50	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	677	2497	1181	425	1068	1116	585	0	0	587	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.9	3.9	2.7	0.0	8.5	8.5	24.3	0.0	0.0	22.8	0.0	0.0
Incr Delay (d2), s/veh	4.4	0.5	0.0	0.0	2.0	1.9	0.9	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.7	0.0	0.0	4.1	4.3	2.2	0.0	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	4.4	2.7	0.0	10.5	10.4	25.3	0.0	0.0	23.2	0.0	0.0
LnGrp LOS	C	A	A	A	B	B	C	A	A	C	A	A
Approach Vol, veh/h		1029			1080			157			73	
Approach Delay, s/veh		6.7			10.5			25.3			23.2	
Approach LOS		A			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	46.3		13.5	8.7	37.7		13.5				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	15.0	* 50		20.0	25.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	0.0	10.3		4.5	5.2	14.9		8.2				
Green Ext Time (p_c), s	0.0	23.7		0.2	0.2	18.8		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Notes

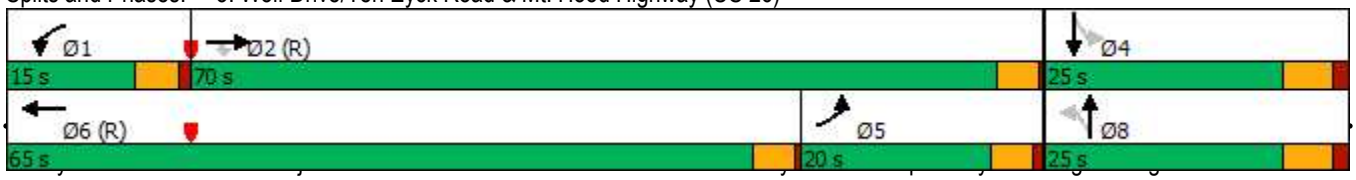
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	1139	139	5	1173	18	121	25	7	42	24	124
Future Volume (vph)	165	1139	139	5	1173	18	121	25	7	42	24	124
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00			1.00			0.99	
Frt			0.850		0.998			0.994			0.912	
Flt Protected	0.950			0.950				0.962			0.989	
Satd. Flow (prot)	1630	3228	1458	1630	3161	0	0	1625	0	0	1526	0
Flt Permitted	0.950			0.950				0.529			0.910	
Satd. Flow (perm)	1629	3228	1426	1629	3161	0	0	890	0	0	1404	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		2			2			75	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)	2		1	1		2	5					5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Adj. Flow (vph)	176	1212	148	5	1248	19	129	27	7	45	26	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	1212	148	5	1267	0	0	163	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	20.0	70.0	70.0	15.0	65.0		25.0	25.0		25.0	25.0	
Total Split (%)	18.2%	63.6%	63.6%	13.6%	59.1%		22.7%	22.7%		22.7%	22.7%	
Maximum Green (s)	15.5	66.0	66.0	10.5	61.0		19.5	19.5		19.5	19.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	15.7	72.6	72.6	5.8	55.0			27.3			27.3	
Actuated g/C Ratio	0.14	0.66	0.66	0.05	0.50			0.25			0.25	
v/c Ratio	0.76	0.57	0.15	0.06	0.80			0.73			0.50	
Control Delay	66.2	11.4	2.9	50.6	27.1			61.0			28.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	66.2	11.4	2.9	50.6	27.1			61.0			28.8	
LOS	E	B	A	D	C			E			C	
Approach Delay		16.9			27.2			61.0			28.8	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	176	1212	148	5	1267	163	203
v/c Ratio	0.76	0.57	0.15	0.06	0.80	0.73	0.50
Control Delay	66.2	11.4	2.9	50.6	27.1	61.0	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.2	11.4	2.9	50.6	27.1	61.0	28.8
Queue Length 50th (ft)	118	195	11	3	378	107	78
Queue Length 95th (ft)	#224	297	37	16	417	#250	164
Internal Link Dist (ft)		388			222	285	130
Turn Bay Length (ft)	115		100	105			
Base Capacity (vph)	250	2130	973	163	1753	222	404
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.57	0.15	0.03	0.72	0.73	0.50

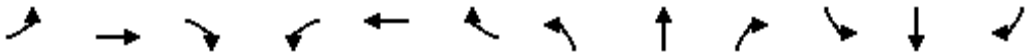
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	1139	139	5	1173	18	121	25	7	42	24	124
Future Volume (vph)	165	1139	139	5	1173	18	121	25	7	42	24	124
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.99			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1630	3228	1426	1630	3160			1619			1527	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.53			0.91	
Satd. Flow (perm)	1630	3228	1426	1630	3160			890			1405	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	176	1212	148	5	1248	19	129	27	7	45	26	132
RTOR Reduction (vph)	0	0	35	0	1	0	0	2	0	0	56	0
Lane Group Flow (vph)	176	1212	113	5	1266	0	0	161	0	0	147	0
Confl. Peds. (#/hr)	2		1	1		2	5					5
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	18.8	69.0	69.0	1.2	51.4			25.8			25.8	
Effective Green, g (s)	19.3	69.0	69.0	1.7	51.4			27.3			27.3	
Actuated g/C Ratio	0.18	0.63	0.63	0.02	0.47			0.25			0.25	
Clearance Time (s)	4.5	4.0	4.0	4.5	4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8			2.5			2.5	
Lane Grp Cap (vph)	285	2024	894	25	1476			220			348	
v/s Ratio Prot	0.11	c0.38		0.00	c0.40							
v/s Ratio Perm			0.08					c0.18			0.10	
v/c Ratio	0.62	0.60	0.13	0.20	0.86			0.73			0.42	
Uniform Delay, d1	41.9	12.2	8.3	53.5	26.0			38.0			34.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.1	1.3	0.3	2.3	6.7			11.3			0.6	
Delay (s)	45.1	13.6	8.6	55.8	32.7			49.3			35.3	
Level of Service	D	B	A	E	C			D			D	
Approach Delay (s)		16.7			32.8			49.3			35.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



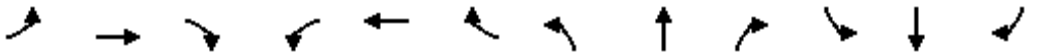
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	1139	139	5	1173	18	121	25	7	42	24	124
Future Volume (veh/h)	165	1139	139	5	1173	18	121	25	7	42	24	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1709	1723	1723	1682	1682	1641	1641	1641	1723	1723	1723
Adj Flow Rate, veh/h	176	1212	114	5	1248	18	129	27	5	45	26	72
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	3	2	2	5	5	8	8	8	2	2	2
Cap, veh/h	328	2278	1023	16	1664	24	212	37	6	109	71	139
Arrive On Green	0.20	0.70	0.70	0.01	0.52	0.52	0.16	0.18	0.16	0.16	0.18	0.16
Sat Flow, veh/h	1641	3247	1458	1641	3224	46	875	211	35	379	404	794
Grp Volume(v), veh/h	176	1212	114	5	618	648	161	0	0	143	0	0
Grp Sat Flow(s),veh/h/ln	1641	1624	1458	1641	1598	1673	1121	0	0	1577	0	0
Q Serve(g_s), s	10.6	19.6	2.8	0.3	33.6	33.6	6.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.6	19.6	2.8	0.3	33.6	33.6	15.8	0.0	0.0	9.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.80		0.03	0.31		0.50
Lane Grp Cap(c), veh/h	328	2278	1023	16	825	864	240	0	0	298	0	0
V/C Ratio(X)	0.54	0.53	0.11	0.31	0.75	0.75	0.67	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	328	2278	1023	164	886	928	260	0	0	321	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.5	7.8	5.3	54.1	21.0	21.0	45.0	0.0	0.0	41.8	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.9	0.2	6.7	6.2	5.9	5.3	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	6.5	0.9	0.2	13.6	14.3	4.8	0.0	0.0	3.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.7	8.7	5.5	60.8	27.2	27.0	50.3	0.0	0.0	42.7	0.0	0.0
LnGrp LOS	D	A	A	E	C	C	D	A	A	D	A	A
Approach Vol, veh/h		1502			1271			161			143	
Approach Delay, s/veh		12.2			27.2			50.3			42.7	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	81.7		23.3	26.0	60.8		23.3				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	10.5	* 66		19.5	15.5	61.0		19.5				
Max Q Clear Time (g_c+I1), s	2.3	21.6		11.1	12.6	35.6		17.8				
Green Ext Time (p_c), s	0.0	34.6		0.3	0.2	21.2		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

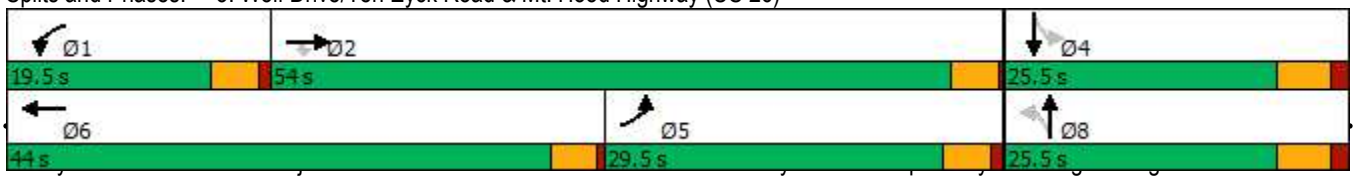


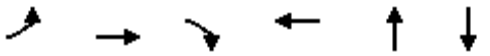
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	982	39	0	1106	19	160	4	2	25	8	159
Future Volume (vph)	64	982	39	0	1106	19	160	4	2	25	8	159
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00			1.00			0.99	
Frt			0.850		0.997			0.998			0.888	
Flt Protected	0.950							0.954			0.994	
Satd. Flow (prot)	1568	2942	1403	1716	3158	0	0	1603	0	0	1455	0
Flt Permitted	0.950							0.515			0.947	
Satd. Flow (perm)	1568	2942	1372	1716	3158	0	0	864	0	0	1386	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77		2			1			173	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Adj. Flow (vph)	70	1067	42	0	1202	21	174	4	2	27	9	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	1067	42	0	1223	0	0	180	0	0	209	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	29.5	54.0	54.0	19.5	44.0		25.5	25.5		25.5	25.5	
Total Split (%)	29.8%	54.5%	54.5%	19.7%	44.4%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	25.0	50.0	50.0	15.0	40.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	8.8	46.5	46.5		36.2			22.1			22.1	
Actuated g/C Ratio	0.11	0.61	0.61		0.47			0.29			0.29	
v/c Ratio	0.39	0.60	0.05		0.82			0.72			0.40	
Control Delay	40.5	10.4	0.5		23.8			47.8			9.5	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	40.5	10.4	0.5		23.8			47.8			9.5	
LOS	D	B	A		C			D			A	
Approach Delay		11.9			23.8			47.8			9.5	
Approach LOS		B			C			D			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 99			
Actuated Cycle Length: 76.8			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

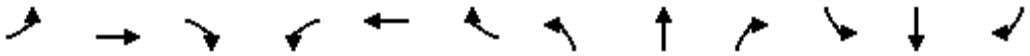




Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	70	1067	42	1223	180	209
v/c Ratio	0.39	0.60	0.05	0.82	0.72	0.40
Control Delay	40.5	10.4	0.5	23.8	47.8	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	10.4	0.5	23.8	47.8	9.5
Queue Length 50th (ft)	34	143	0	264	86	14
Queue Length 95th (ft)	74	193	4	385	#210	73
Internal Link Dist (ft)		388		222	285	130
Turn Bay Length (ft)	115		100			
Base Capacity (vph)	535	2063	985	1692	249	522
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.52	0.04	0.72	0.72	0.40

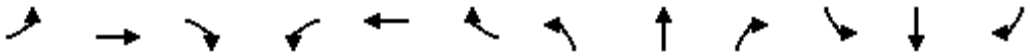
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	982	39	0	1106	19	160	4	2	25	8	159
Future Volume (vph)	64	982	39	0	1106	19	160	4	2	25	8	159
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.89	
Flt Protected	0.95	1.00	1.00		1.00			0.95			0.99	
Satd. Flow (prot)	1568	2942	1373		3159			1601			1455	
Flt Permitted	0.95	1.00	1.00		1.00			0.52			0.95	
Satd. Flow (perm)	1568	2942	1373		3159			865			1387	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	1067	42	0	1202	21	174	4	2	27	9	173
RTOR Reduction (vph)	0	0	16	0	1	0	0	1	0	0	124	0
Lane Group Flow (vph)	70	1067	26	0	1222	0	0	179	0	0	85	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	6.9	47.6	47.6		36.2			20.6			20.6	
Effective Green, g (s)	7.4	47.6	47.6		36.2			22.1			22.1	
Actuated g/C Ratio	0.10	0.61	0.61		0.47			0.28			0.28	
Clearance Time (s)	4.5	4.0	4.0		4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8		5.8			2.5			2.5	
Lane Grp Cap (vph)	149	1802	841		1471			246			394	
v/s Ratio Prot	0.04	c0.36			c0.39							
v/s Ratio Perm			0.02					c0.21			0.06	
v/c Ratio	0.47	0.59	0.03		0.83			0.73			0.22	
Uniform Delay, d1	33.3	9.1	5.9		18.1			25.1			21.2	
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2	1.4	0.9	0.0		4.8			9.7			0.2	
Delay (s)	34.7	10.1	6.0		22.9			34.8			21.4	
Level of Service	C	B	A		C			C			C	
Approach Delay (s)		11.4			22.9			34.8			21.4	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	982	39	0	1106	19	160	4	2	25	8	159
Future Volume (veh/h)	64	982	39	0	1106	19	160	4	2	25	8	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1668	1723	1682	1682	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	70	1067	9	0	1202	20	174	4	1	27	9	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	13	6	2	5	5	2	2	2	2	2	2
Cap, veh/h	100	2065	976	3	1842	31	356	6	1	146	66	146
Arrive On Green	0.06	0.69	0.69	0.00	0.57	0.57	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	1589	2988	1413	1641	3215	53	1398	32	8	392	378	834
Grp Volume(v), veh/h	70	1067	9	0	597	625	179	0	0	75	0	0
Grp Sat Flow(s),veh/h/ln	1589	1494	1413	1641	1598	1671	1438	0	0	1603	0	0
Q Serve(g_s), s	2.7	10.9	0.1	0.0	16.2	16.2	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.7	10.9	0.1	0.0	16.2	16.2	7.5	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.97		0.01	0.36		0.52
Lane Grp Cap(c), veh/h	100	2065	976	3	916	958	329	0	0	319	0	0
V/C Ratio(X)	0.70	0.52	0.01	0.00	0.65	0.65	0.54	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	639	2357	1114	401	1008	1054	553	0	0	560	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.1	4.7	3.0	0.0	9.2	9.2	25.2	0.0	0.0	23.3	0.0	0.0
Incr Delay (d2), s/veh	5.4	0.7	0.0	0.0	2.7	2.6	1.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.5	0.0	0.0	5.3	5.5	2.7	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	5.4	3.1	0.0	12.0	11.9	26.3	0.0	0.0	23.5	0.0	0.0
LnGrp LOS	C	A	A	A	B	B	C	A	A	C	A	A
Approach Vol, veh/h		1146			1222			179			75	
Approach Delay, s/veh		7.1			11.9			26.3			23.5	
Approach LOS		A			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	48.3		15.1	8.0	40.3		15.1				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	15.0	* 50		20.0	25.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	0.0	12.9		4.7	4.7	18.2		9.5				
Green Ext Time (p_c), s	0.0	25.7		0.2	0.2	18.2		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

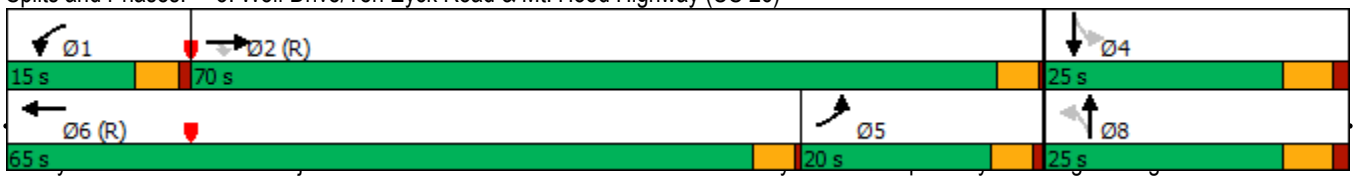
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	1292	158	6	1331	19	137	28	8	45	27	118
Future Volume (vph)	178	1292	158	6	1331	19	137	28	8	45	27	118
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00			1.00			0.99	
Frt			0.850		0.998			0.993			0.916	
Flt Protected	0.950			0.950				0.962			0.988	
Satd. Flow (prot)	1630	3228	1458	1630	3161	0	0	1623	0	0	1532	0
Flt Permitted	0.950			0.950				0.512			0.905	
Satd. Flow (perm)	1629	3228	1426	1629	3161	0	0	861	0	0	1404	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		2			2			66	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)	2		1	1		2	5					5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Adj. Flow (vph)	189	1374	168	6	1416	20	146	30	9	48	29	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	1374	168	6	1436	0	0	185	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	20.0	70.0	70.0	15.0	65.0		25.0	25.0		25.0	25.0	
Total Split (%)	18.2%	63.6%	63.6%	13.6%	59.1%		22.7%	22.7%		22.7%	22.7%	
Maximum Green (s)	15.5	66.0	66.0	10.5	61.0		19.5	19.5		19.5	19.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	15.5	75.3	75.3	5.8	58.0			24.5			24.5	
Actuated g/C Ratio	0.14	0.68	0.68	0.05	0.53			0.22			0.22	
v/c Ratio	0.83	0.62	0.17	0.07	0.86			0.96			0.56	
Control Delay	73.8	11.2	3.1	50.8	28.6			100.2			33.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	73.8	11.2	3.1	50.8	28.6			100.2			33.4	
LOS	E	B	A	D	C			F			C	
Approach Delay		17.3			28.7			100.2			33.4	
Approach LOS		B			C			F			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 27.1 Intersection LOS: C
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	189	1374	168	6	1436	185	203
v/c Ratio	0.83	0.62	0.17	0.07	0.86	0.96	0.56
Control Delay	73.8	11.2	3.1	50.8	28.6	100.2	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	11.2	3.1	50.8	28.6	100.2	33.4
Queue Length 50th (ft)	129	201	12	4	426	~150	89
Queue Length 95th (ft)	#247	369	44	18	517	#295	171
Internal Link Dist (ft)		388			222	285	130
Turn Bay Length (ft)	115		100	105			
Base Capacity (vph)	241	2210	1006	163	1753	193	364
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.62	0.17	0.04	0.82	0.96	0.56

Intersection Summary

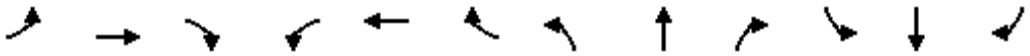
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	1292	158	6	1331	19	137	28	8	45	27	118
Future Volume (vph)	178	1292	158	6	1331	19	137	28	8	45	27	118
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.99			0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1630	3228	1426	1630	3160			1618			1533	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.51			0.90	
Satd. Flow (perm)	1630	3228	1426	1630	3160			861			1403	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	189	1374	168	6	1416	20	146	30	9	48	29	126
RTOR Reduction (vph)	0	0	33	0	1	0	0	2	0	0	51	0
Lane Group Flow (vph)	189	1374	135	6	1435	0	0	183	0	0	152	0
Confl. Peds. (#/hr)	2		1	1		2	5					5
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	18.6	71.7	71.7	1.3	54.4			23.0			23.0	
Effective Green, g (s)	19.1	71.7	71.7	1.8	54.4			24.5			24.5	
Actuated g/C Ratio	0.17	0.65	0.65	0.02	0.49			0.22			0.22	
Clearance Time (s)	4.5	4.0	4.0	4.5	4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8			2.5			2.5	
Lane Grp Cap (vph)	283	2104	929	26	1562			191			312	
v/s Ratio Prot	0.12	c0.43		0.00	c0.45							
v/s Ratio Perm			0.09					c0.21			0.11	
v/c Ratio	0.67	0.65	0.15	0.23	0.92			0.96			0.49	
Uniform Delay, d1	42.5	11.6	7.4	53.4	25.8			42.3			37.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.0	1.6	0.3	2.6	10.2			53.5			0.9	
Delay (s)	47.5	13.2	7.7	56.1	35.9			95.8			38.1	
Level of Service	D	B	A	E	D			F			D	
Approach Delay (s)		16.4			36.0			95.8			38.1	
Approach LOS		B			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



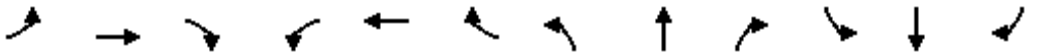
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	1292	158	6	1331	19	137	28	8	45	27	118
Future Volume (veh/h)	178	1292	158	6	1331	19	137	28	8	45	27	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1709	1723	1723	1682	1682	1641	1641	1641	1723	1723	1723
Adj Flow Rate, veh/h	189	1374	136	6	1416	19	146	30	7	48	29	72
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	3	2	2	5	5	8	8	8	2	2	2
Cap, veh/h	264	2224	998	17	1740	23	227	37	8	120	79	146
Arrive On Green	0.16	0.68	0.68	0.01	0.54	0.54	0.18	0.19	0.18	0.18	0.19	0.18
Sat Flow, veh/h	1641	3247	1458	1641	3228	43	882	194	43	401	414	763
Grp Volume(v), veh/h	189	1374	136	6	700	735	183	0	0	149	0	0
Grp Sat Flow(s),veh/h/ln	1641	1624	1458	1641	1598	1674	1118	0	0	1579	0	0
Q Serve(g_s), s	12.0	25.4	3.6	0.4	39.6	39.7	8.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.0	25.4	3.6	0.4	39.6	39.7	18.0	0.0	0.0	9.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.80		0.04	0.32		0.48
Lane Grp Cap(c), veh/h	264	2224	998	17	861	902	257	0	0	323	0	0
V/C Ratio(X)	0.72	0.62	0.14	0.34	0.81	0.81	0.71	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	264	2224	998	164	886	928	257	0	0	323	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.7	9.5	6.0	54.0	20.8	20.8	44.6	0.0	0.0	40.3	0.0	0.0
Incr Delay (d2), s/veh	8.1	1.3	0.3	7.0	8.3	8.0	8.4	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	8.7	1.1	0.2	16.2	17.0	5.6	0.0	0.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	10.8	6.3	61.0	29.1	28.8	53.0	0.0	0.0	41.1	0.0	0.0
LnGrp LOS	D	B	A	E	C	C	D	A	A	D	A	A
Approach Vol, veh/h		1699			1441			183			149	
Approach Delay, s/veh		15.0			29.1			53.0			41.1	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	79.8		25.0	21.7	63.3		25.0				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	10.5	* 66		19.5	15.5	61.0		19.5				
Max Q Clear Time (g_c+I1), s	2.4	27.4		11.4	14.0	41.7		20.0				
Green Ext Time (p_c), s	0.0	33.5		0.3	0.1	17.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

