CLACKAMAS COUNTY PLANNING AND ZONING DIVISION
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD | OREGON CITY, OR 97045
503-742-4500 | ZONINGINFO@CLACKAMAS.US

Application for Design Review

May 2018

******A Pre-Application Conference is required prior to filing this application.******

Date Received: 1/27/2020 1/24/20 File No.: Z0036-20-D PreApp ZPAC0098-19

Staff Member: ~~DATE~~ LD Design Review Fee: $ 22,501.00 #060213

Zone: RI/RC .384% of Construction Cost: $

Comp. Plan: ($650.00 Minimum / $36,835.00 Maximum Fee)

Development No.: Project No.:

Name of Applicant: Parr Lumber Bradley Farmer, ~~applicant~~ owner representative Melinda McMillan, applicant

Mailing Address: 5630 NE Century Blvd, Hillsboro, OR 97214

Phone: 503.614.2539 Email: bradf@parr.com

What is proposed?:
Based on the Director's 2019 Interpretation, Parr Lumber proposes a wholesale store and lumber yard operation in Damascus, Oregon. A new wholesale building will face SE Sunnyside Rd; the yard will be on 3 adjacent lots.

Proposed title: Parr Lumber Sq. ft. of each structure: 8,000sf building, 31,500 sf warehouse

Estimated completion date: 6/2021 Estimated cost of constr (labor & materials): $5,859,650

Site Address: 19855 SE Sunnyside Rd, Damascus 97089

Total Land Area : 5.52 Acres

Legal Description: T 23E R 05D Section: 02205 Tax Lot(s): 23E05D 02205, 01900, 02001 02213, 02000

Adjacent Properties Under Same Ownership: T___ R___ Section___ Tax Lot(s)___

Other persons (if any) to be mailed notices regarding this application:

Name	Address	Relationship
Melinda McMillan	38 NW Davis Portland OR 97209	architect

I hereby certify the statements contained herein, along with the evidence submitted, are in all respects true and correct to the best of my knowledge.

PARR LUMBER Co. Brad Farmer — Property Owner's Name (Print)

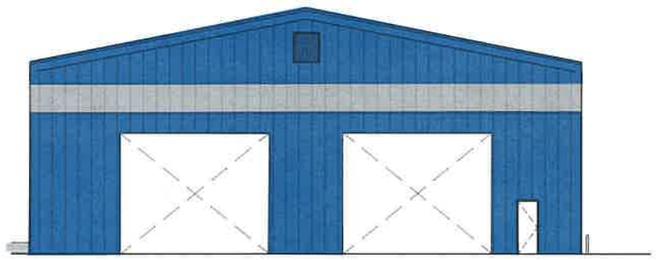
Melinda McMillan, AIA ASLA — Applicant's Name (Print)