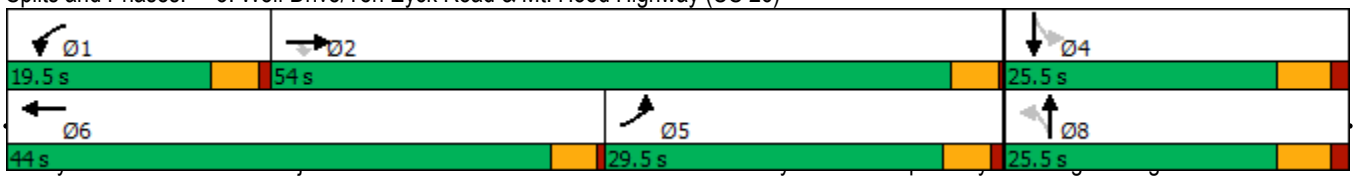


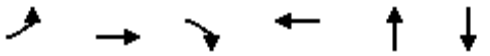
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Future Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98		1.00			1.00			0.99	
Frt			0.850		0.997			0.998			0.888	
Flt Protected	0.950							0.954			0.994	
Satd. Flow (prot)	1568	2942	1403	1716	3158	0	0	1603	0	0	1455	0
Flt Permitted	0.950							0.499			0.946	
Satd. Flow (perm)	1568	2942	1372	1716	3158	0	0	837	0	0	1385	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77		2			1			180	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Adj. Flow (vph)	96	1067	42	0	1202	24	174	4	2	28	9	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1067	42	0	1226	0	0	180	0	0	217	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	29.5	54.0	54.0	19.5	44.0		25.5	25.5		25.5	25.5	
Total Split (%)	29.8%	54.5%	54.5%	19.7%	44.4%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	25.0	50.0	50.0	15.0	40.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	10.2	47.9	47.9		36.5			22.2			22.2	
Actuated g/C Ratio	0.13	0.61	0.61		0.47			0.28			0.28	
v/c Ratio	0.47	0.59	0.05		0.83			0.76			0.42	
Control Delay	41.9	10.2	0.5		25.2			53.0			9.8	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	41.9	10.2	0.5		25.2			53.0			9.8	
LOS	D	B	A		C			D			A	
Approach Delay		12.4			25.2			53.0			9.8	
Approach LOS		B			C			D			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 99			
Actuated Cycle Length: 78.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)





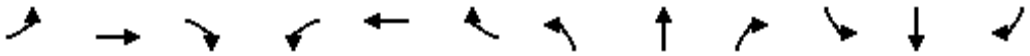
Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	96	1067	42	1226	180	217
v/c Ratio	0.47	0.59	0.05	0.83	0.76	0.42
Control Delay	41.9	10.2	0.5	25.2	53.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	10.2	0.5	25.2	53.0	9.8
Queue Length 50th (ft)	48	143	0	275	89	15
Queue Length 95th (ft)	95	191	4	#406	#220	76
Internal Link Dist (ft)		388		222	285	130
Turn Bay Length (ft)	115		100			
Base Capacity (vph)	526	2064	985	1663	237	520
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.52	0.04	0.74	0.76	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Future Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.89	
Flt Protected	0.95	1.00	1.00		1.00			0.95			0.99	
Satd. Flow (prot)	1568	2942	1373		3158			1601			1455	
Flt Permitted	0.95	1.00	1.00		1.00			0.50			0.95	
Satd. Flow (perm)	1568	2942	1373		3158			838			1385	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	1067	42	0	1202	24	174	4	2	28	9	180
RTOR Reduction (vph)	0	0	16	0	1	0	0	1	0	0	130	0
Lane Group Flow (vph)	96	1067	26	0	1225	0	0	179	0	0	87	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	8.0	49.0	49.0		36.5			20.6			20.6	
Effective Green, g (s)	8.5	49.0	49.0		36.5			22.1			22.1	
Actuated g/C Ratio	0.11	0.62	0.62		0.46			0.28			0.28	
Clearance Time (s)	4.5	4.0	4.0		4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8		5.8			2.5			2.5	
Lane Grp Cap (vph)	168	1822	850		1457			234			386	
v/s Ratio Prot	0.06	c0.36			c0.39							
v/s Ratio Perm			0.02					c0.21			0.06	
v/c Ratio	0.57	0.59	0.03		0.84			0.77			0.23	
Uniform Delay, d1	33.6	9.0	5.8		18.7			26.1			21.9	
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2	3.4	0.9	0.0		5.2			13.3			0.2	
Delay (s)	37.0	9.9	5.9		24.0			39.5			22.1	
Level of Service	D	A	A		C			D			C	
Approach Delay (s)		11.9			24.0			39.5			22.1	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	982	39	0	1106	22	160	4	2	26	8	166
Future Volume (veh/h)	88	982	39	0	1106	22	160	4	2	26	8	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1668	1723	1682	1682	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	96	1067	9	0	1202	23	174	4	1	28	9	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	13	6	2	5	5	2	2	2	2	2	2
Cap, veh/h	135	2083	985	3	1792	34	351	6	1	146	64	143
Arrive On Green	0.08	0.70	0.70	0.00	0.56	0.56	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	1589	2988	1413	1641	3205	61	1399	32	8	411	371	824
Grp Volume(v), veh/h	96	1067	9	0	599	626	179	0	0	76	0	0
Grp Sat Flow(s),veh/h/ln	1589	1494	1413	1641	1598	1669	1440	0	0	1606	0	0
Q Serve(g_s), s	3.9	11.0	0.1	0.0	17.3	17.4	5.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.9	11.0	0.1	0.0	17.3	17.4	7.8	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	0.97		0.01	0.37		0.51
Lane Grp Cap(c), veh/h	135	2083	985	3	893	933	325	0	0	317	0	0
V/C Ratio(X)	0.71	0.51	0.01	0.00	0.67	0.67	0.55	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	617	2277	1077	388	974	1018	535	0	0	543	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.2	4.7	3.0	0.0	10.2	10.2	26.2	0.0	0.0	24.2	0.0	0.0
Incr Delay (d2), s/veh	4.2	0.6	0.0	0.0	3.1	3.0	1.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.6	0.0	0.0	5.9	6.2	2.8	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	5.3	3.0	0.0	13.3	13.2	27.3	0.0	0.0	24.5	0.0	0.0
LnGrp LOS	C	A	A	A	B	B	C	A	A	C	A	A
Approach Vol, veh/h		1172			1225			179			76	
Approach Delay, s/veh		7.6			13.2			27.3			24.5	
Approach LOS		A			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	50.2		15.4	9.6	40.7		15.4				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	15.0	* 50		20.0	25.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	0.0	13.0		4.8	5.9	19.4		9.8				
Green Ext Time (p_c), s	0.0	25.6		0.2	0.3	17.3		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

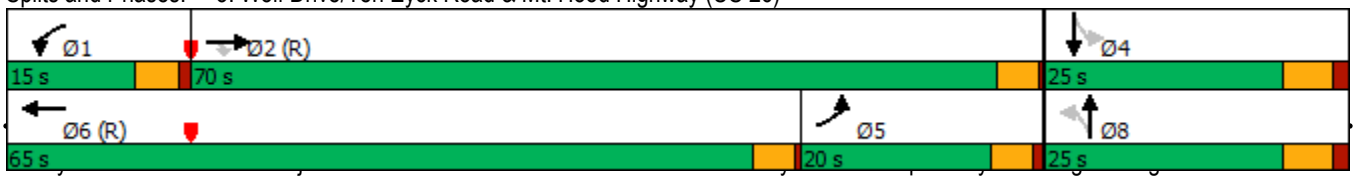
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Future Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00			1.00			0.99	
Frt			0.850		0.998			0.993			0.912	
Flt Protected	0.950			0.950				0.962			0.989	
Satd. Flow (prot)	1630	3228	1458	1630	3161	0	0	1623	0	0	1526	0
Flt Permitted	0.950			0.950				0.473			0.910	
Satd. Flow (perm)	1629	3228	1426	1629	3161	0	0	796	0	0	1404	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		2			2			75	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)	2		1	1		2	5					5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Adj. Flow (vph)	198	1374	168	6	1416	21	146	30	9	50	29	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1374	168	6	1437	0	0	185	0	0	226	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1		2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25		Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153		78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137		2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16		16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0		11.5	11.5		23.5	23.5	
Total Split (s)	20.0	70.0	70.0	15.0	65.0		25.0	25.0		25.0	25.0	
Total Split (%)	18.2%	63.6%	63.6%	13.6%	59.1%		22.7%	22.7%		22.7%	22.7%	
Maximum Green (s)	15.5	66.0	66.0	10.5	61.0		19.5	19.5		19.5	19.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8		2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8		2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0		5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0		5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0					7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)	15.9	75.7	75.7	5.8	58.0			24.1			24.1	
Actuated g/C Ratio	0.14	0.69	0.69	0.05	0.53			0.22			0.22	
v/c Ratio	0.84	0.62	0.17	0.07	0.86			1.05			0.62	
Control Delay	75.7	11.0	3.1	50.8	28.6			126.5			35.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	75.7	11.0	3.1	50.8	28.6			126.5			35.2	
LOS	E	B	A	D	C			F			D	
Approach Delay		17.6			28.7			126.5			35.2	
Approach LOS		B			C			F			D	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 28.8 Intersection LOS: C
Intersection Capacity Utilization 89.6% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	198	1374	168	6	1437	185	226
v/c Ratio	0.84	0.62	0.17	0.07	0.86	1.05	0.62
Control Delay	75.7	11.0	3.1	50.8	28.6	126.5	35.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.7	11.0	3.1	50.8	28.6	126.5	35.2
Queue Length 50th (ft)	136	201	12	4	426	~159	100
Queue Length 95th (ft)	#263	369	44	18	518	#305	#189
Internal Link Dist (ft)		388			222	285	130
Turn Bay Length (ft)	115		100	105			
Base Capacity (vph)	244	2221	1011	163	1753	176	366
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.62	0.17	0.04	0.82	1.05	0.62

Intersection Summary

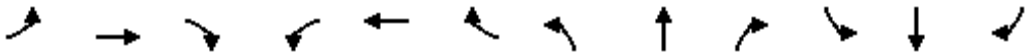
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Future Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.99			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1630	3228	1426	1630	3160			1619			1527	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.47			0.91	
Satd. Flow (perm)	1630	3228	1426	1630	3160			796			1405	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	198	1374	168	6	1416	21	146	30	9	50	29	147
RTOR Reduction (vph)	0	0	33	0	1	0	0	2	0	0	59	0
Lane Group Flow (vph)	198	1374	135	6	1436	0	0	183	0	0	167	0
Confl. Peds. (#/hr)	2		1	1		2	5					5
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	19.0	72.1	72.1	1.3	54.4			22.6			22.6	
Effective Green, g (s)	19.5	72.1	72.1	1.8	54.4			24.1			24.1	
Actuated g/C Ratio	0.18	0.66	0.66	0.02	0.49			0.22			0.22	
Clearance Time (s)	4.5	4.0	4.0	4.5	4.0			5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8			2.5			2.5	
Lane Grp Cap (vph)	288	2115	934	26	1562			174			307	
v/s Ratio Prot	0.12	c0.43		0.00	c0.45							
v/s Ratio Perm			0.09					c0.23			0.12	
v/c Ratio	0.69	0.65	0.14	0.23	0.92			1.05			0.55	
Uniform Delay, d1	42.4	11.4	7.2	53.4	25.8			42.9			38.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.8	1.6	0.3	2.6	10.2			83.3			1.6	
Delay (s)	48.2	12.9	7.5	56.1	36.0			126.3			39.7	
Level of Service	D	B	A	E	D			F			D	
Approach Delay (s)		16.4			36.1			126.3			39.7	
Approach LOS		B			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	1292	158	6	1331	20	137	28	8	47	27	138
Future Volume (veh/h)	186	1292	158	6	1331	20	137	28	8	47	27	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1709	1723	1723	1682	1682	1641	1641	1641	1723	1723	1723
Adj Flow Rate, veh/h	198	1374	137	6	1416	20	146	30	7	50	29	84
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	3	2	2	5	5	8	8	8	2	2	2
Cap, veh/h	264	2224	998	17	1739	25	219	35	8	115	74	156
Arrive On Green	0.16	0.68	0.68	0.01	0.54	0.54	0.18	0.19	0.18	0.18	0.19	0.18
Sat Flow, veh/h	1641	3247	1458	1641	3226	46	839	185	41	379	390	818
Grp Volume(v), veh/h	198	1374	137	6	701	735	183	0	0	163	0	0
Grp Sat Flow(s),veh/h/ln	1641	1624	1458	1641	1598	1673	1064	0	0	1587	0	0
Q Serve(g_s), s	12.7	25.4	3.6	0.4	39.6	39.7	8.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.7	25.4	3.6	0.4	39.6	39.7	18.9	0.0	0.0	10.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.80		0.04	0.31		0.52
Lane Grp Cap(c), veh/h	264	2224	998	17	861	902	247	0	0	324	0	0
V/C Ratio(X)	0.75	0.62	0.14	0.34	0.81	0.81	0.74	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	264	2224	998	164	886	928	247	0	0	324	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	44.0	9.5	6.0	54.0	20.8	20.8	45.1	0.0	0.0	40.8	0.0	0.0
Incr Delay (d2), s/veh	10.6	1.3	0.3	7.0	8.3	8.0	10.6	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	8.7	1.1	0.2	16.3	17.0	5.8	0.0	0.0	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	10.8	6.3	61.0	29.1	28.9	55.8	0.0	0.0	41.7	0.0	0.0
LnGrp LOS	D	B	A	E	C	C	E	A	A	D	A	A
Approach Vol, veh/h		1709			1442			183			163	
Approach Delay, s/veh		15.5			29.1			55.8			41.7	
Approach LOS		B			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	79.8		25.0	21.7	63.3		25.0				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	10.5	* 66		19.5	15.5	61.0		19.5				
Max Q Clear Time (g_c+I1), s	2.4	27.4		12.4	14.7	41.7		20.9				
Green Ext Time (p_c), s	0.0	33.5		0.3	0.1	17.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

Notes

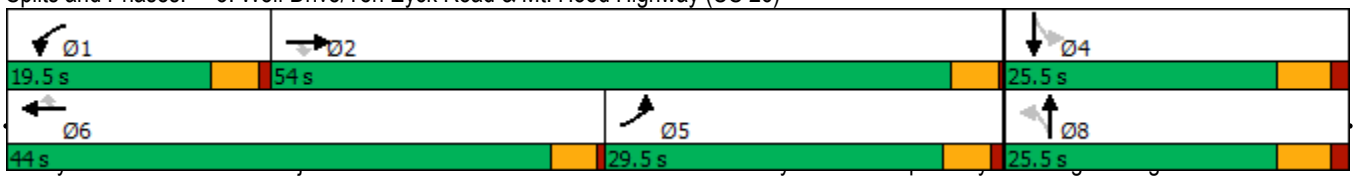
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

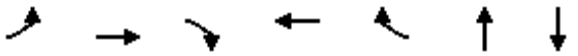
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Future Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		0	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98			0.98		1.00			0.99	
Frt			0.850			0.850		0.998			0.888	
Flt Protected	0.950							0.954			0.994	
Satd. Flow (prot)	1568	2942	1403	1716	3167	1458	0	1603	0	0	1455	0
Flt Permitted	0.950							0.504			0.946	
Satd. Flow (perm)	1568	2942	1372	1716	3167	1428	0	846	0	0	1385	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77			77		1			180	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Adj. Flow (vph)	96	1067	42	0	1202	24	174	4	2	28	9	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1067	42	0	1202	24	0	180	0	0	217	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1	1	2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25	Right	Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153	153	78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137	137	2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137	137	2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16	16	16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0	30.0	11.5	11.5		23.5	23.5	
Total Split (s)	29.5	54.0	54.0	19.5	44.0	44.0	25.5	25.5		25.5	25.5	
Total Split (%)	29.8%	54.5%	54.5%	19.7%	44.4%	44.4%	25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	25.0	50.0	50.0	15.0	40.0	40.0	20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5	0.5	1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0	0.0		-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8	5.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8	3.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0	10.0	5.0	5.0		5.0	5.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		7.0	7.0		7.0	7.0				7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0	19.0				11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0				0	0	
Act Effct Green (s)	10.1	46.7	46.7		35.4	35.4		22.3			22.3	
Actuated g/C Ratio	0.13	0.60	0.60		0.46	0.46		0.29			0.29	
v/c Ratio	0.47	0.60	0.05		0.83	0.03		0.74			0.41	
Control Delay	41.5	10.4	0.5		25.1	0.1		50.4			9.7	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay	41.5	10.4	0.5		25.1	0.1		50.4			9.7	
LOS	D	B	A		C	A		D			A	
Approach Delay		12.5			24.6			50.4			9.7	
Approach LOS		B			C			D			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 99			
Actuated Cycle Length: 77.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)





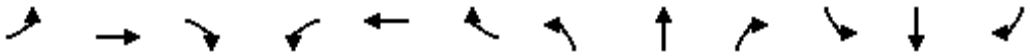
Lane Group	EBL	EBT	EBR	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	96	1067	42	1202	24	180	217
v/c Ratio	0.47	0.60	0.05	0.83	0.03	0.74	0.41
Control Delay	41.5	10.4	0.5	25.1	0.1	50.4	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	10.4	0.5	25.1	0.1	50.4	9.7
Queue Length 50th (ft)	48	143	0	267	0	89	15
Queue Length 95th (ft)	95	191	4	391	0	#219	76
Internal Link Dist (ft)		388		222		285	130
Turn Bay Length (ft)	115		100				
Base Capacity (vph)	536	2101	1001	1698	801	244	527
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.51	0.04	0.71	0.03	0.74	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Future Volume (vph)	88	982	39	0	1106	22	160	4	2	26	8	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98		1.00	0.98		1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00			1.00	
Frt	1.00	1.00	0.85		1.00	0.85		1.00			0.89	
Flt Protected	0.95	1.00	1.00		1.00	1.00		0.95			0.99	
Satd. Flow (prot)	1568	2942	1373		3167	1428		1601			1455	
Flt Permitted	0.95	1.00	1.00		1.00	1.00		0.50			0.95	
Satd. Flow (perm)	1568	2942	1373		3167	1428		846			1386	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	1067	42	0	1202	24	174	4	2	28	9	180
RTOR Reduction (vph)	0	0	16	0	0	13	0	1	0	0	129	0
Lane Group Flow (vph)	96	1067	26	0	1202	11	0	179	0	0	88	0
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	6%	13%	6%	2%	5%	2%	4%	2%	2%	24%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	8.0	47.9	47.9		35.4	35.4		20.7			20.7	
Effective Green, g (s)	8.5	47.9	47.9		35.4	35.4		22.2			22.2	
Actuated g/C Ratio	0.11	0.61	0.61		0.45	0.45		0.28			0.28	
Clearance Time (s)	4.5	4.0	4.0		4.0	4.0		5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8		5.8	5.8		2.5			2.5	
Lane Grp Cap (vph)	170	1804	842		1435	647		240			393	
v/s Ratio Prot	0.06	c0.36			c0.38							
v/s Ratio Perm			0.02			0.01		c0.21			0.06	
v/c Ratio	0.56	0.59	0.03		0.84	0.02		0.75			0.22	
Uniform Delay, d1	33.0	9.2	6.0		18.8	11.8		25.4			21.4	
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2	3.1	0.9	0.0		5.1	0.0		11.4			0.2	
Delay (s)	36.1	10.1	6.0		23.9	11.8		36.8			21.6	
Level of Service	D	B	A		C	B		D			C	
Approach Delay (s)		12.0			23.7			36.8			21.6	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	78.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	982	39	0	1106	22	160	4	2	26	8	166
Future Volume (veh/h)	88	982	39	0	1106	22	160	4	2	26	8	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1668	1723	1682	1723	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	96	1067	8	0	1202	0	174	4	1	28	9	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	13	6	2	5	2	2	2	2	2	2	2
Cap, veh/h	135	2083	985	3	1786	816	351	6	1	143	63	146
Arrive On Green	0.08	0.70	0.70	0.00	0.56	0.00	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	1589	2988	1413	1641	3195	1460	1400	32	8	394	367	843
Grp Volume(v), veh/h	96	1067	8	0	1202	0	179	0	0	78	0	0
Grp Sat Flow(s),veh/h/ln	1589	1494	1413	1641	1598	1460	1440	0	0	1604	0	0
Q Serve(g_s), s	3.9	11.0	0.1	0.0	17.4	0.0	4.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.9	11.0	0.1	0.0	17.4	0.0	7.8	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.97		0.01	0.36		0.53
Lane Grp Cap(c), veh/h	135	2083	985	3	1786	816	325	0	0	316	0	0
V/C Ratio(X)	0.71	0.51	0.01	0.00	0.67	0.00	0.55	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	618	2280	1078	388	1951	891	535	0	0	542	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.2	4.7	3.0	0.0	10.2	0.0	26.1	0.0	0.0	24.2	0.0	0.0
Incr Delay (d2), s/veh	4.2	0.6	0.0	0.0	1.6	0.0	1.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.6	0.0	0.0	5.6	0.0	2.8	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	5.3	3.0	0.0	11.8	0.0	27.2	0.0	0.0	24.5	0.0	0.0
LnGrp LOS	C	A	A	A	B	A	C	A	A	C	A	A
Approach Vol, veh/h		1171			1202			179			78	
Approach Delay, s/veh		7.6			11.8			27.2			24.5	
Approach LOS		A			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	50.2		15.3	9.6	40.6		15.3				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	15.0	* 50		20.0	25.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	0.0	13.0		4.9	5.9	19.4		9.8				
Green Ext Time (p_c), s	0.0	25.6		0.2	0.3	17.2		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

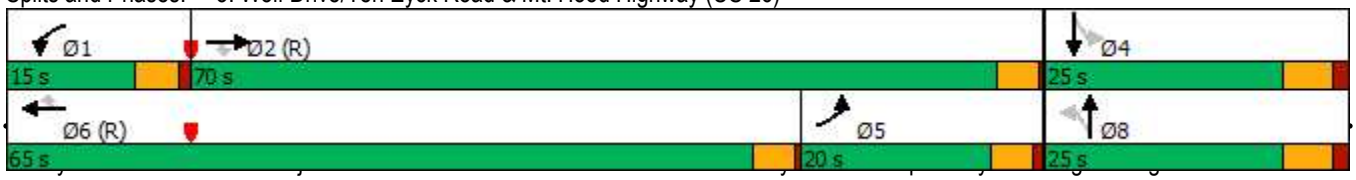
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Future Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	115		100	105		100	0		0	0		0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98		1.00			0.99	
Frt			0.850			0.850		0.993			0.912	
Flt Protected	0.950			0.950				0.962			0.989	
Satd. Flow (prot)	1630	3228	1458	1630	3167	1458	0	1623	0	0	1526	0
Flt Permitted	0.950			0.950				0.477			0.909	
Satd. Flow (perm)	1629	3228	1426	1629	3167	1423	0	802	0	0	1403	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			69		2			75	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		468			302			365			210	
Travel Time (s)		12.8			8.2			10.0			5.7	
Confl. Peds. (#/hr)	2		1	1		2	5					5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Adj. Flow (vph)	198	1374	168	6	1416	21	146	30	9	50	29	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1374	168	6	1416	21	0	185	0	0	226	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA	L NA	R NA	R NA
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-12			0			0			4	
Crosswalk Width(ft)		72			42			32			30	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Number of Detectors	2	1	1	2	1	1	2	2		2	2	
Detector Template	Left	Det25	Right	Left	Det25	Right	Left	Side St		Left	Side St	
Leading Detector (ft)	78	153	153	78	153	153	78	78		78	78	
Trailing Detector (ft)	2	137	137	2	137	137	2	2		2	2	
Detector 1 Position(ft)	2	137	137	2	137	137	2	2		2	2	
Detector 1 Size(ft)	16	16	16	16	16	16	16	16		16	16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	72			72			72	72		72	72	
Detector 2 Size(ft)	6			6			6	6		6	6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	8.5	26.0	26.0	8.5	30.0	30.0	11.5	11.5		23.5	23.5	
Total Split (s)	20.0	70.0	70.0	15.0	65.0	65.0	25.0	25.0		25.0	25.0	
Total Split (%)	18.2%	63.6%	63.6%	13.6%	59.1%	59.1%	22.7%	22.7%		22.7%	22.7%	
Maximum Green (s)	15.5	66.0	66.0	10.5	61.0	61.0	19.5	19.5		19.5	19.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	0.5	0.5	1.0	0.5	0.5	1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	-0.5	0.0	0.0	-0.5	0.0	0.0		-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead						
Lead-Lag Optimize?												
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8	5.8	2.5	2.5		2.5	2.5	
Minimum Gap (s)	0.5	3.8	3.8	0.5	3.8	3.8	2.0	2.0		2.0	2.0	
Time Before Reduce (s)	8.0	10.0	10.0	8.0	10.0	10.0	5.0	5.0		5.0	5.0	
Time To Reduce (s)	3.0	10.0	10.0	3.0	10.0	10.0	5.0	5.0		5.0	5.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Walk Time (s)		7.0	7.0		7.0	7.0				7.0	7.0	
Flash Dont Walk (s)		15.0	15.0		19.0	19.0				11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0				0	0	
Act Effct Green (s)	16.0	75.4	75.4	5.8	57.5	57.5		24.5			24.5	
Actuated g/C Ratio	0.15	0.69	0.69	0.05	0.52	0.52		0.22			0.22	
v/c Ratio	0.84	0.62	0.17	0.07	0.86	0.03		1.03			0.61	
Control Delay	74.8	11.2	3.1	50.8	28.5	0.1		120.1			34.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	74.8	11.2	3.1	50.8	28.5	0.1		120.1			34.8	
LOS	E	B	A	D	C	A		F			C	
Approach Delay		17.6			28.1			120.1			34.8	
Approach LOS		B			C			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 28.2		Intersection LOS: C	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

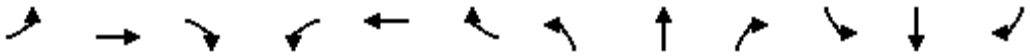


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	198	1374	168	6	1416	21	185	226
v/c Ratio	0.84	0.62	0.17	0.07	0.86	0.03	1.03	0.61
Control Delay	74.8	11.2	3.1	50.8	28.5	0.1	120.1	34.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.8	11.2	3.1	50.8	28.5	0.1	120.1	34.8
Queue Length 50th (ft)	135	201	12	4	418	0	~158	100
Queue Length 95th (ft)	#263	369	44	18	504	0	#304	#190
Internal Link Dist (ft)		388			222		285	130
Turn Bay Length (ft)	115		100	105		100		
Base Capacity (vph)	245	2211	1007	163	1756	819	179	370
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.62	0.17	0.04	0.81	0.03	1.03	0.61

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

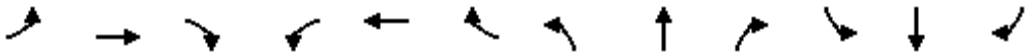
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Future Volume (vph)	186	1292	158	6	1331	20	137	28	8	47	27	138
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96			0.99	
Satd. Flow (prot)	1630	3228	1426	1630	3167	1423		1619			1527	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.48			0.91	
Satd. Flow (perm)	1630	3228	1426	1630	3167	1423		803			1404	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	198	1374	168	6	1416	21	146	30	9	50	29	147
RTOR Reduction (vph)	0	0	33	0	0	11	0	2	0	0	58	0
Lane Group Flow (vph)	198	1374	135	6	1416	10	0	183	0	0	168	0
Confl. Peds. (#/hr)	2		1	1		2	5					5
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	8%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		
Actuated Green, G (s)	19.2	71.7	71.7	1.3	53.8	53.8		23.0			23.0	
Effective Green, g (s)	19.7	71.7	71.7	1.8	53.8	53.8		24.5			24.5	
Actuated g/C Ratio	0.18	0.65	0.65	0.02	0.49	0.49		0.22			0.22	
Clearance Time (s)	4.5	4.0	4.0	4.5	4.0	4.0		5.5			5.5	
Vehicle Extension (s)	2.3	5.8	5.8	2.3	5.8	5.8		2.5			2.5	
Lane Grp Cap (vph)	291	2104	929	26	1548	695		178			312	
v/s Ratio Prot	0.12	c0.43		0.00	c0.45							
v/s Ratio Perm			0.09			0.01		c0.23			0.12	
v/c Ratio	0.68	0.65	0.15	0.23	0.91	0.01		1.03			0.54	
Uniform Delay, d1	42.2	11.6	7.4	53.4	26.0	14.5		42.8			37.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	5.6	1.6	0.3	2.6	9.9	0.0		75.7			1.4	
Delay (s)	47.8	13.2	7.7	56.1	35.9	14.5		118.5			39.1	
Level of Service	D	B	A	E	D	B		F			D	
Approach Delay (s)		16.6			35.7			118.5			39.1	
Approach LOS		B			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	1292	158	6	1331	20	137	28	8	47	27	138
Future Volume (veh/h)	186	1292	158	6	1331	20	137	28	8	47	27	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1709	1723	1723	1682	1723	1641	1641	1641	1723	1723	1723
Adj Flow Rate, veh/h	198	1374	137	6	1416	0	146	30	7	50	29	84
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	3	2	2	5	2	8	8	8	2	2	2
Cap, veh/h	264	2224	998	17	1722	787	219	35	8	115	74	156
Arrive On Green	0.16	0.68	0.68	0.01	0.54	0.00	0.18	0.19	0.18	0.18	0.19	0.18
Sat Flow, veh/h	1641	3247	1458	1641	3195	1460	839	185	41	379	390	818
Grp Volume(v), veh/h	198	1374	137	6	1416	0	183	0	0	163	0	0
Grp Sat Flow(s),veh/h/ln	1641	1624	1458	1641	1598	1460	1064	0	0	1587	0	0
Q Serve(g_s), s	12.7	25.4	3.6	0.4	40.4	0.0	8.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.7	25.4	3.6	0.4	40.4	0.0	18.9	0.0	0.0	10.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.80		0.04	0.31		0.52
Lane Grp Cap(c), veh/h	264	2224	998	17	1722	787	247	0	0	324	0	0
V/C Ratio(X)	0.75	0.62	0.14	0.34	0.82	0.00	0.74	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	264	2224	998	164	1772	810	247	0	0	324	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	44.0	9.5	6.0	54.0	21.0	0.0	45.1	0.0	0.0	40.8	0.0	0.0
Incr Delay (d2), s/veh	10.6	1.3	0.3	7.0	4.6	0.0	10.6	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	8.7	1.1	0.2	15.6	0.0	5.8	0.0	0.0	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	10.8	6.3	61.0	25.6	0.0	55.8	0.0	0.0	41.7	0.0	0.0
LnGrp LOS	D	B	A	E	C	A	E	A	A	D	A	A
Approach Vol, veh/h		1709			1422			183			163	
Approach Delay, s/veh		15.5			25.7			55.8			41.7	
Approach LOS		B			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	79.8		25.0	21.7	63.3		25.0				
Change Period (Y+Rc), s	4.5	* 4.5		5.5	4.5	4.0		5.5				
Max Green Setting (Gmax), s	10.5	* 66		19.5	15.5	61.0		19.5				
Max Q Clear Time (g_c+I1), s	2.4	27.4		12.4	14.7	42.4		20.9				
Green Ext Time (p_c), s	0.0	33.5		0.3	0.1	16.9		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

1: Ten Eyck Road & Pleasant Street (W) Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Vehicles Entered	17	25	18	56	163	24	303
Vehicles Exited	17	25	18	56	163	24	303
Hourly Exit Rate	17	25	18	56	163	24	303
Input Volume	18	24	19	54	169	21	306
% of Volume	94	105	94	103	97	113	99

2: Ten Eyck Road & Pleasant Street (E) Performance by movement

Movement	NBT	NBR	SBT	All
Vehicles Entered	78	10	192	280
Vehicles Exited	78	10	192	280
Hourly Exit Rate	78	10	192	280
Input Volume	78	11	196	284
% of Volume	101	93	98	99

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Vehicles Entered	63	958	46	1086	20	162	4	2	23	12	157	2533
Vehicles Exited	63	959	46	1087	20	162	4	2	23	12	157	2535
Hourly Exit Rate	63	959	46	1087	20	162	4	2	23	12	157	2535
Input Volume	64	982	39	1106	19	160	4	2	25	13	159	2572
% of Volume	98	98	118	98	107	101	100	100	93	91	99	99

Total Network Performance

Vehicles Entered	2579
Vehicles Exited	2582
Hourly Exit Rate	2582
Input Volume	7900
% of Volume	33

Intersection: 1: Ten Eyck Road & Pleasant Street (W)

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	70	63	40
Average Queue (ft)	25	7	1
95th Queue (ft)	52	35	19
Link Distance (ft)	624	59	201
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ten Eyck Road & Pleasant Street (E)

Movement	NB	SB
Directions Served	TR	LT
Maximum Queue (ft)	3	71
Average Queue (ft)	0	8
95th Queue (ft)	3	41
Link Distance (ft)	105	59
Upstream Blk Time (%)		1
Queuing Penalty (veh)		2
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

Movement	EB	EB	EB	EB	WB	WB	B8	B8	NB	SB
Directions Served	L	T	T	R	T	TR	T	T	LTR	LTR
Maximum Queue (ft)	152	291	233	106	283	267	108	68	183	143
Average Queue (ft)	33	142	94	15	174	162	9	3	84	83
95th Queue (ft)	94	249	189	59	267	252	55	30	151	140
Link Distance (ft)		349	349		199	199	1221	1221	285	105
Upstream Blk Time (%)		0			4	3				6
Queuing Penalty (veh)		0			0	0				12
Storage Bay Dist (ft)	115			100						
Storage Blk Time (%)	0	7	3		19					
Queuing Penalty (veh)	1	5	1		0					

Intersection: 8: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	199
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 21

1: Ten Eyck Road & Pleasant Street (W) Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Vehicles Entered	52	48	14	194	140	15	463
Vehicles Exited	52	48	14	194	141	15	464
Hourly Exit Rate	52	48	14	194	141	15	464
Input Volume	53	48	17	198	138	13	466
% of Volume	98	101	82	98	102	118	100

2: Ten Eyck Road & Pleasant Street (E) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Vehicles Entered	12	6	204	20	4	187	433
Vehicles Exited	12	6	205	21	4	187	435
Hourly Exit Rate	12	6	205	21	4	187	435
Input Volume	12	5	211	21	4	184	437
% of Volume	102	114	97	100	94	102	100

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicles Entered	167	1289	160	6	1333	19	137	31	8	44	34	120
Vehicles Exited	165	1289	161	6	1338	19	139	32	8	44	34	120
Hourly Exit Rate	165	1289	161	6	1338	19	139	32	8	44	34	120
Input Volume	178	1292	158	6	1331	19	137	28	8	45	33	118
% of Volume	93	100	102	100	101	99	101	115	97	98	103	102

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	All
Vehicles Entered	3348
Vehicles Exited	3355
Hourly Exit Rate	3355
Input Volume	3354
% of Volume	100

Total Network Performance

Vehicles Entered	3433
Vehicles Exited	3436
Hourly Exit Rate	3436
Input Volume	10386
% of Volume	33

Intersection: 1: Ten Eyck Road & Pleasant Street (W)

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	100	58	75
Average Queue (ft)	39	3	5
95th Queue (ft)	72	26	36
Link Distance (ft)	624	59	201
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ten Eyck Road & Pleasant Street (E)

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	44	9	91
Average Queue (ft)	15	0	25
95th Queue (ft)	41	7	78
Link Distance (ft)	599	106	59
Upstream Blk Time (%)			7
Queuing Penalty (veh)			12
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

Movement	EB	EB	EB	EB	WB	WB	WB	B8	B8	NB	SB
Directions Served	L	T	T	R	L	T	TR	T	T	LTR	LTR
Maximum Queue (ft)	214	437	402	200	67	292	289	365	342	297	142
Average Queue (ft)	127	215	186	52	7	257	247	111	84	153	109
95th Queue (ft)	224	368	340	159	39	308	314	280	246	268	157
Link Distance (ft)		700	700			200	200	1221	1221	882	106
Upstream Blk Time (%)					0	24	20				25
Queuing Penalty (veh)					0	0	0				49
Storage Bay Dist (ft)	115			100	105						
Storage Blk Time (%)	15	14	13	0		36					
Queuing Penalty (veh)	98	25	20	0		2					

Network Summary

Network wide Queuing Penalty: 208

1: Ten Eyck Road & Pleasant Street (W) Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Vehicles Entered	16	24	17	58	166	24	305
Vehicles Exited	16	24	17	58	167	25	307
Hourly Exit Rate	16	24	17	58	167	25	307
Input Volume	18	24	19	54	169	21	306
% of Volume	89	101	88	106	99	118	100

2: Ten Eyck Road & Pleasant Street (E) Performance by movement

Movement	WBL	NBT	NBR	SBT	All
Vehicles Entered	7	79	38	195	319
Vehicles Exited	7	78	38	195	318
Hourly Exit Rate	7	78	38	195	318
Input Volume	8	78	38	196	320
% of Volume	90	100	99	100	100

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Vehicles Entered	87	974	40	1102	23	160	4	2	25	14	163	2594
Vehicles Exited	87	977	40	1103	23	161	4	2	25	15	163	2600
Hourly Exit Rate	87	977	40	1103	23	161	4	2	25	15	163	2600
Input Volume	88	982	39	1106	22	160	4	2	26	14	166	2608
% of Volume	99	99	103	100	106	101	100	100	97	105	98	100

Total Network Performance

Vehicles Entered	2639
Vehicles Exited	2650
Hourly Exit Rate	2650
Input Volume	8011
% of Volume	33

Intersection: 1: Ten Eyck Road & Pleasant Street (W)

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	55	52	12
Average Queue (ft)	23	5	1
95th Queue (ft)	49	28	8
Link Distance (ft)	624	59	201
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ten Eyck Road & Pleasant Street (E)

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	33	9	75
Average Queue (ft)	7	0	8
95th Queue (ft)	28	6	42
Link Distance (ft)	599	105	59
Upstream Blk Time (%)			1
Queuing Penalty (veh)			2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

Movement	EB	EB	EB	EB	WB	WB	B8	B8	NB	SB
Directions Served	L	T	T	R	T	TR	T	T	LTR	LTR
Maximum Queue (ft)	149	310	233	55	272	269	98	75	204	141
Average Queue (ft)	44	143	96	12	190	173	11	5	91	85
95th Queue (ft)	109	251	193	40	283	267	56	37	164	143
Link Distance (ft)		349	349		199	199	1221	1221	285	105
Upstream Blk Time (%)		0			6	4			0	7
Queuing Penalty (veh)		0			0	0			0	13
Storage Bay Dist (ft)	115			100						
Storage Blk Time (%)	0	7	3	0	22					
Queuing Penalty (veh)	2	7	1	0	0					

Intersection: 8: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	199
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 25

1: Ten Eyck Road & Pleasant Street (W) Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Vehicles Entered	56	46	18	196	142	12	470
Vehicles Exited	56	46	18	196	143	12	471
Hourly Exit Rate	56	46	18	196	143	12	471
Input Volume	53	48	17	198	138	13	466
% of Volume	106	96	106	99	103	94	101

2: Ten Eyck Road & Pleasant Street (E) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Vehicles Entered	33	7	208	27	4	186	465
Vehicles Exited	34	6	210	27	4	186	467
Hourly Exit Rate	34	6	210	27	4	186	467
Input Volume	34	5	212	30	4	184	468
% of Volume	100	114	99	91	94	101	100

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicles Entered	180	1297	162	5	1350	20	136	29	8	45	35	141
Vehicles Exited	179	1298	163	5	1354	20	137	29	8	45	36	141
Hourly Exit Rate	179	1298	163	5	1354	20	137	29	8	45	36	141
Input Volume	186	1292	158	6	1331	20	137	28	8	47	34	138
% of Volume	96	100	103	83	102	99	100	105	97	96	107	102

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	All
Vehicles Entered	3408
Vehicles Exited	3415
Hourly Exit Rate	3415
Input Volume	3386
% of Volume	101

Total Network Performance

Vehicles Entered	3490
Vehicles Exited	3494
Hourly Exit Rate	3494
Input Volume	10484
% of Volume	33

Intersection: 1: Ten Eyck Road & Pleasant Street (W)

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	131	46	96
Average Queue (ft)	42	4	9
95th Queue (ft)	97	28	56
Link Distance (ft)	624	59	201
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ten Eyck Road & Pleasant Street (E)

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	128	24	89
Average Queue (ft)	39	1	32
95th Queue (ft)	102	16	88
Link Distance (ft)	599	106	59
Upstream Blk Time (%)		0	10
Queuing Penalty (veh)		0	20
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

Movement	EB	EB	EB	EB	WB	WB	WB	B8	B8	NB	SB
Directions Served	L	T	T	R	L	T	TR	T	T	LTR	LTR
Maximum Queue (ft)	215	556	500	200	126	304	307	371	336	284	145
Average Queue (ft)	147	254	213	58	8	259	249	116	90	145	115
95th Queue (ft)	243	470	419	170	54	316	314	284	251	248	158
Link Distance (ft)		700	700			200	200	1221	1221	882	106
Upstream Blk Time (%)		0	0		0	24	20				34
Queuing Penalty (veh)		0	0		0	0	0				76
Storage Bay Dist (ft)	115			100	105						
Storage Blk Time (%)	23	15	14	0	0	35					
Queuing Penalty (veh)	148	28	22	0	0	2					

Intersection: 8: Bend

Movement	EB	EB
Directions Served	T	T
Maximum Queue (ft)	6	11
Average Queue (ft)	0	0
95th Queue (ft)	6	8
Link Distance (ft)	200	200
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 297

1: Ten Eyck Road & Pleasant Street (W) Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Vehicles Entered	18	26	17	56	172	24	313
Vehicles Exited	18	26	17	56	172	24	313
Hourly Exit Rate	18	26	17	56	172	24	313
Input Volume	18	24	19	54	169	21	306
% of Volume	100	109	88	103	102	113	102

2: Ten Eyck Road & Pleasant Street (E) Performance by movement

Movement	WBL	NBT	NBR	SBT	All
Vehicles Entered	7	78	36	201	322
Vehicles Exited	7	78	37	201	323
Hourly Exit Rate	7	78	37	201	323
Input Volume	8	78	38	196	320
% of Volume	90	100	97	103	101

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Vehicles Entered	88	993	39	1119	21	165	4	4	24	13	173	2643
Vehicles Exited	87	993	39	1123	21	165	4	4	24	13	173	2646
Hourly Exit Rate	87	993	39	1123	21	165	4	4	24	13	173	2646
Input Volume	88	982	39	1106	22	160	4	2	26	14	166	2608
% of Volume	99	101	100	102	97	103	100	200	93	91	104	101

Total Network Performance

Vehicles Entered	2691
Vehicles Exited	2693
Hourly Exit Rate	2693
Input Volume	8011
% of Volume	34

Intersection: 1: Ten Eyck Road & Pleasant Street (W)

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	58	46	19
Average Queue (ft)	24	5	1
95th Queue (ft)	49	27	17
Link Distance (ft)	624	59	201
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ten Eyck Road & Pleasant Street (E)

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	34	41
Average Queue (ft)	7	2
95th Queue (ft)	28	20
Link Distance (ft)	601	59
Upstream Blk Time (%)		0
Queuing Penalty (veh)		1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

Movement	EB	EB	EB	EB	WB	WB	B8	B8	NB	SB	SB
Directions Served	L	T	T	R	T	TR	T	T	LTR	L	TR
Maximum Queue (ft)	193	301	242	80	275	262	143	113	202	81	130
Average Queue (ft)	47	139	92	12	190	176	16	10	90	22	67
95th Queue (ft)	119	252	195	49	285	268	84	65	158	60	118
Link Distance (ft)		341	341		192	192	1221	1221	285	104	104
Upstream Blk Time (%)		0	0		7	6				0	3
Queuing Penalty (veh)		0	0		0	0				0	3
Storage Bay Dist (ft)	115			100							
Storage Blk Time (%)	0	7	3	0	22						
Queuing Penalty (veh)	2	6	1	0	0						

Network Summary

Network wide Queuing Penalty: 14

1: Ten Eyck Road & Pleasant Street (W) Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Vehicles Entered	50	48	17	198	144	14	471
Vehicles Exited	51	48	17	198	145	14	473
Hourly Exit Rate	51	48	17	198	145	14	473
Input Volume	53	48	17	198	138	13	466
% of Volume	96	101	100	100	105	110	101

2: Ten Eyck Road & Pleasant Street (E) Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Vehicles Entered	31	5	212	29	4	191	472
Vehicles Exited	32	5	213	29	4	191	474
Hourly Exit Rate	32	5	213	29	4	191	474
Input Volume	34	5	212	30	4	184	468
% of Volume	94	95	101	97	94	104	101

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicles Entered	190	1277	152	6	1336	20	136	23	8	45	38	141
Vehicles Exited	190	1279	153	5	1340	20	139	24	8	44	38	140
Hourly Exit Rate	190	1279	153	5	1340	20	139	24	8	44	38	140
Input Volume	186	1292	158	6	1331	20	137	28	8	47	34	138
% of Volume	102	99	97	83	101	99	101	86	97	94	113	101

3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26) Performance by movement

Movement	All
Vehicles Entered	3372
Vehicles Exited	3380
Hourly Exit Rate	3380
Input Volume	3386
% of Volume	100

Total Network Performance

Vehicles Entered	3449
Vehicles Exited	3456
Hourly Exit Rate	3456
Input Volume	10484
% of Volume	33

Intersection: 1: Ten Eyck Road & Pleasant Street (W)

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	95	56	56
Average Queue (ft)	38	5	4
95th Queue (ft)	70	33	32
Link Distance (ft)	624	59	201
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Ten Eyck Road & Pleasant Street (E)

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	96	40	86
Average Queue (ft)	28	2	14
95th Queue (ft)	68	21	59
Link Distance (ft)	601	104	59
Upstream Blk Time (%)		0	3
Queuing Penalty (veh)		0	6
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Wolf Drive/Ten Eyck Road & Mt. Hood Highway (US 26)