Property Owner's Signature — 01/23/2020 Date

Applicant's Signature — 1/24/2020 Date

WEST ELEVATION -
FACES SIDE OF ADJACENT RURAL INDUSTRIAL OPERATION

EAST ELEVATION -
FACES INTERIOR LOT/DRAINAGE FIELD



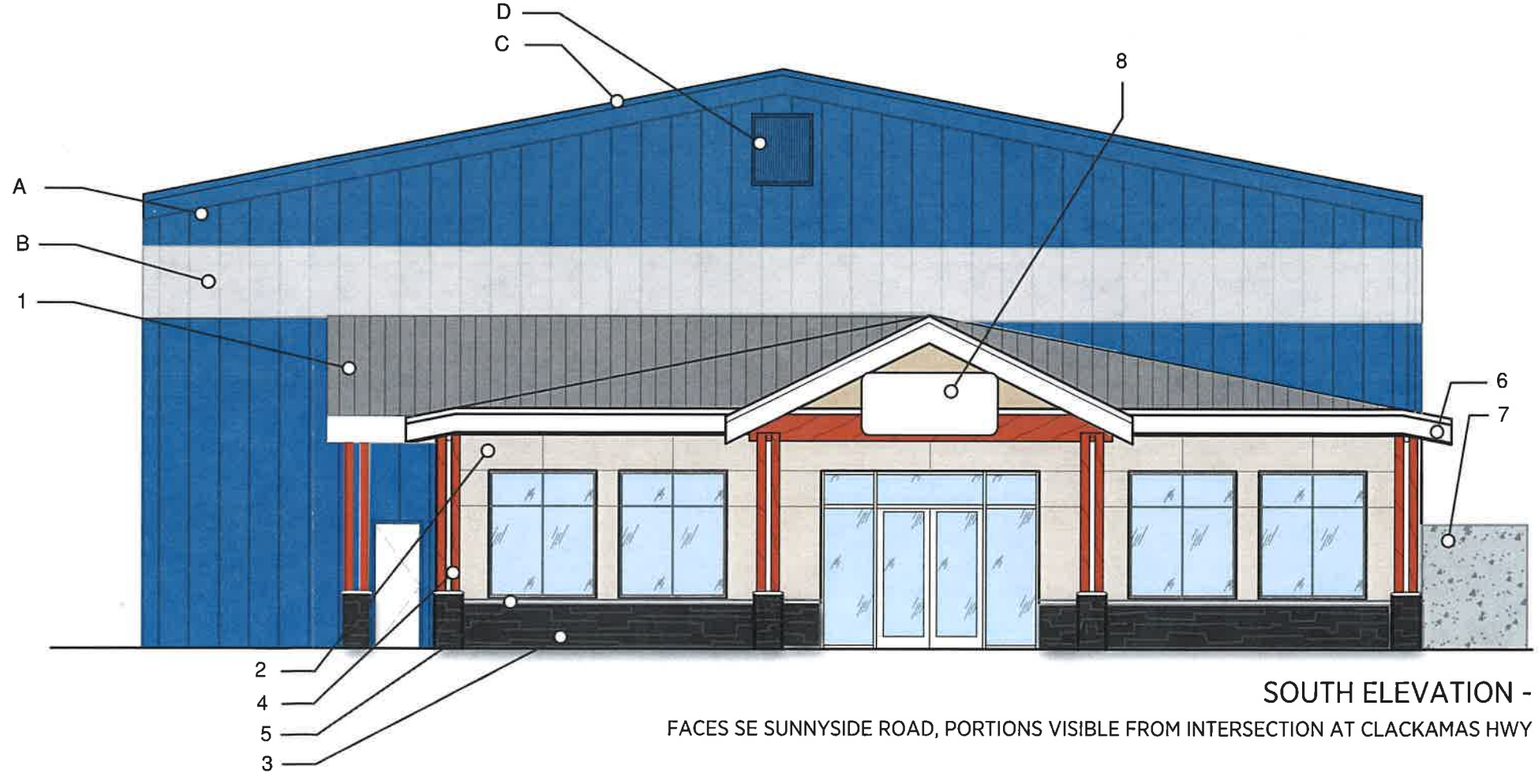
NORTH ELEVATION - FACES BACK OF RURAL INDUSTRIAL OPERATION

WHOLESALE BUILDING

1. METAL ROOFING - CITYSCAPE (MED GRAY) KYNAR 500, ENERGY STAR COLOR RATED /PAC-CLAD COOL COLORS
2. PLASTER FINISH SYSTEM, INTEGRAL COLOR (CREAM) - SENECA API 3043 PUEBLO - CONTROL JOINTS + REVEALS
3. CAST STONE - GRAY/BROWN MIXED COLORS. SKYLINE COUNTRY LEDGESTONE BY BORAL
4. COLUMN IS (4) 6X6 CETAR STAIN WOOD COLUMNS ON CAST STONE CAP (CREAM)
5. CAST STONE WAINSCOTE
6. GUTTERS AND DOWNSPOUTS - PREFINISHED WHITE METAL
7. CONCRETE OR CMU MECHANICAL SCREEN WALL, BEYOND
8. SIGNAGE BY OWNER, PROVIDE POWER

WAREHOUSE

A. METAL PANEL 1 - PARR LUMBER CORPORATE COLOR BLUE
B. METAL PANEL 2 - METAL PANEL STRIPE - GRAY, STD COLOR
C. METAL ROOFING - STONE WHITE KYNAR 500, ENERGY STAR COLOR RATED/ PAC-CLAD COOL COLORS
D. LOUVERED AND SCREENED VENT



SOUTH ELEVATION -
FACES SE SUNNYSIDE ROAD, PORTIONS VISIBLE FROM INTERSECTION AT CLACKAMAS HWY

CULTURED STONE COLORS

PLASTER FINISH SYSTEM - 3043

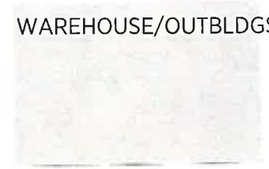
WOOD STAIN SWATCH

METAL ROOF COLORS

Cityscape ★$

● Denotes PAC-CLAD Metallic Colors
▲ Denotes PAC-CLAD Cool Colors
★ Denotes Energy Star® Colors

WAREHOUSE/OUTBLDGS



Stone White ▲★$

Kynar 500® or Hylar 5000® pre-finished steel and aluminum for roofing, curtainwall and storefront applications.

WHOLESALE BUILDING

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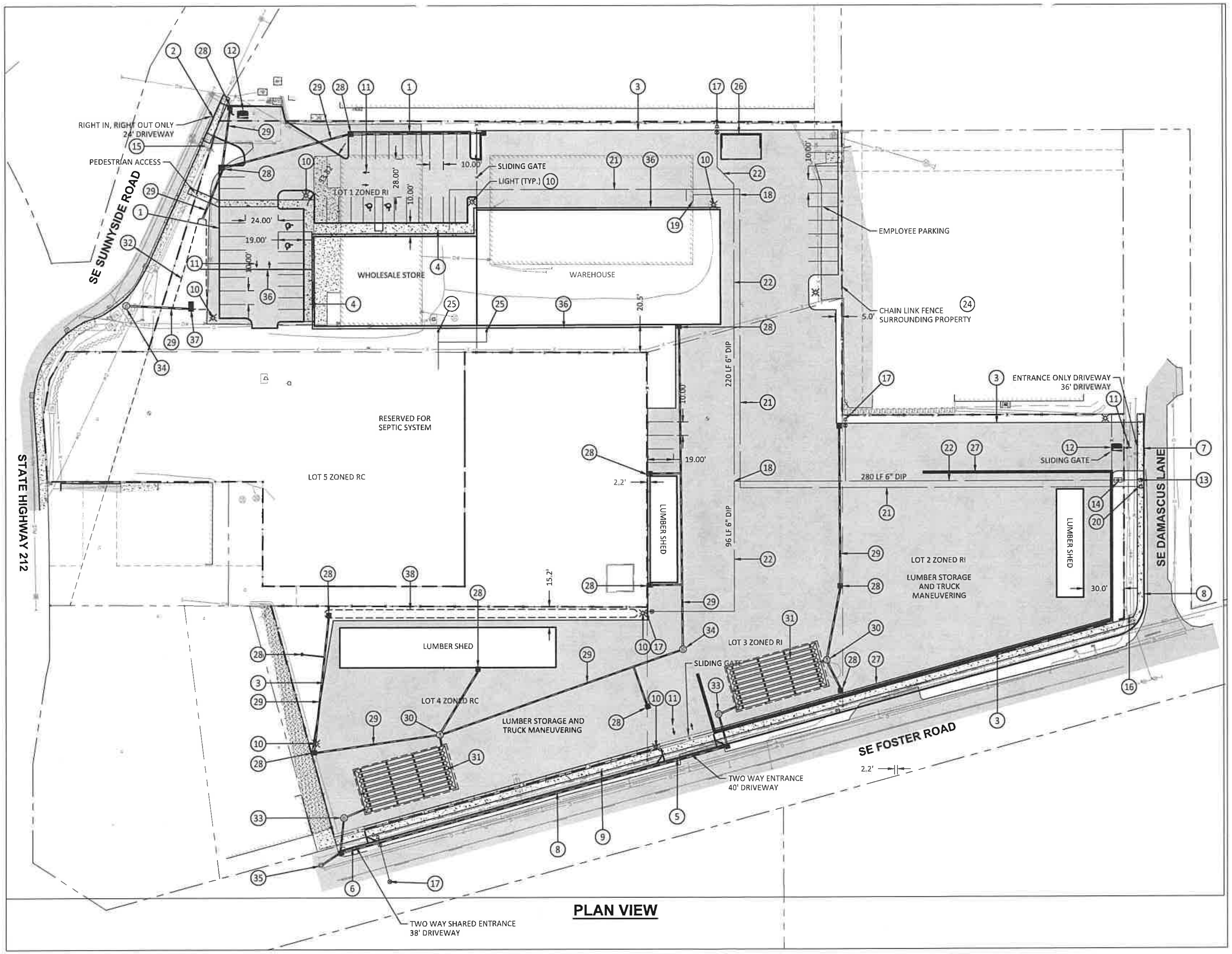

PLAN VIEW

NOT TO SCALE

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB
2. CONSTRUCT 24' COMMERCIAL DRIVEWAY
3. EDGE OF PAVEMENT SEE TYPICAL PAVEMENT SECTION
4. CONSTRUCT CONCRETE WALK
5. CONSTRUCT 40' COMMERCIAL DRIVEWAY
6. CONSTRUCT 38' COMMERICAL DRIVEWAY
7. CONSTRUCT 36' COMMERICAL DRIVEWAY
8. CONSTRUCT CURB AND GUTTER
9. CONSTRUCT CONCRETE SIDEWALK PER DETAIL
10. INSTALL SITE LIGHT PER DETAIL
11. INSTALL DIRECTIONAL ARROW
12. INSTALL ONLY PAVEMENT MARKING
13. INSTALL 6" TAP AND TAPPING VALVE
14. INSTALL 6" DDVC AND FDC
15. EXISTING HYDRANT TO REMAIN
16. RELOCATE EXISTING FIRE HYDRANT INTO PLANTER STRIP
17. INSTALL FIRE HYDRANT
18. INSTAL 6" X 6" TEE
19. STUB FIRE SERVICE TO BUILDING
20. INSTALL 1 1/2" DOMESTIC WATER METER WITH BACK FLOW PREVENTION VALVE
21. INSTALL 2" SCHEDULE 80 WATER LINE
22. INSTALL 6" C900 WATER LINE
24. INSTALL 6' CHAIN LINK FENCE
25. INSTALL 6" SANITARY SEWER LATERAL
26. PROPOSED TRASH ENCLOSURE
27. POPOSED RETAINING WALL
28. PROPOSED CATCH BASIN
29. PROPOSED STORM PIPE
30. PROPOSED WATER QUALITY MANHOLE
31. PROPOSED UNDERGROUND DETENTION SYSTEM
32. PROPOSED STORMWATER QUALITY AND DETENTION POND
33. PROPOSED OUTLET CONTROL MANHOLE
34. PROPOSED STORMWATER MANHOLE
35. PROPOSED STORMWATER CONNECTION
36. PROPOSED ROOF AND FOUNDATION PIPE
37. PROPOSED POND OUTLET CONTROL STRUCTURE
38. PROPOSED WATER QUALITY SWALE

SITE AND UTILITY PLAN

DAMASCUS PARR LUMBER

CLACKAMAS COUNTY, OR

Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

PRELIMINARY

DESIGNED:	KKV
DRAWN:	TLH
CHECKED:	KKV
DATE:	------

REVISIONS

DATE	NO.	DESCRIPTION

SHEET NO. 3.0

JOB NO. PAR-34

P:\PAR (Parr Lumber)\PAR-34 (Damascus)\PAR34-DWGS\SHEETS\PAR34-3_0 Site-Util.dwg

Parr Lumber Damascus Wholesale Building & Supply Store

Design Review Narrative & Findings

Owner/Applicant Contact:

Brad Farmer
Parr Lumber
5630 NE Century Blvd.
Hillsboro, WA 97214
503-614-2539
bradf@parr.com

Engineering & Planning:

Harper Houf Peterson Righellis Inc.
205 SE Spokane Street, Suite 200
Portland, OR 97202
503-221-1131

Ken Valentine, Engineer
Ken@hhpr.com

Brad Kilby, Planner, AICP
BradK@hhpr.com

Kaylene Campbell, Lighting Designer
kcampbell@glumac.com

Architect:

Melinda McMillian
Ankrom Moisan Architects
38 NW Davis Street, Suite 300
Portland, OR 97209
503-892-5352
Melindam@ankrommoisan.com

Site Location:

A Combination of Five Tax Lots
19855 SE Sunnyside Rd
(Tax Lot: 23E05D 02205, Parcel Number 00610556)
19850 SE Damascus Ln
(Tax Lot: 23E05D 02213, Parcel Number 01498089)
No situs address
(Tax Lot: 23E05D 02000, Parcel Number 00610477)
21881 SE Foster Rd
(Tax Lot: 23E05D 02001, Parcel Number 00610486)
19865 SE Hwy 212, Damascus 97089
(Tax Lot: 23E05D 01900, Parcel Number 00610440)

Site Size:

Approximately 5.52 acres within the Metro UGB

Zoning:	Rural Industrial (RI) Rural Commercial (RC)
Summary of Request:	Parr Lumber received a zoning interpretation from the Clackamas Planning director regarding five lots under two owners in the Damascus unincorporated area. The Director found that a Parr Lumber wholesaling and office building, enclosed warehouse, and open/covered lumber storage would be an allowed use on the site. As a result, Parr is under contract to purchase the properties, and are making application for development consistent with the director's interpretation. With this application, Parr Lumber is requesting design review approval to build a new wholesale building, warehouse, lumber yard, and associated facilities.
Report Date:	January 24, 2020

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2.0	Existing Conditions Plan
3.0	Site and Utility Plan (composite)
4.0	Preliminary Grading Plan
5.0	Foster Rd and Damascus Lane Proposed Improvements