Movement	EB	EB	EB	EB	WB	WB	WB	B8	B8	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	T	T	LTR	L	TR
Maximum Queue (ft)	215	550	490	200	128	302	289	376	353	280	102	144
Average Queue (ft)	145	240	197	50	10	253	242	121	94	147	36	86
95th Queue (ft)	239	440	385	153	64	306	302	303	281	247	85	147
Link Distance (ft)		692	692			193	193	1221	1221	881	104	104
Upstream Blk Time (%)		0			0	25	20				1	13
Queuing Penalty (veh)		0			0	0	0				1	15
Storage Bay Dist (ft)	115			100	105							
Storage Blk Time (%)	24	14	13	0		35						
Queuing Penalty (veh)	153	26	20	0		2						

Network Summary

Network wide Queuing Penalty: 223

Appendix D
Crash History

026: MT. HOOD

Highway 026 ALL ROAD TYPES, MP 24.61 to 24.64 01/01/2014 to 12/31/2018, Both Add and Non-Add mileage

1 - 4 of 11 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P / E D	A L C	D R / U G S	M J / N I V	S C / H L	W O / R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
03162	N	N	N	N			08/16/2014	CLACKAMAS	1	14		INTER	5-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NO RPT							SA	SANDY	MN 0		PIONEER BLVD	E		TRF SIGNAL	N	DRY	REAR		UNKN	E -W									000		00
N							4P	SANDY UA	24.61		SE TEN EYCK RD	06	0		N	DAY	INJ		MTRCYCLE		01	DRVR	NONE	00	M	UNK		026	000		29
N							45 23 49.25	-122 15 19.74			002600100S00															UNK					
																		02	NONE 0	STOP											
																			PRVTE	E -W									011		00
																			PSNGR CAR		01	DRVR	NONE	72	M	OR-Y		000	000		00
																										OR<25					
																		02	NONE 0	STOP											
																			PRVTE	E -W									011		00
																			PSNGR CAR		02	PSNG	INJC	64	F			000	000		00
03787	N	N	N	N	N	N	09/15/2015	CLACKAMAS	1	14		INTER	5-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE							TU	SANDY	MN 0		PIONEER BLVD	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
N							1P	SANDY UA	24.61		SE TEN EYCK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y		026	000		29
N							45 23 49.24	-122 15 19.74			002600100S00															OR<25					
																		02	NONE 0	STOP											
																			PRVTE	E -W									011		00
																			PSNGR CAR		01	DRVR	INJC	38	F	OTH-Y N-RES		000	000		00
02412	N	N	N	N			06/24/2014	CLACKAMAS	1	14		INTER	5-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE							TU	SANDY	MN 0		PIONEER BLVD	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW									000		00
N							8A	SANDY UA	24.61		SE TEN EYCK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	55	F	OR-Y		026	000		29
N							45 23 49.25	-122 15 19.74			002600100S00															OR<25					
																		02	NONE 0	STOP											
																			PRVTE	SE-NW									011		00
																			PSNGR CAR		01	DRVR	INJC	51	F	OR-Y OR<25		000	000		00
04899	N	N	N	N	N	N	12/04/2018	CLACKAMAS	1	14		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											10
CITY							TU	SANDY	MN 0		PIONEER BLVD	E	(NONE)	TRF SIGNAL	N	DRY	SS-O		PRVTE	E -W									000		00
N							8A	SANDY UA	24.63		WOLF DR	04			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	48	F	SUSP		080	026		10
N							45 23 49.07	-122 15 18.32			002600100S00		(04)													OR<25					
																		02	NONE 0	STOP											
																			PUBLC	E -W									011		00
																			SCHL BUS		01	DRVR	NONE	44	F	OR-Y OR<25		000	000		00
00248	N	N	N	N			01/20/2018	CLACKAMAS	1	14		STRGHT		N	N	CLD	S-1STOP	01	NONE 0	STRGHT										003	07,29
CITY							SA	SANDY	MN 0		PROCTOR BLVD	SE	(NONE)	NONE	N	DRY	REAR		PRVTE	SE-NW									000		00
N							3P	SANDY UA	24.64		WOLF DR	05			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		043,026	038	003	07,29
N							45 23 48.99	-122 15 17.63			002600100S00		(04)													OR>25					

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R J	U G N H	S V L	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																	02	NONE 0	STOP										
																		PRVTE	SE-NW									011		00
																		PSNGR CAR		01	DRVR	INJC	43	M	OR-Y		000	000		00
																									OR<25					
																	02	NONE 0	STOP										
																		PRVTE	SE-NW									011		00
																		PSNGR CAR		02	PSNG	INJC	35	F			000	000		00
																	02	NONE 0	STOP										
																		PRVTE	SE-NW									011		00
																		PSNGR CAR		03	PSNG	NONE	04	M			000	000		00
04077	N	N	N	N			10/14/2014	CLACKAMAS	1 14		INTER	6-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NO RPT							TU	SANDY	CP 0	PIONEER BLVD	W		TRF SIGNAL	N	WET	REAR		UNKN	W -E									000		00
N							6A	SANDY UA	24.61	WOLF DR	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000		29
N							45 23 49.25	-122 15 19.74		002600100S00															UNK					
																	02	NONE 0	STOP										
																		PRVTE	W -E									011		00
																		PSNGR CAR		01	DRVR	INJC	70	M	OR-Y		000	000		00
																									OR<25					
03023	N	N	N	N	N	N	08/06/2014	CLACKAMAS	1 14		INTER	5-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										082	04
CITY							WE	SANDY	CP 0	PIONEER BLVD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	W -E									000		00
N							1P	SANDY UA	24.61	WOLF DR	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		000	000		00
N							45 23 49.25	-122 15 19.74		002600100S00															OR<25					
																	02	NONE 0	STRGHT										
																		PRVTE	N -S									000		00
																		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y		020	000	082	04
																									OR<25					
01741	N	N	N	N	N	N	05/09/2015	CLACKAMAS	1 14		INTER	5-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE							SA	SANDY	CP 0	PIONEER BLVD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	S -N									000		00
N							6A	SANDY UA	24.61	WOLF DR	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OTH-Y		020	026		04
N							45 23 49.25	-122 15 19.74		002600100S00															OR<25					
																	02	NONE 0	STRGHT										
																		PRVTE	W -E									000		00
																		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y		000	000		00
																									OR<25					
00512	N	N	N	N	N	N	02/07/2017	CLACKAMAS	1 14		INTER	5-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-L											04
CITY							TU	SANDY	CP 0	PIONEER BLVD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S -W									000		00
N							4P	SANDY UA	24.61	WOLF DR	04	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	55	F	OR-Y		000	000		00
N							45 23 49.25	-122 15 19.74		002600100S00															OR<25					
																	02	NONE 0	STRGHT										
																		PRVTE	W -E									000		00
																		PSNGR CAR		01	DRVR	NONE	63	M	OR-Y		020	000		04
																									OR>25					

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L	M J U G	S I N H	C O W R	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
03089	N	N	N	N		09/03/2018	CLACKAMAS	2 14		INTER	5-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE						MO	SANDY	MN 0	PROCTOR BLVD	SE		TRF SIGNAL	N	DRY	REAR		UNKN	SE-NW									000	00
N						3P	SANDY UA	24.63	SE TEN EYCK RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000		29
N						45 23 49.25	-122 15 19.75		002600200S00															UNK				
																02	NONE 0	STOP										
																	PRVTE	SE-NW									011	00
																	PSNGR CAR		01	DRVR	INJC	25	F	OR-Y		000	000		00
																								OR>25				
05173	N	N	N	N		11/08/2016	CLACKAMAS	2 14		INTER	5-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	U-TURN										06
NONE						TU	SANDY	CP 0	PROCTOR BLVD	W		TRF SIGNAL	N	DRY	TURN		N/A	W -W									000	00
N						5P	SANDY UA	24.63	SE TEN EYCK RD	05	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N						45 23 49.25	-122 15 19.74		002600200S00		(02)													UNK				
																02	NONE 9	TURN-R										
																	N/A	NE-W									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK				

General & Site Information	
Analyst:	John Manix PE
Agency/Company:	PBS Engineering and Env.
Date:	3/10/2020
Project Name:	Sandy Health Clinic

Intersection Crash Data

Intersection	Intersection Type	Year 2014	2015	2016	2017	2018	Total
Highway 26 and Ten Eyck	Urban 4SG	4	2	1	1	3	11
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
	Total	4	2	1	1	3	11

Intersection Population Type Crash Rate				
Average Crash Rate per intersection type				
Intersection Pop. Type	**Sum of Crashes**	**Sum of 5-year MEV**	**Avg Crash Rate for Ref Pop.**	**INT in Pop**
Rural 3SG	0	0		
Rural 3ST	0	0		
Rural 4SG	0	0		
Rural 4ST	0	0		
Urban 3ST	0	0		
Urban 3SG	0	0		
Urban 4ST	0	0		
Urban 4SG	11	43	0.2567	1

Critical Rate Calculation								
Intersection	**AADT Entering Intersection**	**5-year MEV**	**Crash Total**	**Intersection Population Type**	**Intersection Crash Rate**	**Reference Population Crash Rate**	**Critical Rate**	**Over Critical**
Highway 26 and Ten Eyck	23,480	42.9	11	Urban 4SG	0.26	0.26	0.40	Under

EXHIBIT I

COPY

Health, Housing & Human Services
CLACKAMAS COUNTY

Deborah Cockrell, FQHC Director
Clackamas Health Centers

Administration
Public Service Building
2051 Kaen Road, Suite 367
Oregon City, OR 97045-4035
503-742-5300

Beavercreek Health Center
110 Beavercreek Road
Oregon City, OR 97045-4023
503-655-8471
Primary Care, Dental Services and Behavioral Health

Sunnyside Health Center
9775 SE Sunnyside Road
Suite 200
Clackamas, OR 97015-5721
503-655-8471
Primary Care, Dental Services and Behavioral Health

Gladstone Health Clinic
18911 Portland Avenue
Gladstone, OR 97027-1630
503-850-4472
Primary Care, Pediatrics, Dental Services and Behavioral Health

Sandy Health Clinic
37400 SE Bell Street
Sandy, OR 97055-7868
503-668-3493
Primary Care and Behavioral Health

Hilltop Behavioral Health Clinic
998 Library Court
Oregon City, OR 97045-4041
503-655-8401

Stewart Behavioral Health Clinic
1002 Library Court
Oregon City, OR 97045-4066
503-655-8264

Sandy Behavioral Health Clinic
38872 Proctor Boulevard
PO Box 1390
Sandy, OR 97055-8035
503-722-6950

School Based Health Centers
Oregon City High School
19761 S Beavercreek Road
Oregon City, OR 97045-9557
503-785-8770

Rex Putnam High School
4950 SE Roethe Rd.
Milwaukie, OR 97267-5746
503-722-6858

Sandy High School
37400 Bell Street
Sandy, OR 97055-7868
503-668-3483

February 10, 2020

Police Chief Ernie Roberts
Sandy Police Department
39850 Pleasant Street
Sandy, Oregon 97055

RE: SIX SHARED PARKING SPACES ALIGNED ON THE PROPERTY LINE BETWEEN OUR PROPERTIES

Dear Chief Roberts:

This letter is to communicate openly with your office regarding the six shared parking spaces, along your west property line. At the time of our interest in the vacant building (i.e. property) adjacent to your precinct, we were informed by the seller(s) of the existing six shared parking spaces agreement that was established some time ago. The City of Sandy Design Review Process requires the County to maintain the use of the existing six shared parking spaces.

Our architectural firm, Ankrom Moisan Architects, Inc. on our behalf is working with the City of Sandy Planning Office to meet their requirements for our new building design. At this point, we are unaware of an exact start of our construction schedule for the New Sandy Health Clinic. However, the construction project will occur sometime in 2020-2021. As soon as our project is released to the public via the bidding process to contractors, we will alert your office of our planned steps and keep you apprised of an established construction schedule, once we receive bids. Once a general contractor is hired, we will need to use the parking spaces between our property lines for staging for the project. We are hopeful this is an allowable request.

In regards to the shared parking spaces, no employee will park there in the future, once the new building opens to the public. Only patients will be parking in our new lot and periodically using the shared parking spaces. Attached please find the proposed building site plan, which includes the shared parking spaces.

It is the County's full intention to be good neighbors of the Sandy Police Department. If you have questions, I can reach me at my office phone number 503-742-5495. The assigned Project Coordinator is Steve Kelly and his phone number is 503-650-5665. Thank you for your valuable time.

Sincerely,

Deborah Cockrell

Deborah Cockrell, FQHC
Health Centers, Director

Cc: Steve Kelly, Project Coordinator
Ankrom Moisan Architects, Inc.

2/3/2020 2:46:54 PM

ZONING: C-1 (CENTRAL BUSINESS DISTRICT)

SETBACKS: 10' ABUTTING RESIDENTIAL ZONE
5' LANDSCAPE BUFFER PLANTINGS AT PARKING ADJACENT TO THE R-O-W
10' MAXIMUM SETBACK

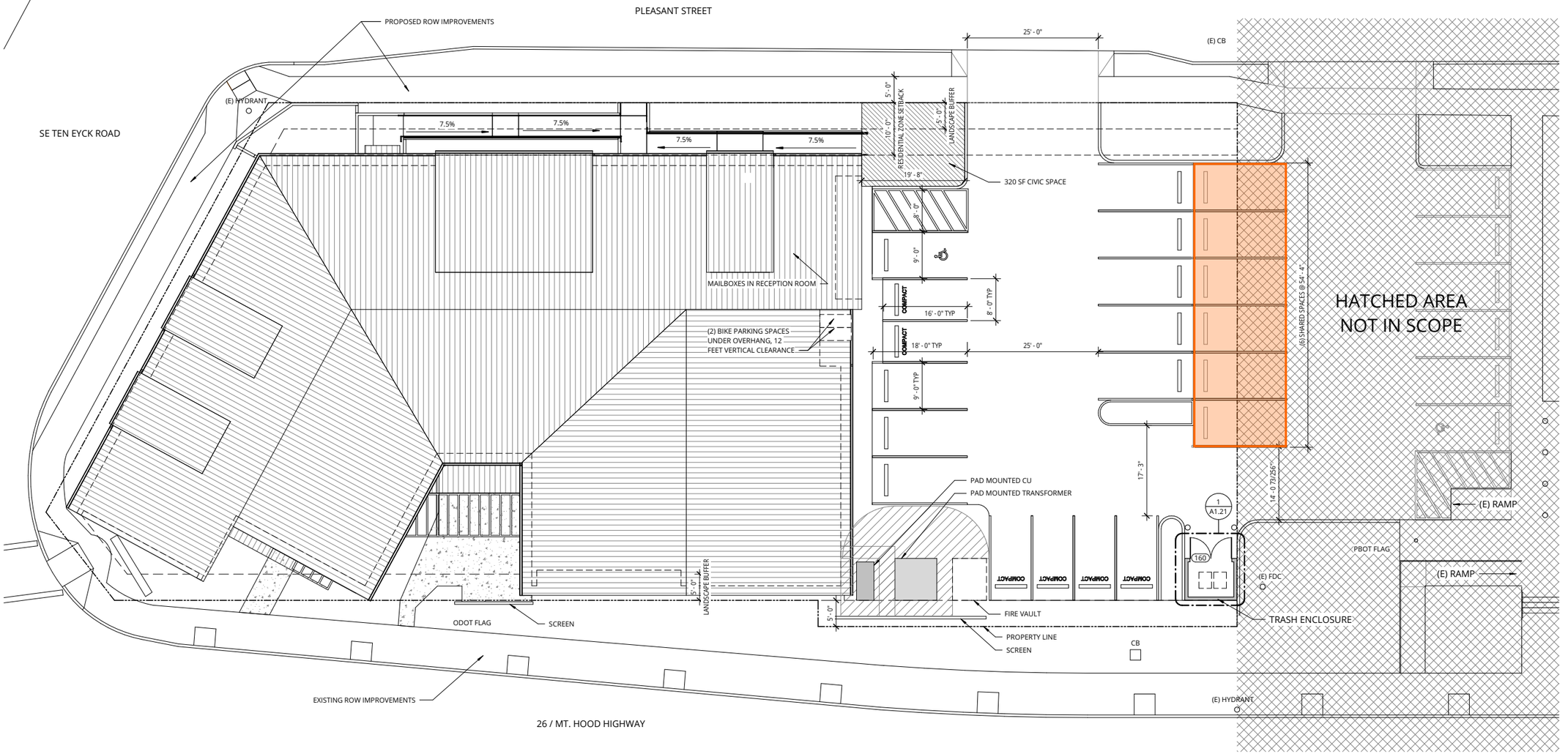
OFF-STREET CAR PARKING REQUIRED:
1 PER 300 SF; 1 PER 2 EMPLOYEES
PATIENT SPACES: 8,345 GSF / 300 = 27.81 STALLS
25% REDUCTION FOR C-1 ZONE = 20.86 REQUIRED STALLS
STAFF SPACES: 12 MAX STAFF, 6+ PARKING STALLS AT IMMANUEL LUTHERAN CHURCH PARKING LOT
COMPACT: 6 SPACES/21 TOTAL SPACES 29%>35% (OK)
ACCESSIBLE: 1 VAN ACCESSIBLE STALL

BIKE PARKING REQUIRED:
5% OR 2: TOTAL PARKING = 27 x 5% = 1.4; 2 BIKE PARKING SPACES REQUIRED

LANDSCAPING:
REQUIRED: 10% MINIMUM (INCLUDING REQUIRED CIVIC SPACE) x 20,473 SF = 2,047 SF
PROVIDED: 15% (2,999 SF TOTAL)

GENERAL NOTES - SITE PLAN

1. REFER TO SHEET A0.01 FOR 'PROJECT NOTES' APPLICABLE TO ALL PORTIONS OF THE WORK.
2. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION, CONFLICTS ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION RELATED TO SUCH.
3. REFER TO CIVIL DRAWINGS FOR GRADING AND UTILITY INFORMATION.
4. CONTRACTORS SHALL VERIFY ALL LOCATIONS OF EXISTING UTILITIES, CARE SHOULD BE TAKE TO AVOID DAMAGE TO OR DISTURBANCE OF EXISTING UTILITIES.
5. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ALL PUBLIC RIGHT-OF-WAY IMPROVEMENTS.
6. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULL BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR THE LOCATION OF THE HOOK-UP.
7. THE CONSTRUCTION SHALL NOT BE WITHIN 10' OF ANY POWER LINES - WHETHER OR NOT THE POWER LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS OR ADDITIONAL EXPENSES.



PROJECT

1 SITE PLAN
1" = 10'-0"

C:\ Revit Projects\192530-17-Sandy Clinic\192530-17-Sandy Clinic_scotts.rvt

NOT FOR CONSTRUCTION

Ankrom Moisan

38 NORTHWEST DAVIS, SUITE 300
PORTLAND, OR 97209
503.245.7100

1505 5TH AVE, SUITE 300
SEATTLE, WA 98101
206.576.1600

1014 HOWARD STREET
SAN FRANCISCO, CA 94103
415.252.7063

SANDY HEALTH CLINIC
39831 HIGHWAY 26
SANDY, OR 97055
CLACKAMAS COUNTY

REVISION	DATE	REASON FOR ISSUE

SITE PLAN

DESIGN DEVELOPMENT

DATE	PROJECT NUMBER
1.24.2020	192530

SHEET NUMBER
A1.01

EXHIBIT J

PARKING SPACE LEASE AGREEMENT

This agreement is made and entered into this___ day of_____ , 2020, by and between **Immanuel Lutheran Church** ("Owner") and **Clackamas County** ("County") for the lease of Seventeen (17) parking spaces, in the south parking lot across Pleasant Street from property described as Lots One (1) to including Lot Twelve (12), Block Two (2), Minnie Meinig's Pine View Tracts and commonly known as 39901 Pleasant Street, Sandy OR 97055 (map attached).

Owner represents that it has the right to lease these parking spaces to the County for the County's exclusive use, subject to the following terms and conditions.

1. Term. The lease shall commence on _____, 2020 and shall end on _____, 2027. County shall be allowed use of the spaces between the hours of 6am to 8pm, Monday through Friday.

2. Hold Over. If County shall hold over and remain in possession of said premises after expiration of this Lease without any written lease actually being made, such holding over shall not be deemed to operate as a renewal or extension of this Lease but shall only create a tenancy which may be terminated at any time by Owner upon sixty (60) days written notice to County.

3. Renewal. This Lease may be renewed for successive seven (7) year terms ("Renewal Term") by mutual written agreement of the parties, executed not less than six (6) months prior to the expiration of the Initial Term or any Renewal Term, as applicable.

4. Use. County will use the leased parking spaces only for the parking of vehicles. Owner will provide County with exclusive use of the leased parking spaces, and Owner will provide signage indicating that these spaces are reserved for County use during the hours of operation noted in 1. Above. County shall be entitled to full use and possession of the parking spaces for the entire lease term.

5. Fees and Payment. The annual fee will be $6,000 per year. Payment is due on the first day of _____ and is payable by the 14th day of _____. A late fee of $100 will be assessed on the 15th day of _____ if payment has not been received by the 14th day. No deposit is required. Checks for payment should be made payable to:

Immanuel Lutheran Church
39901 Pleasant Street

Sandy, Oregon 97055

6. Property Taxes and other expenses. Owner is solely responsible for property taxes or other expenses such as electric bill for lighting (if any) on the leased parking spaces.

7. Maintenance. County shall be responsible for any necessary trash collection, sweeping, or maintenance of the leased parking spaces. Owner shall be responsible for all other necessary maintenance of the leased parking spaces.

8. Termination.

a. Either party may terminate the Lease upon occurrence of an event of default. An event of default shall be deemed to occur should any of the following events happen:

1. Failure of County to pay lease fees within 30 days from written notice by Owner to County that lease fees are overdue;
2. Repeated failure of County or its employees to obey reasonable rules of the Owner concerning matters of security, safety, or preservation of the Owner's facilities, during the term of the Agreement; or
3. Failure of either party to comply with any term or condition of this Agreement.

In the event of default, the defaulting party shall be given notice of the default in writing by the other party. The party which has been given notice of default shall have 30 days to correct said default. If the default is not corrected within the 30 day notice period, the other party shall have the right to terminate this lease by giving written notice of uncorrected default and termination to the defaulting party. Any notice shall be given by in writing through certified mail, and shall be effective upon receipt. Notice shall be sent to the address for the receiving party as designated herein.

b. County may terminate this Lease in the event the County fails to receive expenditure authority sufficient to allow County, in the exercise of its reasonable administrative discretion, to continue to make payments for performance of this Lease, or if federal or state laws, regulations or guidelines are modified or interpreted in such a way that County is prohibited from performing under the Lease.

c. Any termination of this Lease shall not prejudice any rights or obligations accrued to the parties prior to termination.

9. Constitutional Debt Limitation. This Lease is expressly subject to the debt limitation of Oregon Counties set forth in Article XI, Section 10 of the Oregon Constitution, and is contingent

upon funds being appropriated therefor. Any provisions herein which would conflict with law are deemed inoperative to that extent.

10. **No Attorney Fees:** In the event any arbitration, action or proceeding, including any bankruptcy proceeding, is instituted to enforce any term of this Lease, each party shall be responsible for its own attorneys' fees and expenses.

11. **Warrant of Authority:** Owner warrants and represents that it is the sole owner of the leased premises subject to this Lease, and that Owner has full authority to execute this Lease. The undersigned warrants and represents that he/she has full authority to sign on behalf of Owner.