Landscape

L1.0	Planting Plan
L1.1	Planting Plan
L1.2	Planting Plan & Details

Architectural

A1.01	Floor Plan
A1.02	Signage Plan
A3.11	Building Elevations & Signage Notes

Exterior Lighting

EL003P	Site Plan - Photometrics

APPENDIX ITEMS

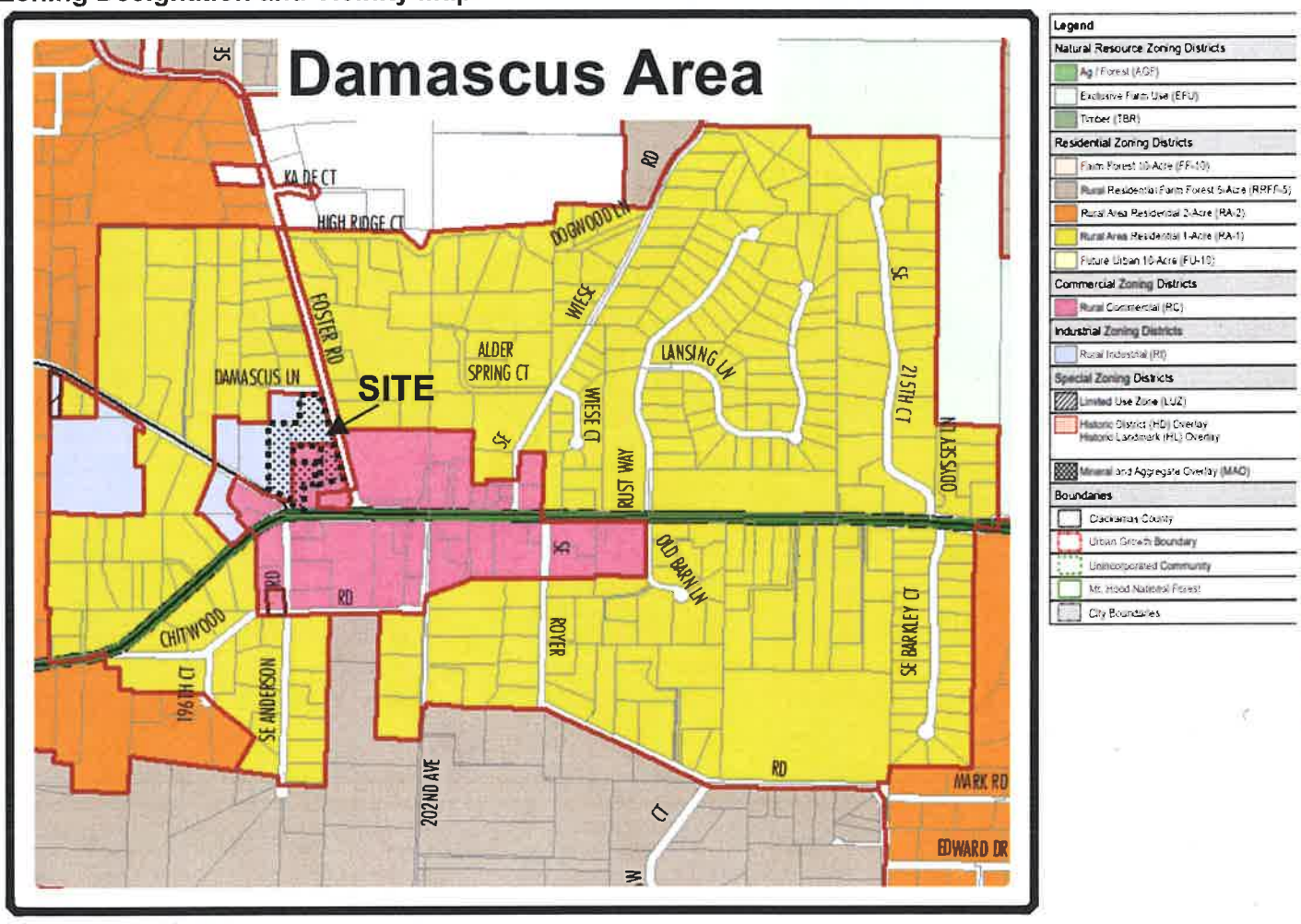
A. Pre-application Conference Notes
B. Traffic Study
C. Geotechnical Study
D. Service Provider Letter from Sunrise Water Authority, January 17, 2020
E. Service Provider Letter from Clackamas County Surface Water
F. Preliminary Stormwater Report
G. Cutsheets for products referenced

I. Description of Proposal

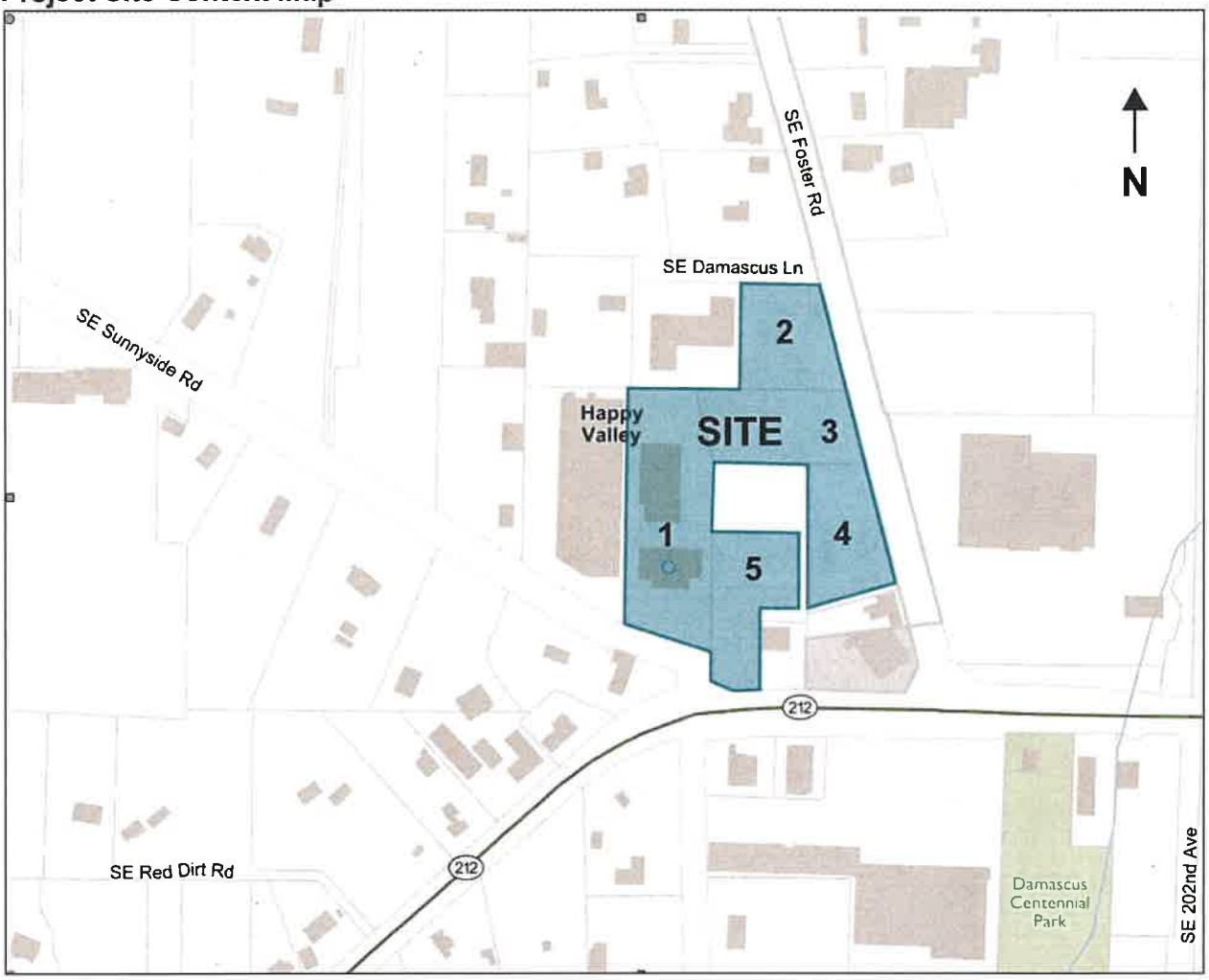
EXISTING CONDITIONS AND PROJECT PROPOSAL

This proposal includes the development of five tax lots in Damascus near where SE Sunnyside Road and SE Foster Road intersect Hwy 212. These parcels are under contract to be purchased by Parr Lumber and will create a site that is approximately 5.52 acres in size once the lots are consolidated. A combination of Rural Industrial (RI) and Rural Commercial (RD) zoning is applied across the site. Parcel 00610556 has a RI zoning designation and contains two existing, vacant buildings. Demolition of these structures will occur under the new development. The other four tax lots are currently vacant and undeveloped. Once entitled, all of the tax lots will be consolidated into a single tax lot.

Zoning Designation and Vicinity Map



Project Site Context Map



Lots 1-3 are zoned Rural Industrial and 4 and 5 are Rural Commercial. Parr Lumber proposes to construct two new buildings on the site, along with customer/employee parking areas, an open lumber storage yard, a truck staging/loading area, a drain field, covered open storage, and a perimeter security fence. The two largest proposed buildings are located in the same general vicinity of the existing structures and include an enclosed warehouse, approximately 31,500 square feet in size, and an office/sales building, approximately 8,000 square feet in size. The proposed development is a complementary use to the garden supply store at the intersection of SE Foster. Internal Parr studies determined that these services are needed in this area.

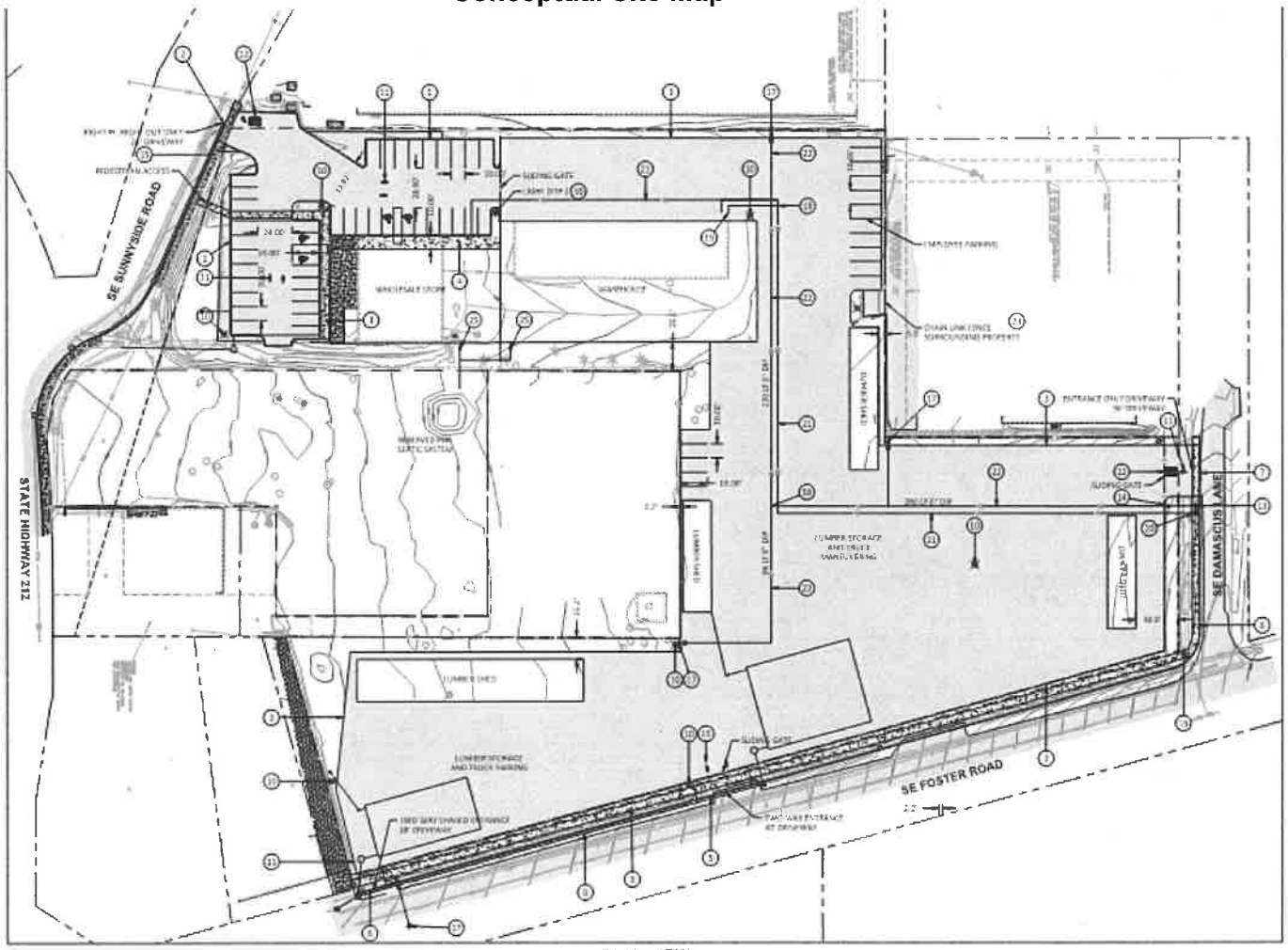
With two zoning designations and the absence of the flag-shaped lot included with the land purchase, there are operational constraints associated with the development. Circulation on the site must accommodate small contractor visits, large truck deliveries, garbage/recycling pickup, and truck staging and loading.

The project connects and improves sidewalks, simplifies utility connections, and remediates stormwater onsite. With a grade that drops over 32 feet from the NE to the south, stormwater and drainage/septic fields are placed at lower points. Where possible, the preservation of

mature trees is proposed along lot lines. Street connections and improvements have accommodated findings from the attached traffic study.

A Pre-Application Conference meeting was held with Clackamas County Staff for this project proposal on September 11, 2019. The application was assigned case file ZPAC0099-19. The Pre-Application notes from the Pre-Application Conference are provided in Appendix A.

Conceptual Site Map



PLAN VIEW

North

II. Responses to Applicable Approval Criteria: Clackamas County Zoning and Development Ordinance

513 – RURAL COMMERCIAL (RC) DISTRICTS

513.03 USES PERMITTED

A. Uses permitted in the RTC and RC Districts are listed in Table 513-1, Permitted Uses in the RTC and RC Districts. In addition, uses similar to one or more of the listed uses for the applicable zoning district may be authorized pursuant to Section 106, Authorizations of Similar Uses.

B. As used in Table 513-1:

1. "P" means the use is a primary use.
2. "A" means the use is an accessory use.
3. "C" means the use is a conditional use, approval of which is subject to Section 1203, Conditional Uses.
4. "S" means the use may be authorized only pursuant to Section 106; however, identifying a use as "S" does not indicate that any determination has been made regarding whether the use will be authorized pursuant to Section 106.
5. "X" means the use is prohibited.
6. Numbers in superscript correspond to the notes that follow Table 513-1. C. Permitted uses are subject to the applicable provisions of Subsection 513.04, Dimensional Standards; Section 1000, Development Standards; and Section 1100, Development Review Process.