[SIGNATURES TO FOLLOW]

Lessee:
CLACKAMAS COUNTY

Commissioner Jim Bernard, Chair
Commissioner Sonya Fischer
Commissioner Ken Humberston
Commissioner Paul Savas
Commissioner Martha Schrader

Signing on Behalf of the Board.

_____
Richard Swift, Director
Health, Housing, and Human Services Department

_____
Date

Lessor:
IMMANUEL LUTHERAN CHURCH

39901 Pleasant Street
Sandy, Oregon 97055

_____
Dwight Reigert, Legal Signer

_____
Date

STATE OF OREGON, County of Clackamas) ss.

***BE IT REMEMBERED*,** that on this _____ day of _____, 2020, before me, the undersigned, a Notary Public in and for said County and State, personally appeared **DWIGHT REIGERT** known to be to be the individual(s) described in and who executed the within Parking Space Lease Agreement, and acknowledged to me that said individual(s) executed the same freely and voluntarily.

IN TESTIMONY WHEREOF, I have hereunto sent my hand and affixed my official seal the day and year last about written.

_____
NOTARY PUBLIC FOR OREGON

[PROPERTY MAP TO FOLLOW]


Immanuel
Lutheran Church
Pleasant St
Sandy Police Department
Pleasant St
Mt Hood Hwy
South
Parking Lot
U.S. Hwy 26
Mt Hood Hwy

EXHIBIT K

AAI afghan associates, inc.
ENGINEERING

MEMORANDUM

DATE: 03/23/2020
BY: Norm Scheg
SUBJECT: Stormwater Utility Narrative
PROJECT: Sandy Health Clinic
PROJECT NO.: A19188.10

This memorandum is to outline the stormwater requirements for the Sandy Health Clinic project located at 39831 Highway 26, Sandy, OR 97055. The project consists of construction of a 10,940SF building, 5,291SF of pervious parking lot with associated pedestrian pathways and utilities. The total site is 20,204SF and is predominately impervious with an existing building and parking lot. Post construction we will be collecting roof runoff in downspouts that will be hard piped to a drywell. This drywell is "authorized by rule" by Oregon DEQ as it will infiltrate runoff from roofs and a parking lot of less than 50 vehicles. We will be constructing pervious pavement for the parking area as well. Both of these facilities have been modeled utilizing 2" per hour as a basis for storage sizing. Once the site has been cleared, and before construction of any utilities, a Geotechnical Engineer will be retained to test the actual infiltration rates of the native soils to assure they have at least a design infiltration rate of 2" per hour or more. The drywell sizing will be reviewed at that time to see it the annulus of rock can be reduced. The rock under the pervious pavement is the minimum thickness for structural integrity. Attached are HydroCAD calculations verifying the infiltration systems meets the stated requirements. A comprehensive stormwater plan will be submitted with the next submittal.

4875 SW Griffith Drive | Suite 300 | Beaverton, OR | 97005

503.620.3030 | tel 503.620.5539 | fax

www.aaieng.com

Pervious Pavement Pavement Aggregate

Subcat Reach Pond Link

Routing Diagram for A19188.10 - Sandy Health Clinic
Prepared by AAI Enginering Inc., Printed 3/23/2020

Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pervious Pavement Runoff Area=5,291 sf 100.00% Impervious Runoff Depth>4.19"
Tc=0.0 min CN=0/98 Runoff=0.15 cfs 0.042 af

Pond 1P: Pavement Aggregate Peak Elev=0.00' Storage=16 cf Inflow=0.15 cfs 0.042 af
Outflow=0.15 cfs 0.042 af

Total Runoff Area = 0.121 ac Runoff Volume = 0.042 af Average Runoff Depth = 4.19"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.121 ac

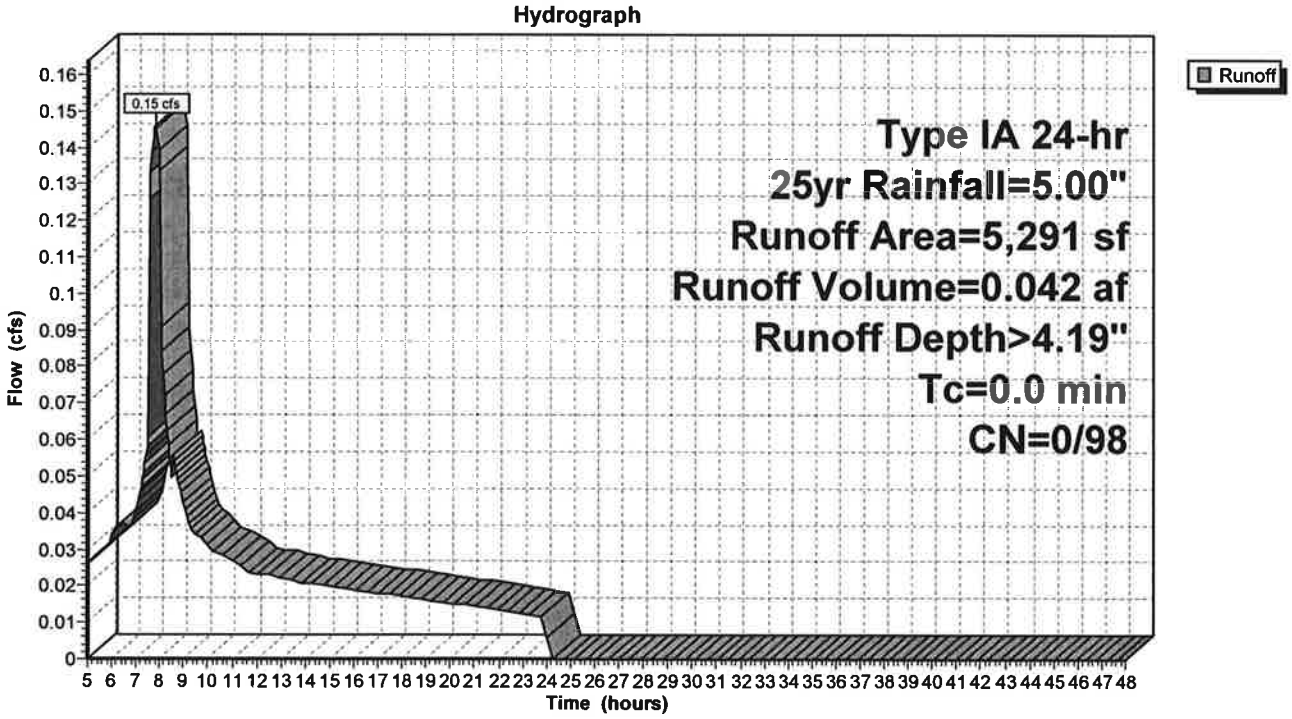
Summary for Subcatchment 1S: Pervious Pavement

Runoff = 0.15 cfs @ 7.80 hrs, Volume= 0.042 af, Depth> 4.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25yr Rainfall=5.00"

	Area (sf)	CN	Description
*	5,291	98	Pervious Pavement
	5,291	98	100.00% Impervious Area

Subcatchment 1S: Pervious Pavement



Summary for Pond 1P: Pavement Aggregate

Inflow Area = 0.121 ac,100.00% Impervious, Inflow Depth > 4.19" for 25yr event
Inflow = 0.15 cfs @ 7.80 hrs, Volume= 0.042 af
Outflow = 0.15 cfs @ 7.83 hrs, Volume= 0.042 af, Atten= 0%, Lag= 1.8 min
Discarded = 0.15 cfs @ 7.83 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 0.00' @ 7.83 hrs Surf.Area= 211,640 sf Storage= 16 cf

Plug-Flow detention time= 2.6 min calculated for 0.042 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (714.7 - 712.9)

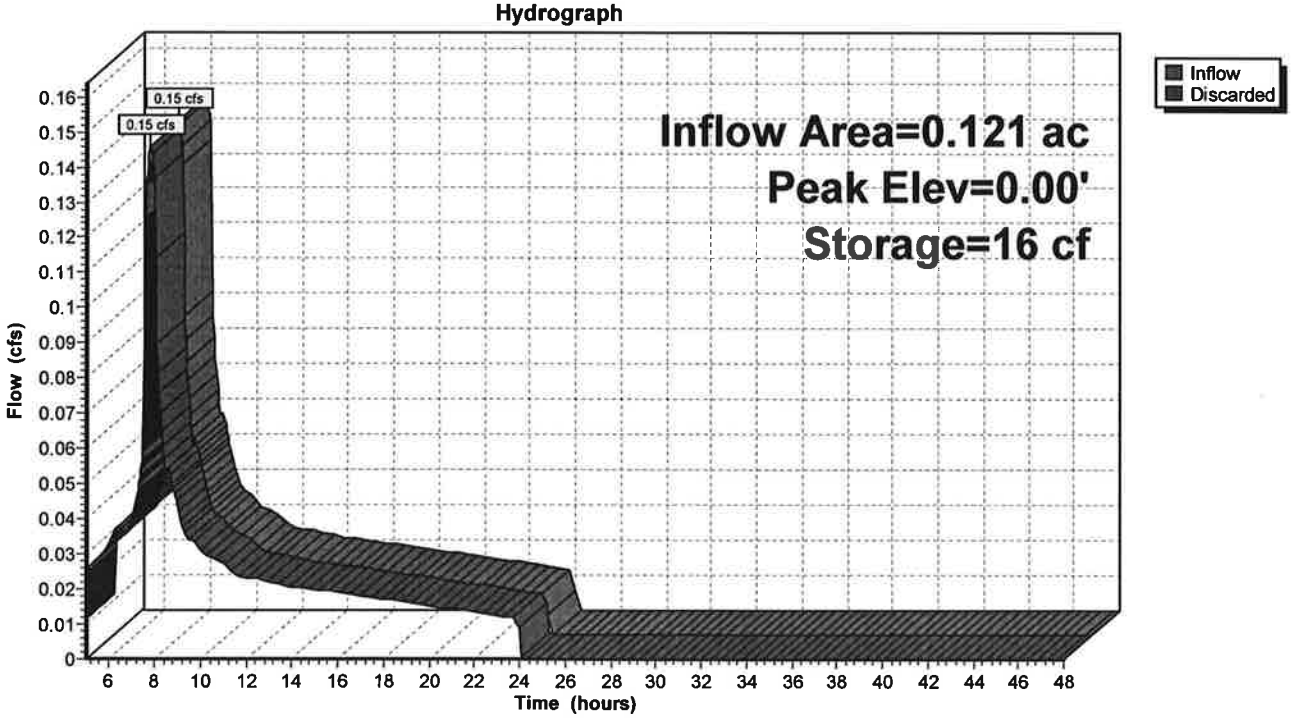
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	105,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 40

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	5,291	0	0
0.50	5,291	2,646	2,646

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=9.80 cfs @ 7.83 hrs HW=0.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 9.80 cfs)

Pond 1P: Pavement Aggregate



Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pervious Pavement Runoff Area=5,291 sf 100.00% Impervious Runoff Depth>5.05"
Tc=0.0 min CN=0/98 Runoff=0.18 cfs 0.051 af

Pond 1P: Pavement Aggregate Peak Elev=0.00' Storage=19 cf Inflow=0.18 cfs 0.051 af
Outflow=0.18 cfs 0.051 af

Total Runoff Area = 0.121 ac Runoff Volume = 0.051 af Average Runoff Depth = 5.05"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.121 ac

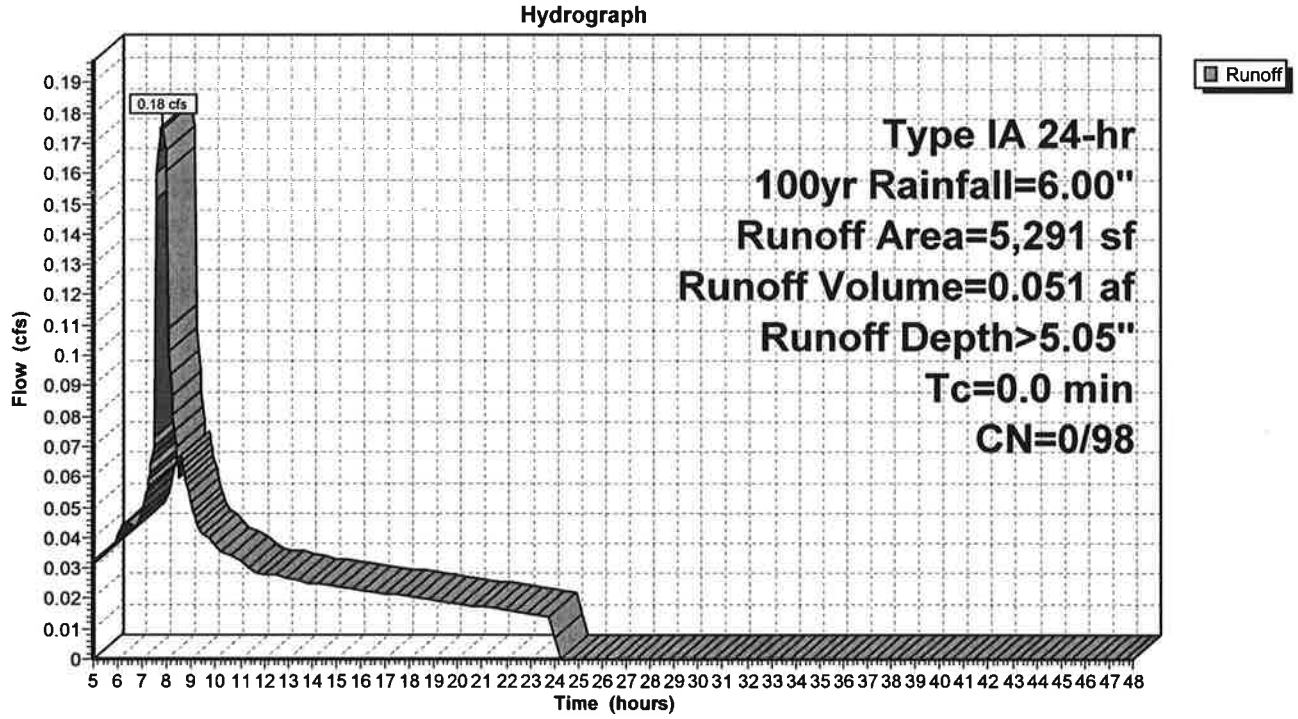
Summary for Subcatchment 1S: Pervious Pavement

Runoff = 0.18 cfs @ 7.80 hrs, Volume= 0.051 af, Depth> 5.05"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100yr Rainfall=6.00"

	Area (sf)	CN	Description
*	5,291	98	Pervious Pavement
	5,291	98	100.00% Impervious Area

Subcatchment 1S: Pervious Pavement



Summary for Pond 1P: Pavement Aggregate

Inflow Area = 0.121 ac,100.00% Impervious, Inflow Depth > 5.05" for 100yr event
Inflow = 0.18 cfs @ 7.80 hrs, Volume= 0.051 af
Outflow = 0.18 cfs @ 7.83 hrs, Volume= 0.051 af, Atten= 0%, Lag= 1.8 min
Discarded = 0.18 cfs @ 7.83 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 0.00' @ 7.83 hrs Surf.Area= 211,640 sf Storage= 19 cf

Plug-Flow detention time= 2.6 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (714.1 - 712.3)

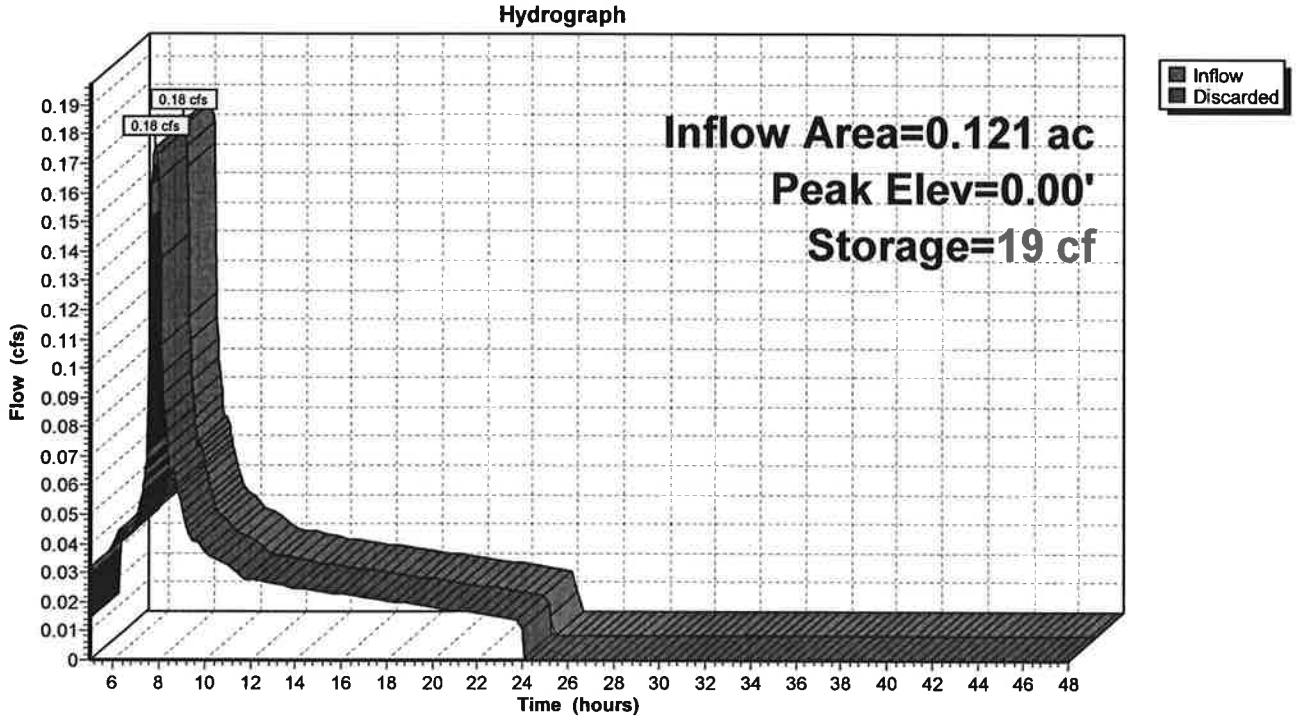
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	105,820 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 40

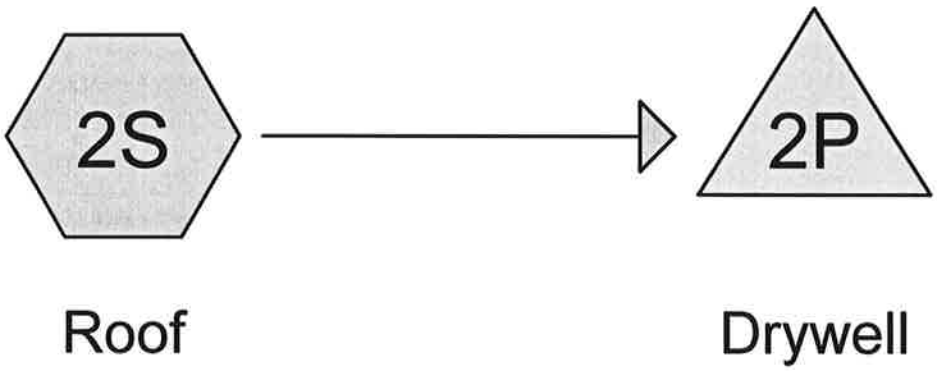
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	5,291	0	0
0.50	5,291	2,646	2,646

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=9.80 cfs @ 7.83 hrs HW=0.00' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 9.80 cfs)

Pond 1P: Pavement Aggregate





Subcat Reach Pond Link

Routing Diagram for A19188.10 - Sandy Health Clinic
Prepared by AAI Enginering Inc., Printed 3/23/2020

Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Roof Runoff Area=10,940 sf 100.00% Impervious Runoff Depth>4.19"
Tc=0.0 min CN=0/98 Runoff=0.30 cfs 0.088 af

Pond 2P: Drywell Peak Elev=12.83' Storage=2,396 cf Inflow=0.30 cfs 0.088 af
Outflow=0.02 cfs 0.074 af

Total Runoff Area = 0.251 ac Runoff Volume = 0.088 af Average Runoff Depth = 4.19"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.251 ac

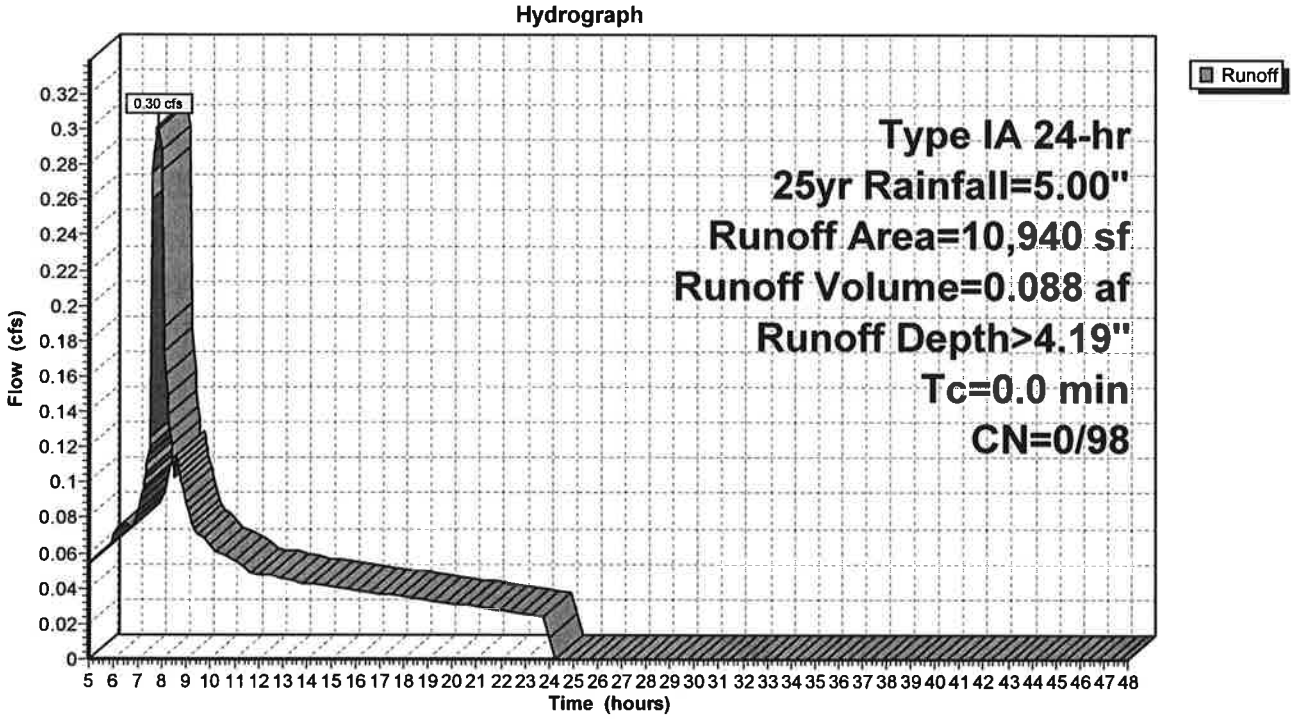
Summary for Subcatchment 2S: Roof

Runoff = 0.30 cfs @ 7.80 hrs, Volume= 0.088 af, Depth> 4.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25yr Rainfall=5.00"