Excerpt of Table 602-1: Permitted Uses in the RC District

Use	*RC*
Accessory Uses, Customarily Permitted Including: Parking areas and storage buildings/rooms	*A*
Offices, including administrative and corporate offices and call centers. These businesses primarily serve other industries or deliver their products and services to the end user through means other than on-site customer visits. Few general public customer visits per day are generated. Offices, including administrative, business, corporate, governmental, and professional offices. Examples include offices for the following: accounting services, architectural services, business management services, call centers, employment agencies, engineering services, governmental services, income tax services, insurance services, legal services, manufacturer's representatives, office management services, property management services, real estate agencies, and travel agencies.	*P*
Retailing—whether by sale, lease, or rent—of any of the following new or used products: animal feed, **building materials**, farm equipment, forestry equipment, and livestock supplies services, such as cardlock fueling stations; however, motor vehicle fueling stations that cater to the general public are excluded.	*P*
Wholesaling—whether by sale, lease, or rent—of any of the following new or used products: animal feed, farm equipment, farm materials, farm products, fertilizer,	*P*

forestry equipment, forestry materials, forestry products, mulch, nursery stock, seeds, and seedlings	

Response: The proposed uses as described within the proposal and bolded in the above table, pulled from Table 602-1 are permitted within the Rural Commercial zoned portion of the site and are consistent with the Director's interpretation issued by Clackamas County under File number Z0076-19.

513.04 DIMENSIONAL STANDARDS IN THE RC DISTRICT

Standard	*Requirement*	*Proposed*
Minimum Lot Size	Generally, None 20-acre min. for subdivision/partition	N/A. New lots not created.
Maximum Front Yard Setback	N/A	
Minimum Front Setback	30 feet	85 feet from SE Foster Road
Minimum Rear Setback	10 feet	15.2 feet
Minimum Side Yard Depth	10 feet	40 feet
Building Height	No maximum	~18 feet

Response: As proposed, the portions of the development on the RC zoned properties will meet or exceed the required setbacks. Please see sheet 3.0 Site and Utility Plan for details.

604 – RURAL INDUSTRIAL (RI) DISTRICTS

604.03 USES PERMITTED

Uses permitted in the RI District are listed in Table 604-1, Permitted Uses in the RI District. In addition, uses similar to one or more of the listed uses may be authorized pursuant to Section 106, Authorizations of Similar Uses.

A. As used in Table 604-1:

1. *"P" means the use is a primary use.*
2. *"A" means the use is an accessory use.*
3. *"C" means the use is a conditional use, approval of which is subject to Section 1203, Conditional Uses.*
4. *"X" means the use is prohibited.*
5. *Numbers in superscript correspond to the notes that follow Table 604-1.*

B. Permitted uses are subject to the applicable provisions of Subsection 604.04, Dimensional Standards, Section 1000, Development Standards, and Section 1100, Development Review Process.

Excerpt of Table 604-1: Permitted Uses in the RI District

Use	*RC*
Accessory Uses, Customarily Permitted Including: Parking areas and storage buildings/rooms	*A*
Offices	*A*

Retail Sales of Products that are Manufactured on the Subject Property, Distributed from the Subject Property, Warehoused on the Subject Property, or Sold on a Wholesale Basis from the Subject Property	*A*

Response: As proposed, the uses proposed in the Rural Industrial zoned portions of the site including the offices, wholesaling, warehousing, Lumber sheds parking, loading, and maneuvering areas are allowed as accessory uses per table 604-1.

604.04 DIMENSIONAL STANDARDS IN THE RI DISTRICT

Standard	***Requirement***	***Proposed***
Minimum Lot Size	Generally, None. 20-acre min. for subdivision/partition	N/A. New lots not created.
Maximum Front Yard Setback	None	
Minimum Front Setback	30 feet	120 feet from Sunnyside Road
Minimum Rear Setback	0 feet	5-30 feet
Minimum Side Yard Depth	0 feet	2.2 feet
Building Height	No maximum	~28 feet
Maximum Building Floor Space per Commercial Use in an Unincorporated Community	4,000 square feet[4]	~2,246 SF (See sheet A2.01 for specifics.)
Maximum Building Floor Space per Industrial Use in an Unincorporated Community	40,000 square feet[5]	~20,000 SF (See sheet A2.01 for specifics.)

[4]No maximum applies to uses authorized under Oregon Statewide Planning Goals 3 and 4 and uses intended to serve the community and surrounding rural area or the travel needs of people passing through the area.

[5]No maximum applies to uses authorized under Statewide Planning Goals 3 and 4; expansion of a use that existed on December 5, 1994; uses that require proximity to a rural resource, as defined in Oregon Administrative Rules 660-004-0022(3)(a); new uses that will not exceed the capacity of water and sewer service available to the site on December 5, 1994, or, if such services are not available to the site, the capacity of the site itself to provide water and absorb sewage; and uses sited on abandoned or diminished mill sites.

[6]No maximum applies to the primary processing of raw material produced in rural areas, or uses sited on abandoned or diminished mill sites. Also, any lawfully established industrial use that existed on December 20, 2001, may expand to occupy a maximum of 40,000 square feet of building floor space or 25 percent more building floor space than was occupied by the use on December 20, 2001, whichever is greater.

Response: The proposed buildings and development have been designed with these standards in mind. The floor space for the retail portion of the site is approximately 2,246 SF, accessory to the primary use on the site which is wholesaling and warehousing.

709 – WATER QUALITY RESOURCE AREA DISTRICT

709.01 PURPOSE

Section 709 is adopted to implement the policies of the Comprehensive Plan for Water Quality Resource Areas.

709.02 AREA OF APPLICATION

A. Section 709 applies in the Water Quality Resource Area District (WQRAD). The WQRAD applies to all parcels containing a Water Quality Resource Area (WQRA), provided that such parcels are inside the Metropolitan Service District Boundary or the Portland Metropolitan Urban Growth Boundary and outside the boundaries of both Clackamas County Service District No. 1 and Surface Water Management Agency of Clackamas County. WQRAs are protected water resources and adjacent vegetated corridors as established by Section 709. Protected water resources are classified as primary or secondary.

Response: The proposed site is located within Clackamas County Service District No. 1. This means that the proposed site is not within the WQRAD, and that this section is not applicable to the proposed development.

SECTION 1002 – PROTECTION OF NATURAL FEATURES

1002.02 – DEVELOPMENT RESTRICTION FOLLOWING EXCESSIVE TREE REMOVAL

Subsection 1002.02 applies to land inside the Portland Metropolitan Urban Growth Boundary, except land specially assessed as forestland on September 28, 2010.

A. Excessive Tree Removal: Excessive tree removal is the removal of more than three trees—excluding those identified as exempt in Subsection 1002.02(E)—on a lot of record in a calendar year.

E.11. Trees, the removal of which is authorized by approval of an administrative action under this Ordinance;

Response: Review and approval of the tree removal proposal under the administrative Design Review is exempt from the excessive tree removal threshold. The project requires removal of 16 trees, 6-inches or greater in size, to accommodate new development. Landscaping installed within the newly developed areas will exceed the number of trees removed. A total of 31 new trees are proposed on site, and another 21 trees are proposed as street trees. (see Landscape Sheets L1.0 through L1.2 for specific details). In addition, the landscape buffer around the site has been proposed to retain and protect as many trees and shrubs as possible on the perimeter of the lots to mitigate aesthetic impacts from surrounding properties.

Removal of Existing Trees

Location	Qty.
Lumber storage and truck parking area	10
Warehouse building	4
Wholesale store	2

1002.03 – TREES AND WOODED AREAS

A. *Existing wooded areas, significant clumps or groves of trees and vegetation, consisting of conifers, oaks and large deciduous trees, shall be incorporated in the development plan wherever feasible. The preservation of these natural features shall be balanced with the needs of the development, but shall not preclude development of the subject property, or require a reduction in the number of lots or dwelling units that would otherwise be permitted. Site planning and design techniques which address incorporation of trees and wooded areas in the development plan include, but are not limited to, the following [...]*

Response: The areas proposed for new improvements contain sparse tree canopy. No wooded areas or significant clumps or groves of trees are present. It is not possible to retain the sixteen trees proposed for removal and accommodate the proposed development. The project proposal complies with the parking lot landscaping and minimum site landscaping requirements, resulting in far more onsite trees (34) overall at the completion of development.

B. *Trees and wooded areas to be retained shall be protected during site preparation and construction according to County design and specifications by:*
   1. *Avoiding disturbance of the roots by grading and filling activity;*
   2. *Providing for water and air filtration to the roots of trees which will be covered with impermeable surfaces;*
   3. *Pruning or topping of trees which will be in parking areas or near buildings, as necessary, to maintain proper balance between top growth and roots, reduce windfall potential, and provide adequate vision clearances for safe vehicular circulation; and*
   4. *Requiring, if necessary, the advisory expertise of a qualified consulting arborist or horticulturist both during and after site preparation, and a special maintenance/management program to provide protection of specified wooded areas or specimen trees, as recommended by the arborist or horticulturist.*

Response: Acknowledged by the applicant. Tree protection will be implemented as deemed necessary during construction activities.

1002.08 – SIGNIFICANT LANDFORMS & VEGETATION

Institutional, commercial, and industrial development; multifamily dwellings; and developments of more than one two- or three-family dwelling shall cluster and modulate building masses to minimize disturbance of existing significant landforms and vegetation. Pursuant to the review procedure required by Section 1102, Design Review, minimum front setbacks may be reduced or waived to minimize disturbance of natural landforms or vegetation. If a setback reduction is granted, a program for protection of those landforms and vegetation during construction, and for long-term maintenance, shall be provided.

Response: There are no significant landforms of vegetation associated with these properties. No exception to the minimum front setback is proposed development; therefore, Section 1002.08 does not apply.

1005 – SITE AND BUILDING DESIGN

1005.02 APPLICABILITY

Section 1005 applies to institutional, commercial, and industrial development; multifamily dwellings; and developments of more than one two- or three-family dwelling.

Response: The proposed development is located in the Rural Commercial and Rural Industrial Zoning Districts. Therefore, ZDO Section 1005 applies to the application.

1005.03 GENERAL SITE DESIGN STANDARDS

A. Where feasible, cluster buildings within single and adjacent developments for efficient sharing of walkways, on-site vehicular circulation, connections to adjoining sites, parking, loading, transit-related facilities, plazas, recreation areas, and similar amenities.

Response: The site is being developed as a wholesale building materials and lumber yard. To the extent possible, the two main buildings that are most likely to see the most on-site activity are clustered off of SE Sunnyside Road in the southwest portion of the site. Pedestrian walkways from the main building entrance to Sunnyside Road is provided as shown on sheet 3.0 the composite Site and Utility Plan.

B. Where feasible, design the site so that so that the longest building elevations can be oriented within 20 degrees of true south in order to maximize the south-facing dimensions.

Response: Given the layout of the lots, the existing zoning, and the operational needs of the development, the location of the two main buildings are located in the SW corner of the site and perpendicular to the southern end of the site. The proposed lumber sheds are all oriented on an east west axis.

C. Minimum setbacks may be reduced by up to 50 percent as needed to allow improved solar access when solar panels or other active or passive solar use is incorporated into the building plan.

Response: Reduced setbacks do not permit the buildings to be located on site in a way that would improve their solar access.

D. A continuous, interconnected on-site walkway system meeting the following standards shall be provided.

1. Walkways shall directly connect each building public entrance accessible to the public to the nearest sidewalk or pedestrian pathway, and to all adjacent streets, including streets that dead-end at the development or to which the development is not oriented.

Response: Pedestrian walkways from the main building entrance to Sunnyside Road is provided as shown on sheet 3.0 the composite Site and Utility Plan.

2. *Walkways shall connect each building to outdoor activity areas including parking lots, transit stops, children's play areas and plazas.*

Response: The public outdoor areas including the primary parking area is connected to the main public entrance of the building. Other than this connection, employee parking is located at the rear of the building and within the lumber yard.

3. *Walkways shall be illuminated. Separate lighting shall not be required if existing lighting adequately illuminates the walkway.*

Response: The on-site walkways will be illuminated through parking lot and building mounted lighting. See sheet E1.01, the photometric lighting plan for specific lighting locations and intensity.

4. *Walkways shall be constructed with a well-drained, hard-surfaced material or porous pavement and shall be at least five feet in unobstructed width.*

Response: All new walkways will be constructed of concrete and will meet the minimum unobstructed width of 5 feet as required. See sheet 3.0 for specific sidewalk widths and locations.

5. *Standards for walkways through vehicular areas:*
   a. *Walkways crossing driveways, parking areas and loading areas shall be constructed to be clearly identifiable to motorists through the use of different paving material, raised elevation, warning signs or other similar methods.*
   b. *Where walkways are adjacent to driveways, they shall be separated by a raised curb, bollards, landscaping or other physical barrier.*
   c. *Inside the Portland Metropolitan Urban Growth Boundary (UGB), if the distance between the building public entrance and street is 75 feet or greater and located adjacent to a driveway or in a parking lot, the walkway shall be raised, with curbs, a minimum four-foot-wide landscape strip and shade trees planted a maximum of 30 feet on center.*
   d. *The exclusive use of a painted crossing zone to make walkways identifiable to motorists may be used only for portions of walkways which are shorter than 30 feet and located across driveways, parking lots, or loading areas.*
   e. *Walkways bordering parking spaces shall be at least seven feet wide or a minimum of five feet wide when concrete bumpers, bollards, curbing, landscaping, or other similar improvements are provided which prevent parked vehicles or opening doors from obstructing the walkway.*

Response: The proposed walkway through the parking area is shown on sheet 3.0, and is proposed to be constructed of concrete as opposed to asphalt. The walkway eventually connects to Sunnyside Road. All other parking is for employees and is located in a gate controlled yard. There is an expectation that the entire yard with the exception of the designated parking will be utilized for maneuvering, loading, and unloading lumber and building materials consistent with other similar facilities. Employees are either walking or driving in the laydown yard during all business hours.