	Area (sf)	CN	Description
*	10,940	98	Roof
	10,940	98	100.00% Impervious Area

Subcatchment 2S: Roof



Summary for Pond 2P: Drywell

Inflow Area = 0.251 ac,100.00% Impervious, Inflow Depth > 4.19" for 25yr event
Inflow = 0.30 cfs @ 7.80 hrs, Volume= 0.088 af
Outflow = 0.02 cfs @ 5.25 hrs, Volume= 0.074 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.02 cfs @ 5.25 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 12.83' @ 23.99 hrs Surf.Area= 452 sf Storage= 2,396 cf

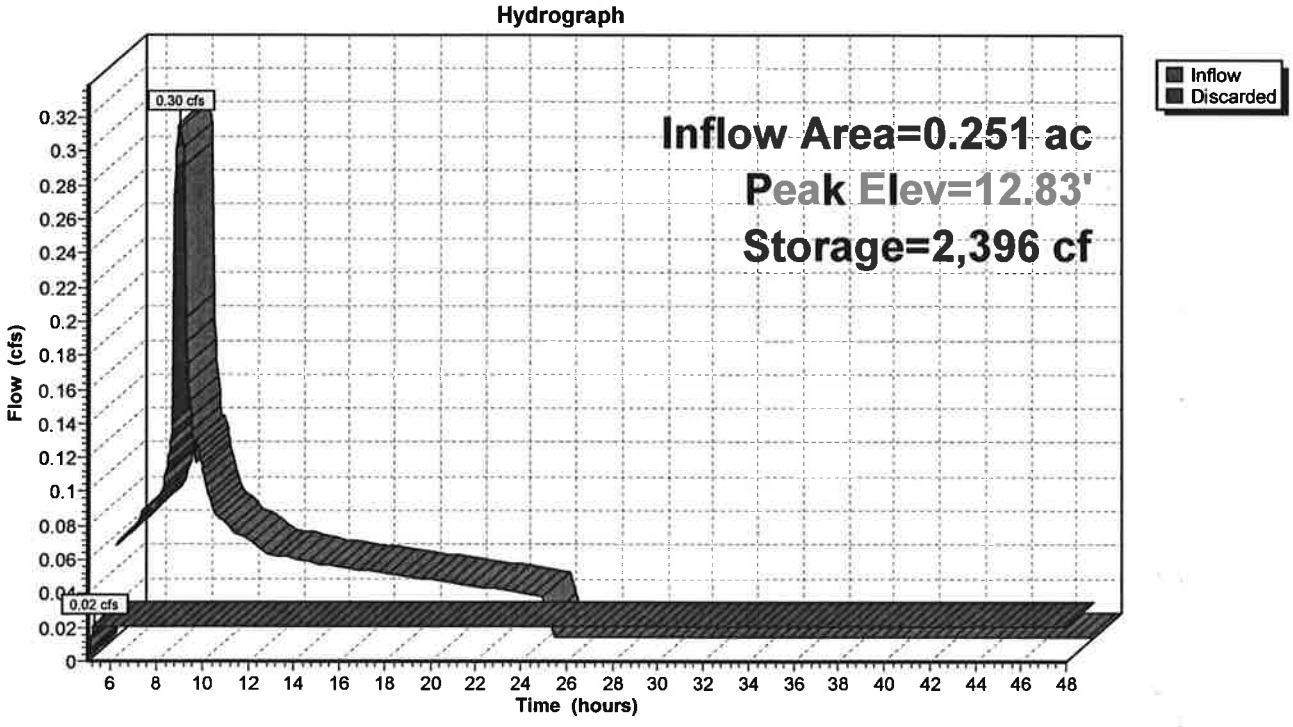
Plug-Flow detention time= 982.6 min calculated for 0.074 af (85% of inflow)
Center-of-Mass det. time= 880.4 min (1,593.3 - 712.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	3,482 cf	**24.00'D x 20.00'H Vertical Cone/Cylinder** 9,048 cf Overall - 342 cf Embedded = 8,706 cf x 40.0% Voids
#2	0.00'	251 cf	**4.00'D x 20.00'H Vertical Cone/Cylinder** Inside #1 342 cf Overall - 4.0" Wall Thickness = 251 cf
		3,734 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 5.25 hrs HW=0.23' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 2P: Drywell



Time span=5.00-48.00 hrs, dt=0.05 hrs, 861 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Roof Runoff Area=10,940 sf 100.00% Impervious Runoff Depth>5.05"
Tc=0.0 min CN=0/98 Runoff=0.36 cfs 0.106 af

Pond 2P: Drywell Peak Elev=16.98' Storage=3,170 cf Inflow=0.36 cfs 0.106 af
Outflow=0.02 cfs 0.074 af

Total Runoff Area = 0.251 ac Runoff Volume = 0.106 af Average Runoff Depth = 5.05"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.251 ac

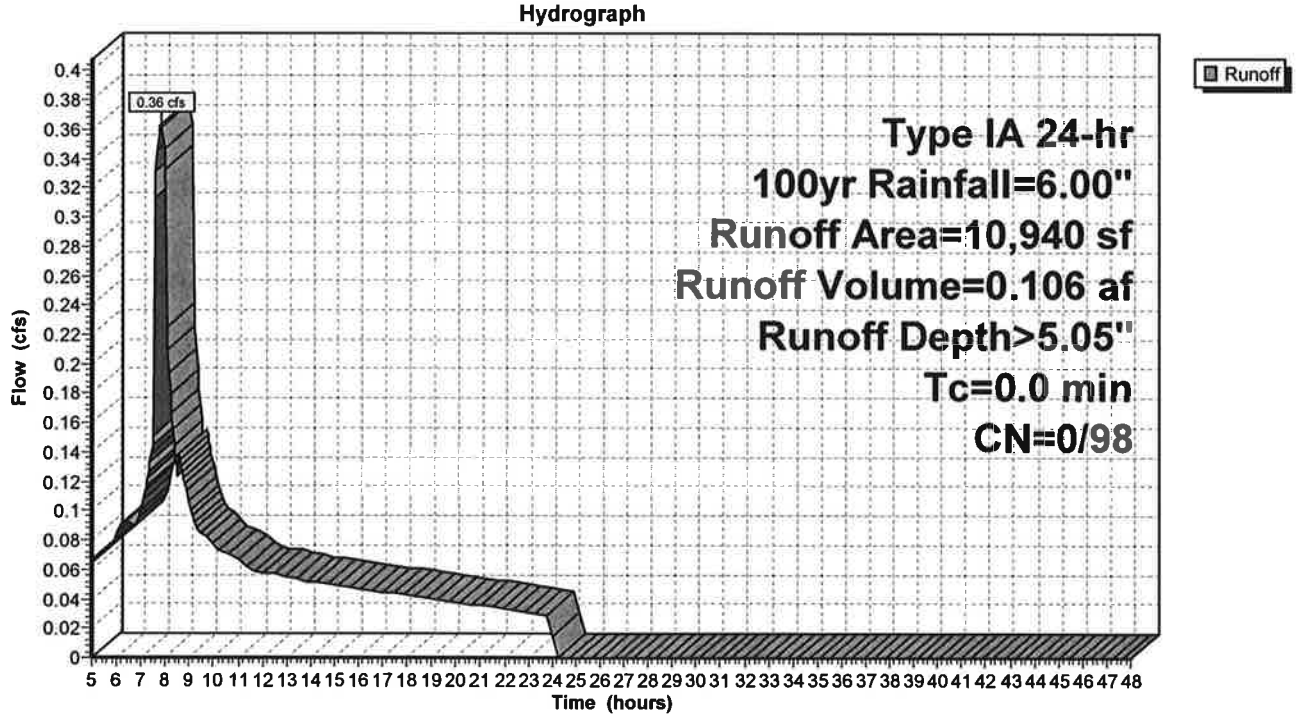
Summary for Subcatchment 2S: Roof

Runoff = 0.36 cfs @ 7.80 hrs, Volume= 0.106 af, Depth> 5.05"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100yr Rainfall=6.00"

	Area (sf)	CN	Description
*	10,940	98	Roof
	10,940	98	100.00% Impervious Area

Subcatchment 2S: Roof



Summary for Pond 2P: Drywell

Inflow Area = 0.251 ac,100.00% Impervious, Inflow Depth > 5.05" for 100yr event
Inflow = 0.36 cfs @ 7.80 hrs, Volume= 0.106 af
Outflow = 0.02 cfs @ 5.20 hrs, Volume= 0.074 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.02 cfs @ 5.20 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 16.98' @ 24.00 hrs Surf.Area= 452 sf Storage= 3,170 cf

Plug-Flow detention time= 1,057.8 min calculated for 0.074 af (70% of inflow)
Center-of-Mass det. time= 880.3 min (1,592.6 - 712.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	3,482 cf	**24.00'D x 20.00'H Vertical Cone/Cylinder** 9,048 cf Overall - 342 cf Embedded = 8,706 cf x 40.0% Voids
#2	0.00'	251 cf	**4.00'D x 20.00'H Vertical Cone/Cylinder** Inside #1 342 cf Overall - 4.0" Wall Thickness = 251 cf
		3,734 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 5.20 hrs HW=0.24' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 2P: Drywell

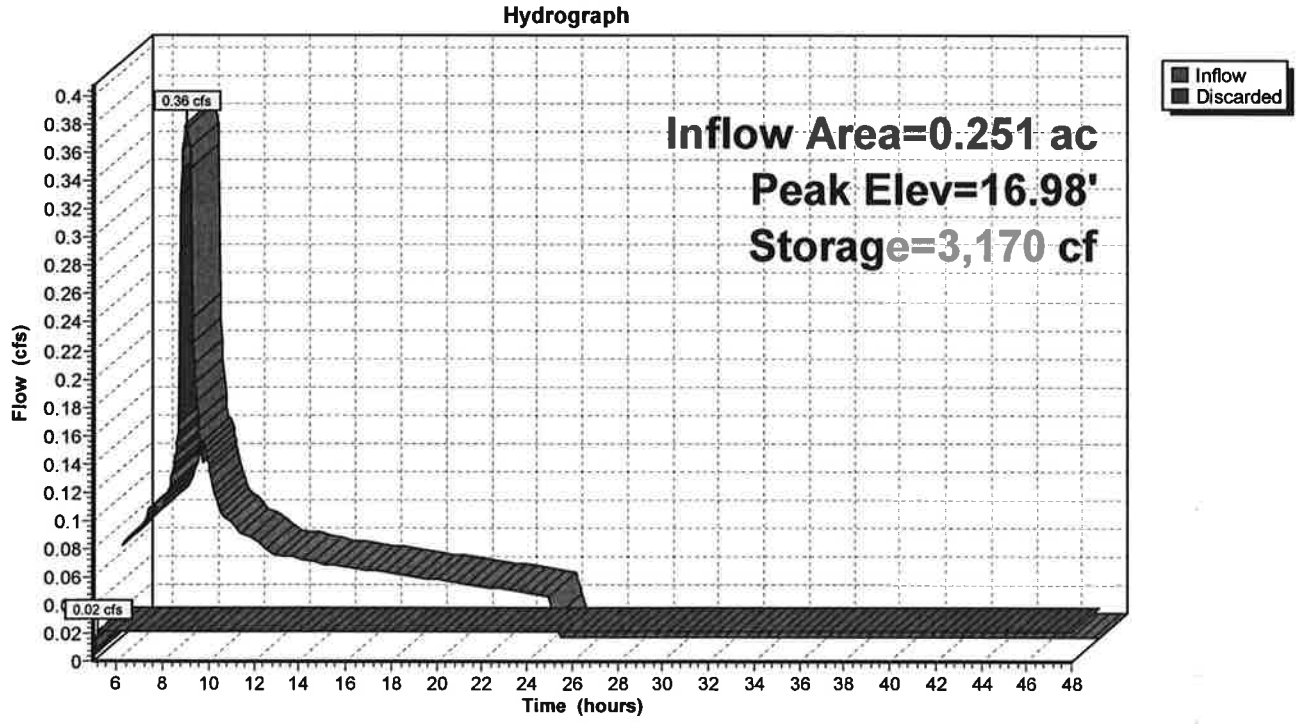


EXHIBIT L

A. Site Analysis: 1:60 Vicinity Map

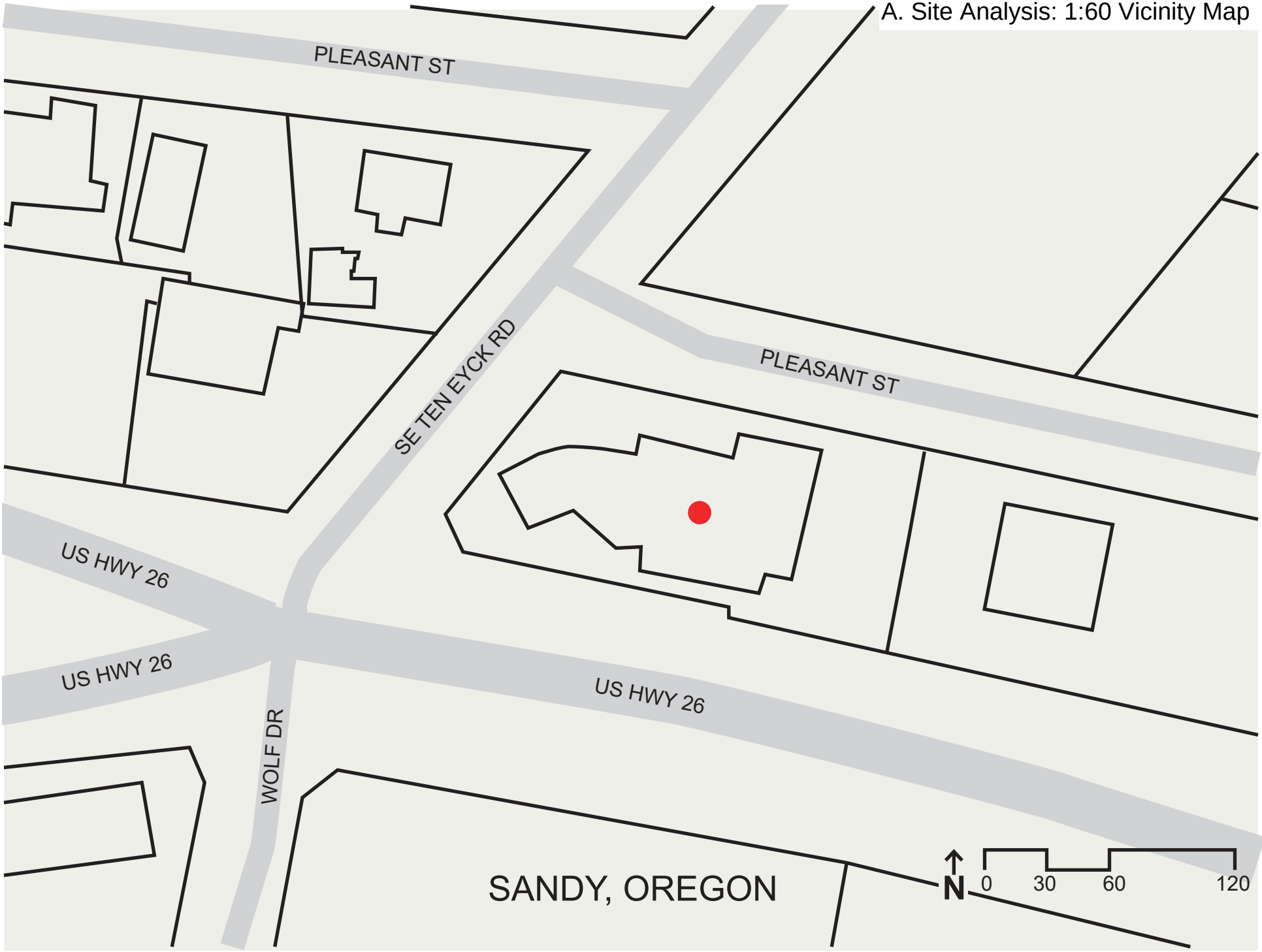
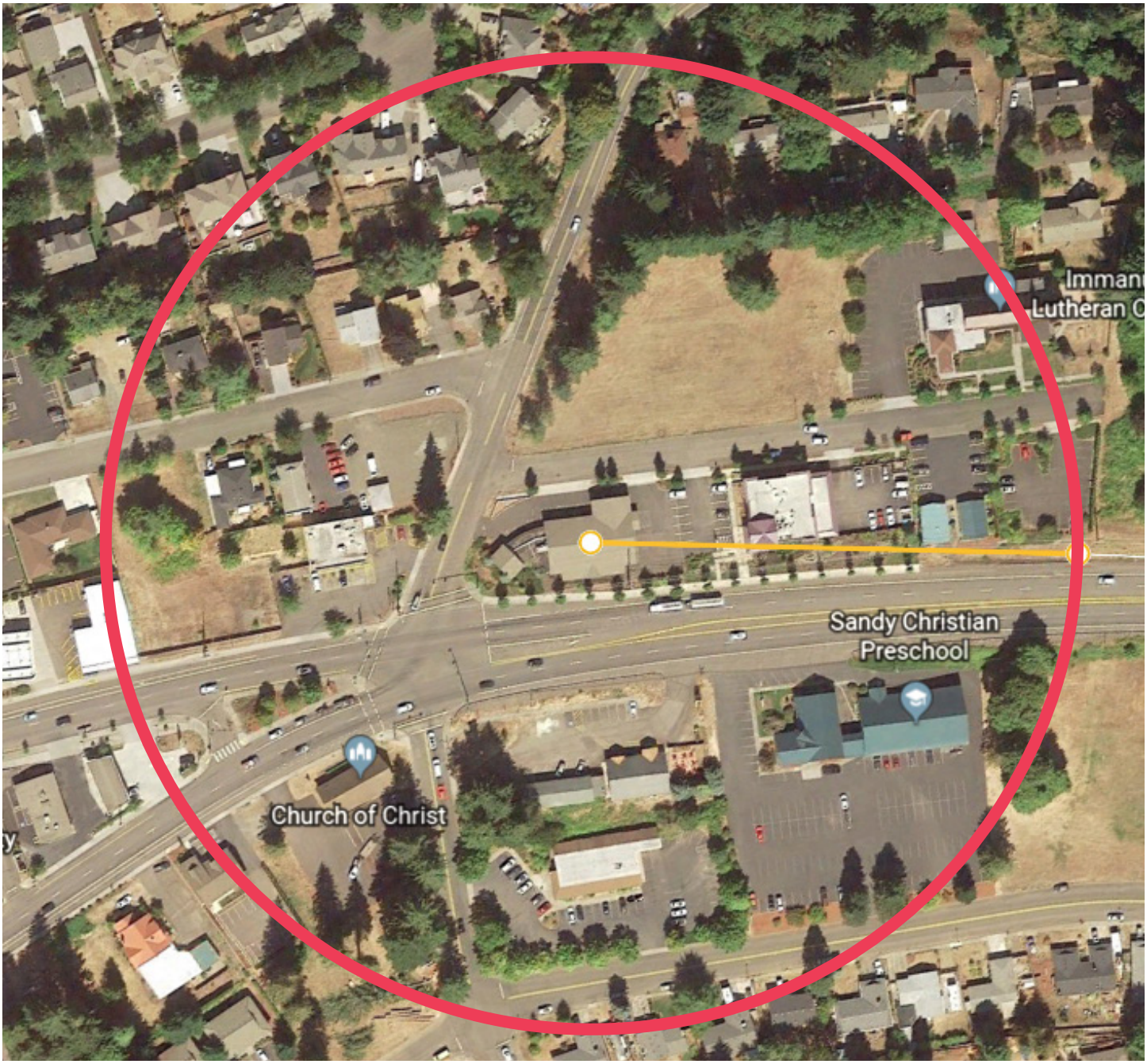


EXHIBIT M

A. Site Analysis: 500 FT Radius



500 ft radius

EXHIBIT N

CURRAN-McLEOD, INC.
CONSULTING ENGINEERS
6655 SW HAMPTON, SUITE 210
PORTLAND, OR 97223

May 29, 2020

Ms. Emily Meharg
City of Sandy
39250 Pioneer Blvd.
Sandy, OR 97055

RE: CITY OF SANDY
SANDY HEALTH CLINIC (File # 20-006 DR//VAR/DEV/ADJ)
PRELIMINARY REVIEW

Dear Emily:

We have reviewed the preliminary submittal for the above noted development and have the following comments/ recommendations:

1. All earthwork activities shall follow the requirements of the most current edition of the Oregon Structural Specialty Code. Site grading shall not in any way impede or impound or inundate the surface drainage flow from the adjoining properties without a proper collection system. The earthwork activities shall be observed and documented under the supervision of the geotechnical Engineer.

2. The proposed driveway accesses on Pleasant Street shall be Concrete Commercial Driveway Approach constructed in conformance with the applicable City of Sandy driveway detail and meeting PROWAG requirements.

3. Where the existing driveway is removed on Pleasant Street, it shall be replaced with sidewalks and an ADA ramp shall be constructed at the intersection with Ten Eyck Road to current PROPWAG requirements.

4. Ten Eyck Road is a County road, we recommend the county requires sidewalks to be constructed along the entire site frontage to match the existing sidewalks on Hwy 26.

5. A demolition permit shall be required from the City prior to demoing the existing building.

6. We have reviewed the preliminary stormwater calculations that was provided with this submittal. The calculations were found not meeting the water quality/quantity criteria as stated in the City of Sandy Development Code (SDC) 13.18 Standards and the 2016 City of Portland Stormwater Management Manual (SWMM) Standards, that were adopted by reference into the Sandy Development Code. The water quality shall be designed based on 0.19 in/hr rate for 5 minutes time of concentration. While the water quality shall be designed for 2, 5, 10 and 25 year storm events and not 25 and 100 year storm events only. A detailed final report stamped by a licensed professional shall be resubmitted for review with the final construction plans.

7. The proposed 6" sanitary sewer service should be adequate to serve this building, unless the City public works department determines a sanitary sewer service exists and a new one is not needed.

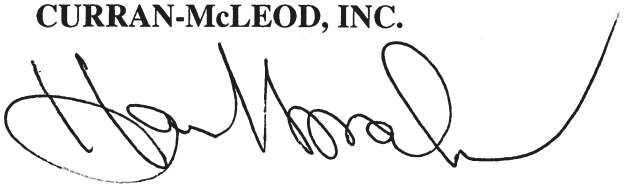
8. The final construction plans shall be submitted to Sandy Fire Department for review and approval to ensure that the proposed vault has adequate fire protection and also acceptable access is provided to the building.

9. The final construction plans shall verify the domestic 2" meter size is adequate based on the meter flow and the building fixture counts found in the 2017 Oregon Plumbing Specialty Code, if larger than 2" meter size is needed shall be verified in the AWWA series 700 and the Oregon Plumbing Specialty Code.

We have no concerns about the proceedings with this project subject to the above stated comments.

Sincerely,

CURRAN-McLEOD, INC.



Hassan A. Ibrahim, P.E.

cc: Mr. Mike Walker, City of Sandy

EXHIBIT O

Emily Meharg <emeharg@ci.sandy.or.us>

Clackamas County Health Clinic (File No. 20-006 DR/VAR/DEV/ADJ)

Gary Boyles <fmboyles.sandyfire@gmail.com> Wed, Jun 3, 2020 at 12:32 PM
To: emeharg@ci.sandy.or.us
Cc: Don Patty <d.patty3710@gmail.com>

Hi Emily,

The only comment I have regarding this application is that the new fire department connection (FDC) be relocated to the Mt. Hood Highway side of the proposed fire vault and to be as close as possible to the existing fire hydrant located in that area as possible.

Thank you,

Gary Boyles
Fire Marshal
Sandy Fire District No. 72
PO Box 518
17460 SE Bruns Ave.
Sandy, Oregon 97055

Business line: 503-668-8093
Cell number: 503-891-7042

EXHIBIT P

REPLINGER & ASSOCIATES LLC
TRANSPORTATION ENGINEERING

June 8, 2020

Ms. Emily Meharg
City of Sandy
39250 Pioneer Blvd.
Sandy, OR 97055

SUBJECT: REVIEW OF TRANSPORTATION IMPACT ANALYSIS – SANDY HEALTH CLINIC

Dear Emily:

In response to your request, I have reviewed materials submitted in support of the Sandy Health Clinic in the northeast quadrant of Highway 26 and Ten Eyck Road in the east part of Sandy. The Transportation Impact Analysis (TIA), dated March 12, 2020, was prepared under the direction of John Manix, PE of PBS.

The site, currently occupied by a warehouse, is proposed to have a 9600-square foot health clinic. Access will be on Pleasant Street.

Overall

I find the TIA addresses the city's requirements and provides an adequate basis to evaluate impacts of the proposed development.

Comments

1. ***Study Area.*** The study addresses the appropriate intersections. It includes analyses of:

   - Highway 26 at SE Ten Eyck Road;
   - Ten Eyck Road at Pleasant Street.

2. ***Traffic Counts.*** The AM and PM peak hour traffic counts were conducted during February 2020. The engineer adjusted the traffic counts to account for seasonal variations. The engineer adjusted the February counts by 28 percent to estimate the 30th highest hour traffic volumes. The methodology appears consistent with the procedures defined by the Oregon Department of Transportation (ODOT). The adjusted counts appear reasonable.

3. ***Trip Generation.*** The TIA uses trip generation for a medical clinic and for a warehouse (land use code 630 and 150, respectively) from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*. The warehouse calculation was used to calculate traffic from the existing use. After accounting for the warehouse, the engineer calculates that the medical clinic would produce 34 net new AM peak hour trips; 30 net new PM peak hour trips; and 335 net new daily trips. The calculation of trips generated by the development appears reasonable.

4. ***Trip Distribution.*** The TIA provided information about trip distribution from the site. Among other resources, the engineer consulted with county medical staff about clients. The engineer assumed 90 percent of the traffic would travel to and from the west on US 26 and 10 percent would travel to and from the east on US 26. The trip distribution seems reasonable.

5. ***Traffic Growth.*** The TIA uses a 2.0 percent annual increase for Highway 26 based on projected volumes from the Transportation System Plan. No adjustments were made for in process developments. The future year background traffic volumes appear reasonable.

6. ***Analysis.*** Traffic volumes were calculated for the intersections cited in #1, above. Intersection level-of-service (LOS) and the volume-to-capacity (v/c) ratio were provided. The intersection of US 26 with SE Ten Eyck Road is signalized; the intersection of Ten Eyck Road and Pleasant Street is stop-controlled. The analyses were conducted for existing 2020 conditions, 2022 background conditions, 2022 with the development, 2029 background conditions, and 2029 with the development.

   The engineer calculated that the intersection of Highway 26 and Ten Eyck Road would operate at LOS B or better and a v/c ratio of 0.66 or better during the AM peak hour. For the PM peak hour, he calculated the intersection would operate at LOS C or better and a v/c ratio of 0.84 or better under all conditions. This meets ODOT's performance standard.

   The engineer did not report the LOS or v/c ratio for the intersection of Ten Eyck Road with Pleasant Street. Both the east leg and west leg approaches of Pleasant Street with Ten Eyck Road were analyzed in a simulation that showed the anticipated queues and blockage time. Due to the low traffic volumes and short predicted queues on Pleasant Street, it is apparent that operations of the intersection will be good even with the proposed development. My own calculations using Synchro indicated the intersection will operate at LOS A, meeting city operational standards.

The engineer provides a thorough discussion of queuing issues using traffic volumes for 2029. During the PM peak hour, eastbound left-turn and eastbound right-turn queues are calculated to exceed available storage both with and without the development. In addition, southbound queues on Ten Eyck Road are expected to block nearby driveways and intersections both with and without the development. The engineer notes that the addition of a southbound left-turn lane may shorten queues. He recommended tracking volumes and queues over time to assess queuing storage needs.

The engineer also evaluated the effect of a westbound right-turn lane on Highway 26 at the intersection with Ten Eyck Road. He determined the performance of the intersection is not significantly different with a turn lane and meets v/c standards without it. He recommends against a westbound right-turn lane. He recommends retaining the existing configuration that features a slip lane.

7. ***Crash Information.*** The TIA provides information on crashes for the most recent available five-year period covering 2014 through 2018.

   At the intersection of US 26 and SE Ten Eyck Road, there were eleven reported crashes. Rear-end crashes were the most common type. This is typical of signalized intersections in an urban area. The intersection has a relatively low crash rate of 0.26 crashes per million entering vehicles. The engineer concluded that no further investigation or mitigation is required. I concur.

8. ***Site Plan and Access.*** The site plan provides for a single access on Pleasant Street near the parcel's east boundary. The TIA indicates safety will be improved by the elimination of two existing driveways serving the site, including one on Ten Eyck Road. The site access is an improvement relative to existing conditions.

9. ***Sight Distance.*** The engineer analyzed sight distance at the proposed access and concludes stopping sight distance is met. He recommends maintaining 200 feet of sight distance at the access.

10. ***Conclusions and Recommendations.*** The engineer concludes that the intersections will meet ODOT and city operational standards for the study area intersections either with or without the development. He also indicates that queuing is not significantly different with or without the development, but that queue storage will be exceeded by 2029 for some movements.

    He found crash rates at the intersection of Highway 26 and Ten Eyck Road to be low and did not recommend further investigation. He concluded that a right-turn lane for

Highway 26 westbound was not warranted and recommended retaining the existing slip lane.

He concluded the reduction in accesses to the site, including the elimination of a driveway to Ten Eyck Road, would be beneficial and improve safety.

He recommended monitoring traffic volumes and queuing at the Highway 26 and Ten Eyck Road intersection and reevaluating the intersection in connection with a future Transportation System Plan update.

I concur with the engineer's conclusions.

Conclusion and Recommendations

Based on the information provided by the applicant, I find the TIA meets city requirements. The engineer used appropriate methods and documents his procedures and conclusions.

The intersections of Highway 26 and Ten Eyck Road and Ten Eyck Road and Pleasant Street are calculated to meet ODOT and city performance standards. I do not find a need for mitigation measures to address traffic impacts of the development or to address safety issues.

To the extent that the developer may be required to implement projects or participate in projects involving facilities under the jurisdiction of ODOT, conditions of approval should be included requiring that the development comply with the requirements standards and procedures specified by ODOT. I recommend that that ODOT requirements and standards associated with frontage improvements where the development abuts Highway 26 be made conditions of approval for the development.

If you have any questions or need any further information concerning this review, please contact me at replinger-associates@comcast.net.

Sincerely,

John Replinger, PE
Principal

SandyMedicalTIS060820

EXHIBIT Q

Oregon
Kate Brown, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

June 17, 2020 ODOT #10415

Updated ODOT Response

Project Name: Sandy Health Clinic	**Applicant:** Steve Kelly
Jurisdiction: City of Sandy	**Jurisdiction Case #:** 20-006 DR/VAR/DEV/ADJ
Site Address: 39831 US Hwy 26, Sandy, OR 97055	**Legal Description:** 02S 04E 13ad **Tax Lot(s):** 01000
State Highway: US 26	

The site of this proposed land use action is adjacent to US 26. ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation. ODOT has reviewed the Traffic Impact Analysis for the proposed medical clinic development and determined that a westbound right turn lane at the US 26/SE Ten Eyck Rd intersection is not warranted.

☒ ODOT has determined there will be no significant impacts to state highway facilities and no additional state review is required.

Please send a copy of the Notice of Decision including conditions of approval to:

ODOT Region 1 Planning
Development Review
123 NW Flanders St
Portland, OR 97209

ODOT_R1_DevRev@odot.state.or.us

Development Review Planner: Marah Danielson	503.731.8258, marah.b.danielson@odot.state.or.us

EXHIBIT R

M E M O R A N D U M

TO: EMILY MEHARG, ASSOCIATE PLANNER
FROM: MIKE WALKER, PUBLIC WORKS DIRECTOR
RE: FILE 20-006 CLACKAMAS COUNTY HEALTH CLINIC
DATE: JUNE 18, 2020

The following are Public Works' comments on the above-referenced application:

Transportation

The applicant shall improve the US 26 frontage of the site in compliance with ODOT requirements including modifying the existing slip/right-turn lane to reduce the curb radius at the corner to accommodate east-west and north-south ADA compliant ramps if required by ODOT. This may require right-of-way dedication at the NE corner of US 26 and Ten Eyck Rd.

The existing driveway approach onto Ten Eyck Rd. from the site does not meet the minimum spacing standards in 17.98.80(A) of the Sandy Municipal Code (SMC). The applicant shall abandon the existing driveway approach and improve the Ten Eyck Road frontage of the site including but not limited to: curbs, sidewalks, storm drainage, streetlighting, street trees per the requirements in sections 15.20 and 17.84.30 of the SMC. This section of Ten Eyck Rd. is under the jurisdiction of Clackamas County. The applicant shall coordinate with Clackamas County DTD to determine the required section for Ten Eyck. This may include relocating the existing fire hydrant at the intersection of Ten Eyck Rd. and Pleasant Ave. to install ADA compliant access ramps. Ten Eyck Road is a minor arterial street. Both Clackamas County and City of Sandy require minimum 6 ft. wide sidewalks on arterial streets. The County standard and the proposed ultimate section for Ten Eyck Road will only permit a curb tight sidewalk in the available right-of-way.

The City recently designed a pedestrian improvement project on Ten Eyck Rd. at the subject site. The Clackamas County DTD plan review fee has been paid and the plans have been approved by DTD. The applicant will be responsible for these improvements and is welcome to use the approved planset for this work.

The applicant shall dedicate sufficient right-of-way at the SW corner of the site to accommodate the required street section and pedestrian improvements including ADA-compliant ramp(s) at the intersection with US 26. The exact dedication area shall be determined during construction plan review. The applicant shall be responsible for providing legal descriptions and sketch maps of the dedication area, dedicating the right-of-way using the City's standard documents, and pay all recording costs.

The applicant shall remove the existing west driveway approach onto Pleasant St. The existing driveway approach doesn't to meet the minimum spacing standard in 17.98.80(A) SMC or the maneuvering standard in 17.98.70(B). The applicant shall

improve the Pleasant St. frontage of the site including but not limited to: curbs, sidewalks, storm drainage, streetlighting, street trees per the requirements in sections 15.20 and 17.84.30 of the SMC. The sidewalk shall be curb-tight, minimum 8 ft. in width with street trees specified by the City in tree wells on XX foot centers. The sidewalk shall be five feet wide separated from the curb with a five foot wide planter strip including street trees specified by the City on XX foot centers.

Street tree and landscaping placement shall conform to the sight distance recommendations in the traffic impact analysis submitted by the Applicant.

Utilities

The site is served by the existing 16" water main in US 26 and the existing 8" sanitary sewer main in Pleasant St. The applicant is proposing a drywell for stormwater disposal. Typically, the soils in Sandy do not permit treatment and discharge of stormwater in this manner. Stormwater management shall conform to the requirements in the City of Portland Stormwater Management Manual and the requirements in section 13.18 and 13.20 SMC.

Utility and right-of-way improvement plans are submitted with the land use application solely for conformance with the submittal requirements in Section 17.100.60(D). Land use approval does note connote approval of public improvement plans.

Please let me know if you have any questions or need more information.

EXHIBIT S

SANDY OREGON

Emily Meharg <emeharg@ci.sandy.or.us>

Incompleteness Letter: 20-006 DR/VAR/DEV/ADJ

Scott Soukup <scotts@ankrommoisan.com> Wed, Apr 1, 2020 at 9:21 AM
To: Emily Meharg <emeharg@ci.sandy.or.us>
Cc: Marisol Martinez <mmartinez@ci.sandy.or.us>, "Kelly O'Neill Jr." <koneill@ci.sandy.or.us>, "Kelly, Steve" <SteveKel@clackamas.us>, Lori Kellow <lorik@ankrommoisan.com>

Hi Emily,

Here is the credit card authorization form.

For the vertical Nichiha siding, Section 17.90.110(B.3.d) allows composite-wood (concrete fiberboard, panels or shingles). The vertical ribbed Nichiha product is a panelized fiber cement product with 1 5/8" vertical slats and 3/8" reveals between each slat which add depth and rustic texture to the façade. The product is available in custom colors that can match any selected Miller or Sherwin Williams paint. The ribbed fiber cement is not the same as board-and-batten siding or T1-11 sheet siding.

The product can be installed either vertically or horizontally. In terms of design, the vertical siding is a darker earth tone and is the bulk of the siding. The vertical orientation was selected to distinguish it from the horizontal redwood Nichiha material pops of warm color at the bumpouts and recesses in the facade. Both siding products are Nichiha so all the siding can come from a single source manufacturer. This will make the construction process smoother and simplify the detailing. The vertical siding has been selected as the main siding, because the vertical orientation is better for cleaning and maintenance over time.

[Quoted text hidden]

Credit Card Authorization Form_signed 4.1.2020.pdf
337K

EXHIBIT T

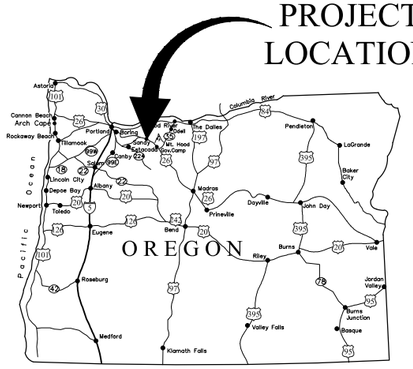
CITY OF SANDY

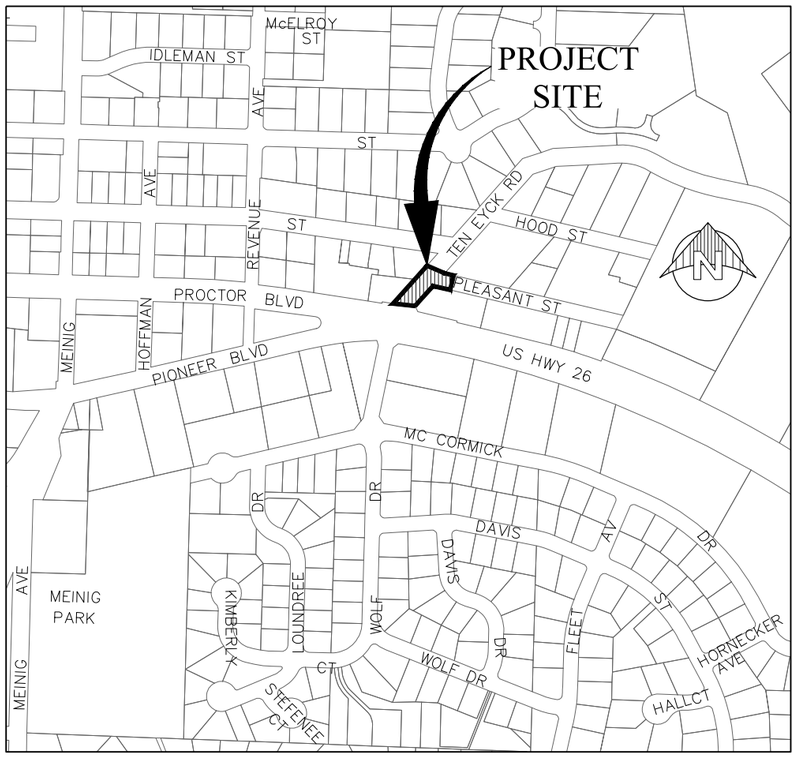
SE TEN EYCK ROAD & PLEASANT STREET

CURB & SIDEWALK IMPROVEMENTS

CLACKAMAS COUNTY, OREGON

DECEMBER 2018





LOCATION MAP

NOT TO SCALE

CITY OF SANDY

HONORABLE BILL KING	MAYOR
JEREMY PIETZOLD	COUNCILOR
JOHN HAMBLIN	COUNCILOR
SCOTT HORSFALL	COUNCILOR
JAN LEE	COUNCILOR
CARL EXNER	COUNCILOR
JEAN CUBIC	COUNCILOR
KIM YAMASHITA	CITY MANAGER
MIKE WALKER	DIRECTOR OF PUBLIC WORKS

CALL BEFORE YOU DIG

ATTENTION:
OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES BY CALLING THE CENTER. (NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232-1987) OR 811 OR 1-800-332-2344

ALL UTILITY CROSSINGS ARE APPROXIMATE, CONTRACTOR TO POTHOLE AND FIELD DEPTH VERIFY PRIOR TO CONSTRUCTION AND CONSULT WITH THE ENGINEER REGARDING ANY CONFLICTS

CONTRACTOR TO PROTECT EXISTING POWER, TELEPHONE/TELECOMMUNICATION LINES & COORDINATE RELOCATION OF ANY LINES THAT ARE IN CONFLICT WITH THE CONSTRUCTION WITH APPROPRIATE AGENCY

SHEET INDEX

LEGEND

●	MONUMENTS FOUND TO BE PROTECTED
SA	EXISTING SEWER
ST	EXISTING STORM
W	EXISTING WATER
T	EXISTING TELEPHONE
P	EXISTING POWER
X	EXISTING FENCE TO BE PROTECTED
E	EXISTING UNDERGROUND ELECTRIC
FO	EXISTING UNDERGROUND FIBER OPTIC
	EXISTING CONCRETE SIDEWALK
	EXISTING GRAVEL SURFACE
	EXISTING ASPHALT CONCRETE
	NEW ASPHALT CONCRETE
	EXISTING FIRE HYDRANT
CB	EXISTING CATCH BASIN
D	EXISTING STORM MANHOLE
CO	EXISTING CLEANOUT
S	EXISTING SANITARY MANHOLE
	EXISTING LIGHT POLE
	EXISTING POWER POLE
WV	EXISTING WATER VALVE
WM	EXISTING WATER METER
	EXISTING TREE
MB	EXISTING MAILBOX
	NEW CATCH BASIN
D	NEW STORM MANHOLE
	NEW STORM LINE
	NEW CONCRETE SIDEWALK

BAR IS ONE INCH ON ORIGINAL DRAWING.
ADJUST SCALE AS SHOWN ACCORDINGLY.

REVISIONS

REV.#			
REV.#			
REV.#			
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REV.#			

DIGITAL SIGNATURE
REGISTERED PROFESSIONAL ENGINEER
17,219PE
OREGON
JULY 19, 1996
HASSAN ABBAS IBRAHIM
EXPIRES: 6/30/2019

CURRAN–McLEOD, INC.
CONSULTING ENGINEERS
6655 S.W. HAMPTON ST., SUITE 210
PORTLAND, OREGON 97223
PHONE (503) 684-3478

CITY OF SANDY

COVER SHEET AND INDEX

SE TEN EYCK ROAD / PLEASANT STREET
CLACKAMAS COUNTY, OREGON

DATE	12/2018
P/N	1723
D/B	HAI
D/S	JVB
CAD#	1723-1

C1 OF 4

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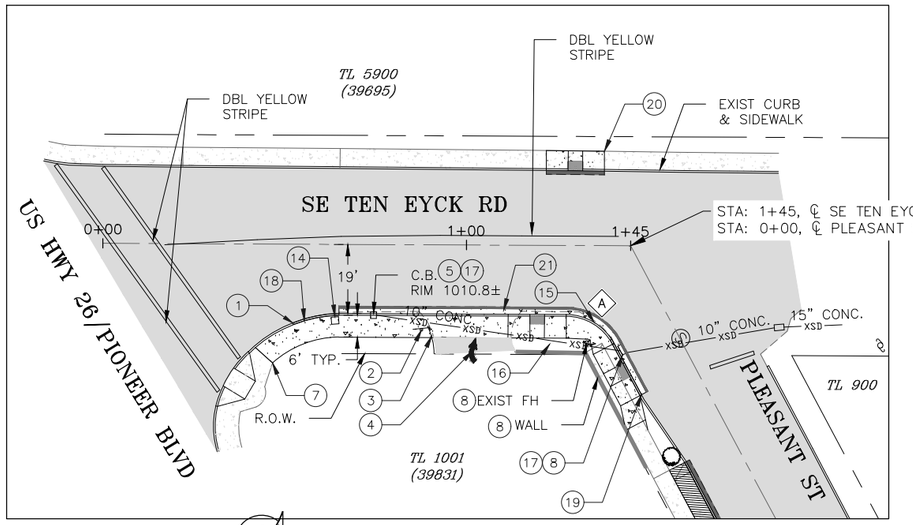
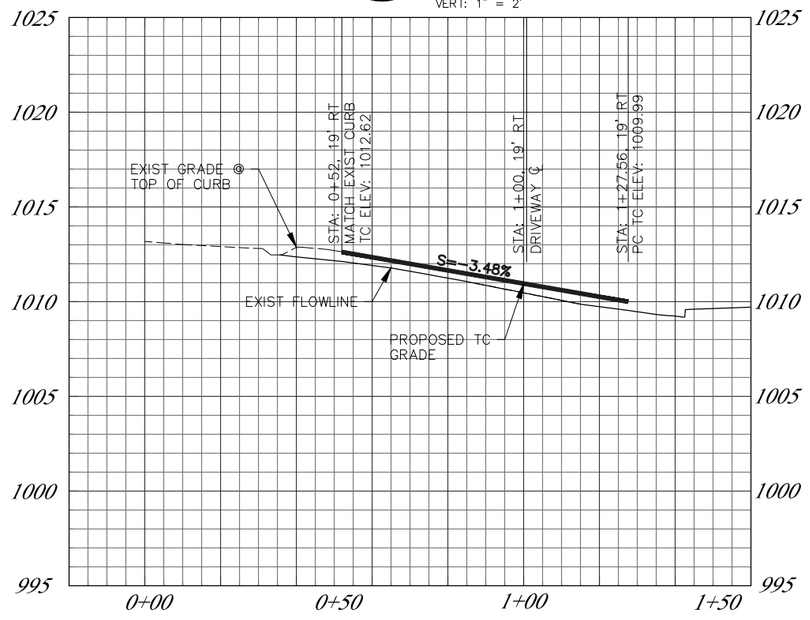
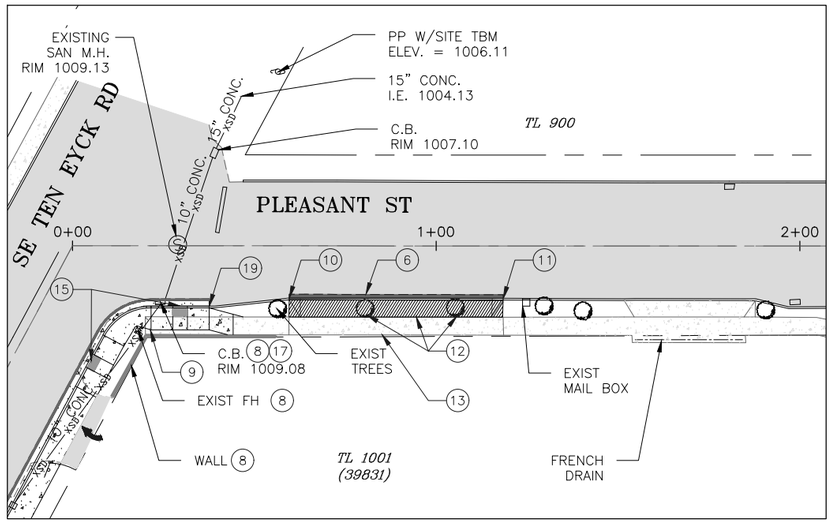


STA: 0+00 - 1+45
1 / -
SE TEN EYCK RD (COUNTY)
SCALE: 1" = 20'

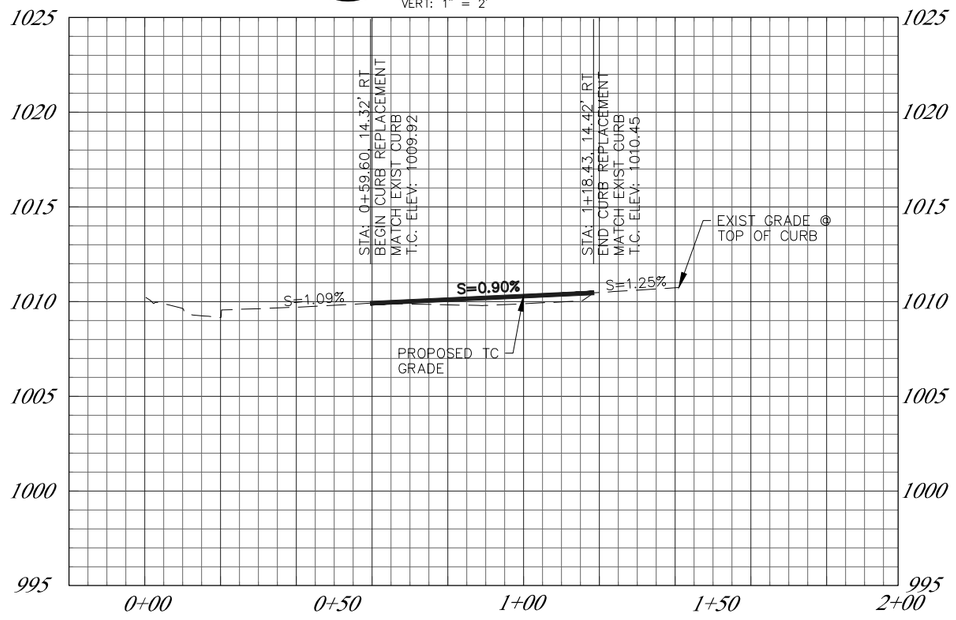
STA 0+00 - 1+45
2 / -
SE TEN EYCK RD (COUNTY)
SCALE: 1" = 20'
VERT: 1" = 2'





STA: 0+00 - 2+00
3 / -
PLEASANT ST (CITY)
SCALE: 1" = 20'

STA 0+00 - 2+00
4 / -
PLEASANT ST (CITY)
SCALE: 1" = 20'
VERT: 1" = 2'



CONSTRUCTION NOTES:

1. STA: 0+52, 19' RT
   BEGIN NEW CURB & GUTTER, SAWCUT & MATCH EXIST.
   SEE DETAIL S150 SHEET C3.
2. REMOVE EXIST TRAFFIC SIGN AND SALVAGE TO CITY.
3. REMOVE 3.25'± OF EXIST CURB, TAPER TO MATCH NEW SIDEWALK.
4. REMOVE EXIST. ARROW.
5. REMOVE EXIST CB GRATE AND INSTALL CURB INLET TOP, SEE DETAIL S350 SHEET C3.
6. SAWCUT 1'± INTO EXIST PAVEMENT & MATCH EXIST AC DEPTH.
7. MATCH EXIST CURB & SIDEWALK.
8. PROTECT EXIST. FIRE HYDRANT, CATCH BASIN AND RETAINING WALL, MAINTAIN 48" MIN. CLEAR PATH.
9. REMOVE 24 LF± OF SIDEWALK, MEANDER AROUND EXIST FIRE HYDRANT.
10. STA: 0+59.60, 14.32' RT
    BEGIN NEW TYPE 'C' CURB, SAWCUT & MATCH EXIST.
    SEE DETAIL 5 SHEET C4.
11. STA: 1+18.43, 14.42' RT
    END NEW TYPE 'C' CURB SAWCUT, MATCH EXIST.
    SEE DETAIL 5 SHEET C4.
12. REMOVE EXIST 59'± CURB & 274 SF± OF DRIVEWAY, MAINTAIN EXIST SIDEWALK, FILL PLANTER STRIP W/12" CLEAN TOPSOIL, TWO STREET TREES (BY CITY).
13. PROTECT EXIST SIDEWALK.
14. PROTECT EXIST WATER METER, ADJUST BOX TO NEW SIDEWALK GRADE.
15. CONSTRUCT DUAL ADA RAMP, SEE DETAIL 1 ON SHEET C4.
16. RESTORE DAMAGED LANDSCAPE TO ORIGINAL CONDITION OR BETTER.
17. INSTALL INLET PROTECTION.
18. SAWCUT & REMOVE 13 LF± OF EXIST CURB.
19. STA: 0+37.57, 16.56' RT
    END NEW CURB & GUTTER & MATCH EXIST. SEE DETAIL S150 SHEET C3.
20. INSTALL MIDBLOCK CROSSING. SEE DETAIL 2 SHEET C4.
21. SAWCUT 2.5'± INTO EXIST PAVEMENT & MATCH EXIST AC DEPTH.

No.	RADIUS	Δ	LENGTH	CL
A	15.00'	61°37'11"	16.13'	15.37'

No.	STATION	OFFSET	T.C. EL
A	1+27.56 PC SE TEN EYCK RD	19.00' RT	1009.99
	½Δ		1009.79
	1+40.74 PT SE TEN EYCK RD	26.86' RT	1009.59

BAR IS ONE INCH ON ORIGINAL DRAWING.
ADJUST SCALE AS SHOWN ACCORDINGLY.

REVISIONS
REV.:#
REV.:#
REV.:#
REV.:#
REV.:#
REV.:#

DIGITAL SIGNATURE
REGISTERED PROFESSIONAL ENGINEER
17,219PE
OREGON
JULY 19, 1994
HASSAN ABBAS IBRAHIM
EXPIRES: 6/30/2019

CURRAN–McLEOD, INC.
CONSULTING ENGINEERS
6655 S.W. HAMPTON ST., SUITE 210
PORTLAND, OREGON 97223
PHONE (503) 684–3478

CITY OF SANDY

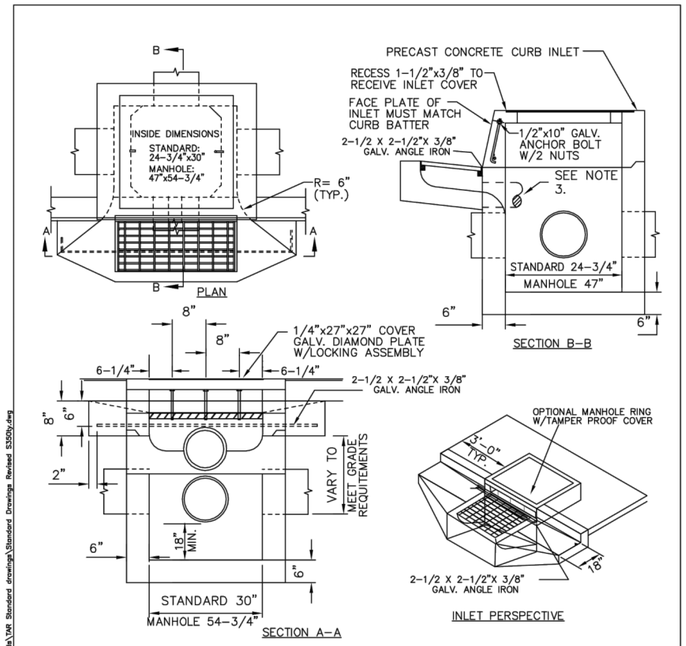
SE TEN EYCK ROAD & PLEASANT ST CURB & SIDEWALK IMPROVEMENTS

SE TEN EYCK ROAD / PLEASANT STREET
CLACKAMAS COUNTY, OREGON

DATE	12/2018
P/N	1723
D/B	HAI
D/S	JVB
CAD#	1723 C2

C2 OF 4

J:\Sandy\1723 - SE TEN EYCK ROAD\DWG\1723-C1.dwg, 2/12/2019 1:48:14 PM, DWG To PDF.pc3



NOTES

1. CURB INLET CATCH BASIN SHALL CONFORM TO CURRENT ODOT/APWA SPECIFICATION. THE INLET SHALL HAVE AN 8" CURB EXPOSURE AT THE GRATE.
2. GRATED INLET SHALL BE POURED IN PLACE. A SHALLOW PRECAST INLET, OR A COMBINATION INLET GUTTER PLATE WITH LID (NEENAH R-3335-B CURB PIECE OR APPROVED EQUAL)
3. CONNECT THE GRATED INLET TO THE CATCH BASIN BY A MINIMUM 12" DIAMETER CONCRETE PIPE GROUTED INTO BOTH SECTONS. A SLOT MAY BE USED IF THE CURB INLET SECTION IS PRECAST AND DESIGNED TO CARRY THE LOADING. A METAL CURB PIECE MAY BE USED.
4. THE CURB INLET CATCH BASIN MAY USE A GB INLET WITH A SINGLE GRATE.
5. AN 18" SUMP IS REQUIRED.
6. ALL METAL PARTS MUST BE HOT DIPPED GALVANIZED AFTER FABRICATION.
7. THE LATCH SPRING MUST HAVE 50 LB. OF COMPRESSIVE STRENGTH.
8. SPECIFICATIONS FOR CONCRETE AND MISC. MATERIALS USED IN CONSTRUCTION SHALL CONFORM TO THE CURRENT ODOT/APWA STANDARD SPECIFICATIONS.
9. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3300 PSI IN 28 DAYS.

REVISION	DATE	BY

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

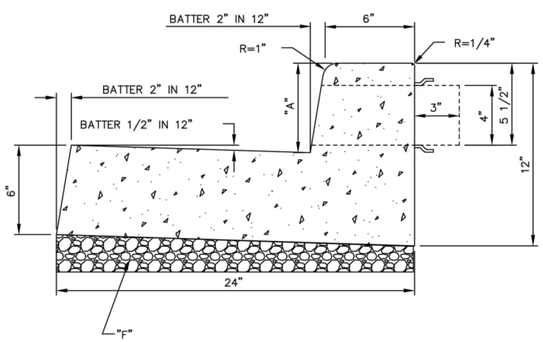
CLACKAMAS COUNTY

APPROVAL DATE: 1/1/10 SCALE: N.T.S.

CURB INLET CATCH BASIN WITH GRATED INLET

STANDARD DRAWING S350

1 -.- CURB INLET CATCH BASIN WITH GRATED INLET
N.T.S.



NOTES

1. SPECIFICATIONS FOR CONCRETE AND MISCELLANEOUS MATERIALS USED IN CONSTRUCTION SHALL CONFORM TO CURRENT OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3300 PSI IN 28 DAYS, 2" TO 4" SLUMP.
3. 4" PLASTIC PIPE SHALL HAVE A BELL OR A 3" EXTENSION, FOR FUTURE HOOK-UP.
4. EXPANSION JOINTS, MAX. 45' SPACING AND AT BEGINNING AND END OF CURVES OR AS DIRECTED.
5. CONTRACTION JOINTS, MAX. 15' SPACING AND AT LOCATIONS AS DIRECTED.

REVISION	DATE	BY
EDIT NOTE 1	12/12	RN

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

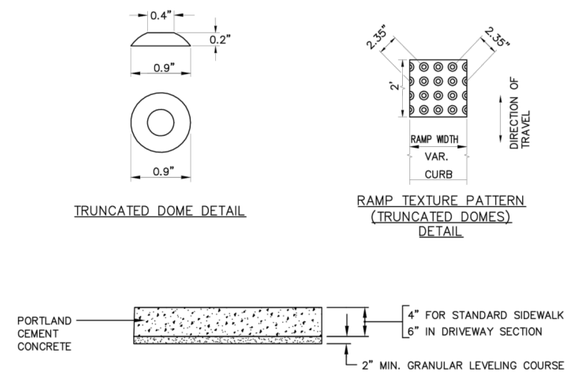
CLACKAMAS COUNTY

APPROVAL DATE: 2/1/13 SCALE: N.T.S.

STANDARD CURB AND GUTTER

STANDARD DRAWING S150

2 -.- STANDARD TYPE 'C' VERTICAL CURB AND CURB DETAIL
N.T.S.



NOTES

1. CONCRETE AND MISC. MATERIALS USED IN CONSTRUCTION SHALL CONFORM TO CURRENT OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION. DETECTABLE WARNINGS ON WALKING SURFACES AS PER ADA REQUIREMENTS.
2. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 in (23 mm) A HEIGHT OF NOMINAL 0.2 in (5 mm) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35in (60mm) AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT.
3. EXPANSION JOINT SPACING EVERY 45' MIN. OR AT EQUAL INTERVALS CORRESPONDING TO CURB LINE. CONTRACTION JOINT EVERY 15'. TOOLED JOINT EVERY 5 FEET.
4. THE SURFACE FINISH SHALL BE CROSS BROOMED.
5. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3300 PSI IN 28 DAYS.
6. APPROVAL MUST BE OBTAINED FROM ENGINEERING FOR SIDEWALK AT ANY LOCATION IN THE PUBLIC ROAD R/W.

REVISION	DATE	BY
EDIT NOTE 1	12/12	RN
EDIT NOTE 6	12/12	RN

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

CLACKAMAS COUNTY

APPROVAL DATE: 2/1/13 SCALE: N.T.S.

STANDARD SIDEWALK & CURB RAMP NOTES & DETAILS

STANDARD DRAWING S960

3 -.- STANDARD SIDEWALK & CURB RAMP NOTES & DETAILS
N.T.S.

BAR IS ONE INCH ON ORIGINAL DRAWING.
ADJUST SCALE AS SHOWN ACCORDINGLY.

REV:#			
REV:#			
REV:#			
REV:#			
REV:#			
REV:#			
REV:#			

REVISIONS

DIGITAL SIGNATURE
REGISTERED PROFESSIONAL ENGINEER
17,219PE
OREGON
JULY 19, 1994
HASSAN ABBAS IBRAHIM
EXPIRES: 6/30/2019

CURRAN-McLEOD, INC.
CONSULTING ENGINEERS
6655 S.W. HAMPTON ST., SUITE 210
PORTLAND, OREGON 97223
PHONE (503) 684-3478

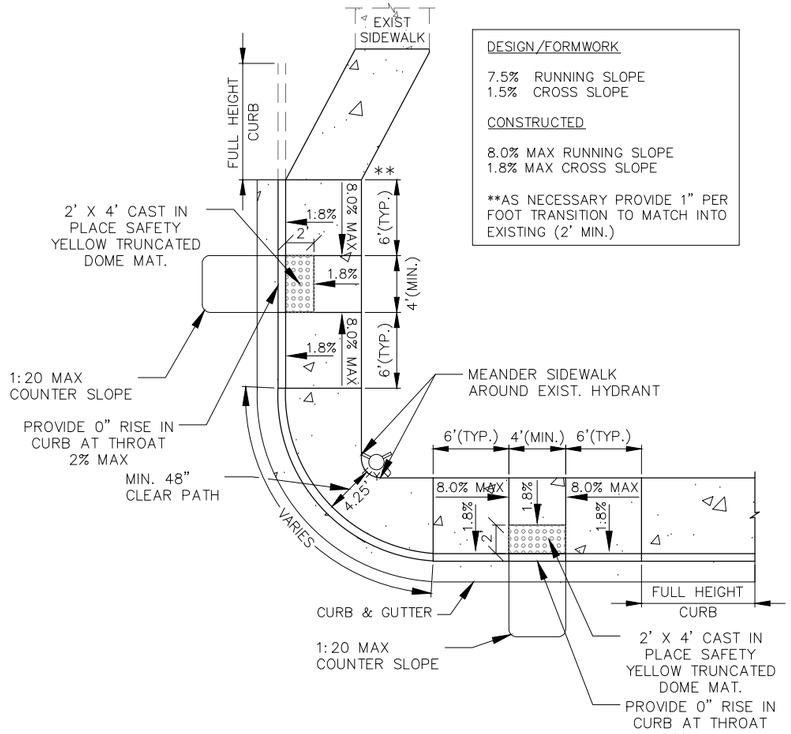
CITY OF SANDY

CLACKAMAS COUNTY CONSTRUCTION DETAILS

SE TEN EYCK ROAD / PLEASANT STREET
CLACKAMAS COUNTY, OREGON

DATE	12/2018
P/N	1723
D/B	HAI
D/S	JVB
CAD#	1723-1

C3 OF 4



DESIGN/FORMWORK

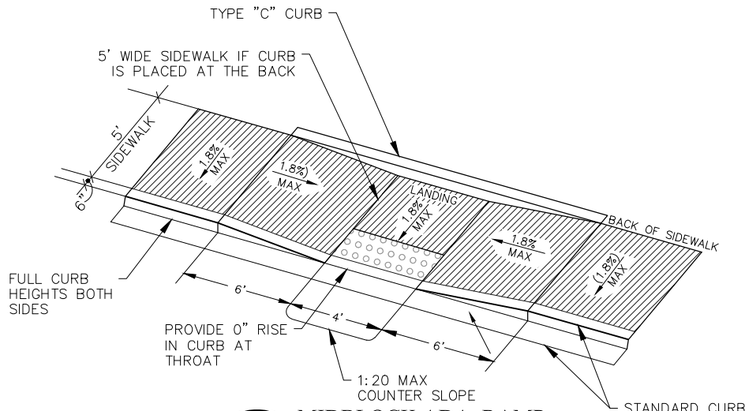
7.5% RUNNING SLOPE
1.5% CROSS SLOPE

CONSTRUCTED

8.0% MAX RUNNING SLOPE
1.8% MAX CROSS SLOPE

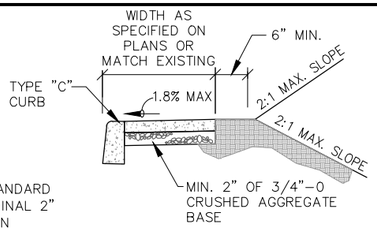
**AS NECESSARY PROVIDE 1" PER FOOT TRANSITION TO MATCH INTO EXISTING (2' MIN.)

1 DUAL ADA CURB RAMP DETAIL
NOT TO SCALE



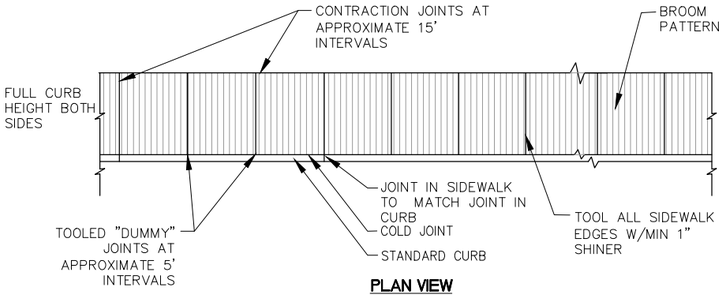
2 MIDBLOCK ADA RAMP
N.T.S.

FLATTEN GUTTER AT THE RAMP THROAT NOT TO EXCEED 2%



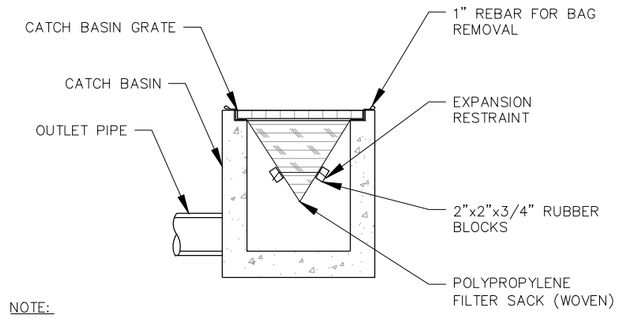
- CONCRETE DEPTH FOR STANDARD SIDEWALKS SHALL BE NOMINAL 2" MIN.; 6" MIN. THICKNESS IN DRIVEWAYS.
- TYPE 'C' CURB AT BACK OF SIDEWALK AS DIRECTED.

TYPICAL CURB TIGHT SIDEWALK



PLAN VIEW

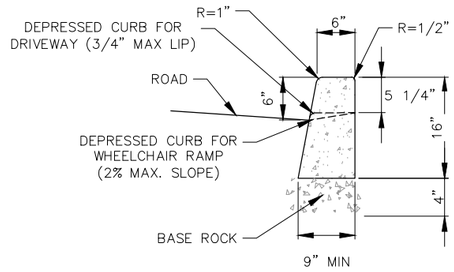
3 TYPICAL SIDEWALK DETAIL
NOT TO SCALE



NOTE:

RECESSED CURB INLETS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS. SIZE OF FILTER FABRIC INLET SACKS TO BE DETERMINED BY MANUFACTURE

4 WOVEN POLYPROPYLENE SACK - DETAIL
N.T.S.



TYPICAL "C" CURB DETAIL

NOTES:

1. ALL RADII SHALL BE 3/4" EXCEPT AS OTHERWISE SHOWN.
2. CONTRACTION JOINTS SHALL BE PLACED AT 15' INTERVALS AND SHALL EXTEND AT LEAST 50% THROUGH THE CURB OR CURB AND GUTTER.
3. A CONTRACTION JOINT SHALL BE PLACED ALONG AND OVER WEEP HOLE THROUGH THE CURB AND THROUGH THE SIDEWALK.
4. WHEN SIDEWALKS ARE CONSTRUCTED, EXTEND 3" PIPE TO BACK OF SIDEWALK AND INSTALL COUPLING.

5 TYPICAL CURB DETAIL
NOT TO SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
ADJUST SCALE AS SHOWN ACCORDINGLY.

REVISIONS		
REV:#		
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REGISTERED PROFESSIONAL ENGINEER
17,219PE
OREGON
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CITY OF SANDY

CITY OF SANDY CONSTRUCTION DETAILS

SE TEN EYCK ROAD / PLEASANT STREET
CLACKAMAS COUNTY, OREGON

DATE	12/2018
P/N	1723
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CAD#	1723-C4

C4 *OF* 4