6. *The interconnected onsite walkway system shall connect to walkways in adjacent developments, or stub to the adjacent property line if the adjacent land is vacant or is developed without walkways.*

a. *Walkway stubs shall be located in consideration of topography and eventual redevelopment of the adjacent property.*
b. *Notwithstanding the remainder of Subsection 1005.03(D)(6), walkway linkages to adjacent development shall not be required within industrial developments, to industrial developments, or to vacant industrially zoned land.*

Response: As mentioned previously, walkways are provided along the entire perimeter of the site, and a direct connection is provided from the main entrance to the nearest public street. Access to the laydown yard is controlled and not open to the public, so there would be no proposed connections to from the site along those lines. It is important to note that the public portions of the site are zoned Rural Industrial, and that the entire site will be developed with a use that many communities would consider light industrial.

E. Inside the UGB, except for industrial developments, a minimum of 50 percent of the street frontage of the development site shall have buildings located at the minimum front yard depth line.

Response: The site is located in the UGB, but the main activity of the site is located on property zoned Rural Industrial and with a use that is typically considered light industrial in that Parr Lumber provides wholesaling of building materials as opposed to general retail that one might typically find in a large format hardware/lumber store such as Home Depot or Lowes.

F. Inside the UGB, parking lots larger than three acres in size shall be built with major on-site vehicular circulation ways that include raised walkways with curbs, a minimum four-foot-wide landscape strip and shade trees planted a maximum of 30 feet on center.

Response: The proposed parking and circulation areas open to the general public along with the same areas for employee parking constitute approximately 78,350 square feet or 1.8 acres in size. This criterion is not applicable to the proposed development.

G. New retail, office, mixed use, and institutional buildings located on major transit streets shall have at least one public entrance facing a major transit street, or street intersecting a major transit street.

1. *A private street used to meet the standards in Subsection 1005.03(G) must have raised walking surfaces on both sides, street trees, curbs, and pedestrianscale street lighting, and must connect at both ends to an existing or proposed street.*
2. *If a development has frontage on more than one major transit street, this orientation requirement needs to be met on only one side.*
3. *The public entrance orientation requirement does not apply to warehouses or industrial buildings with less than 5,000 square feet of attached offices.*

Response: There is no transit service available to the site. This criterion is not applicable.

H. New retail, office, mixed use, multifamily, and institutional buildings located at a major transit stop shall be set back a maximum of 20 feet from at least one of the following: the major transit stop, the major transit street or an intersecting street, or a pedestrian plaza at the major transit stop or a street intersection.

1. For the purpose of Subsection 1005.03(H), a building is located at a major transit stop, if:

a. The building is located on a lot that has frontage on the major transit street or an intersecting street; and

b. Any portion of the building is within a 200-foot radius of the major transit stop.

2. Lawfully established buildings that do not comply with the maximum setback standard may have additional height added as an expansion without being brought into conformance with the standard.

3. The maximum setback standard does not apply to warehouses or industrial buildings with less than 5,000 square feet of attached offices.

Response: There is no transit service available to the site. This criterion is not applicable.

1005.04 BUILDING DESIGN

A. The following standards apply to building facades visible from a public or private street or accessway and to all building façades where the primary entrance is located.

1. Building facades shall be developed with architectural relief, variety and visual interest and shall avoid the effect of a single, long or massive wall with no relation to human size. Examples of elements that subdivide the wall: change in plane, texture, masonry pattern or color, or windows.

Response: The building façade is provided with architectural relieve through a variety of colors, materials, and glazing. The building facades do not consist of a long or massive wall with a single plane. See sheet A3.11 for the building elevations.

2. Building facades shall have particular architectural emphasis at entrances and along sidewalks and walkways.

Response: Building facades are provided with overhangs and signage at entrances along sidewalks and will be visible from SE Sunnyside Road see sheets A3.11 and A3.13 for the building elevations and materials.

3. Provide visual interest through use of articulation, placement and design of windows and entrances, building trim, detailing, ornamentation, planters or modulating building masses.

Response: The smaller mass of the wholesale building breaks up the warehouse elevation. The wholesale building has visual interest around entries, with detailing, material changes, and color variation. As mentioned above, the buildings are provided with articulation through a varying roof line, a variety of colors, materials and grading. See sheets A3.11 and A3.13 for the proposed building elevations and materials.

4. Utilize human scale, and proportion and rhythm in the design and placement of architectural features.

Response: The wholesale building is a single level with articulated entries that further scale the proportion of the buildings to human scale. The windows provide a rhythm to the front façade that continues around the west to a second public entry. See sheets A3.11 for specific details.

5. Use architectural features which are consistent with the proposed use of the building, level and exposure to public view, exposure to natural elements, and ease of maintenance.

Response: Parr Lumber buys and sells building materials. Their facilities are designed and constructed based on their intimate knowledge of the business. The materials for the warehouse and lumber sheds have been selected for durability, ease of maintenance, and cost. The wholesale building is proposed to be constructed with higher-grade finishes as it is the primary building visible from the public view facing SE Sunnyside. Natural light enters from all external walls into the wholesale building and a porch entry and staff door offer access to views of the green lower lot, stormwater areas, and mature trees. See sheets 3.0 for the Site and Utility plan, and A3.11 and A3.13 for proposed building elevations and materials.

6. When uses between ground-level spaces and upper stories differ, provide differentiation through use of bays or balconies for upper stories, and awnings, canopies, trim and other similar treatments for lower levels.

Response: The proposed buildings are single-story. This criterion is not applicable.

B. Requirements for building entries:

1. Public entries shall be clearly defined, highly visible and sheltered with an overhang or other architectural feature, with a depth of at least four feet.

2. Commercial, mixed-use and institutional buildings sited to comply with 1005.03(E) shall have public entries that face streets and are open to the public during all business hours.

Response: The proposed development is for a wholesale lumber yard with a small retail component on land zoned Rural Industrial and Rural Commercial. The main activity on site is industrial with accessory office and retail uses. Section 1005.03.E does not appear to be applicable to this request.

C. The street-facing façade of commercial, mixed-use and institutional buildings sited to comply with 1005.03(E) shall meet the following requirements:

1. Facades of buildings shall have transparent windows, display windows, entry areas, or arcades occupying a minimum of 60 percent of the first floor linear frontage.

2. Transparent windows shall occupy a minimum of 40 percent of the first floor linear frontage. Such windows shall be designed and placed for viewing access by pedestrians.

3. For large-format retail buildings greater than 50,000 square feet, features to enhance the pedestrian environment, other than transparent window, may be approved through design review. Such items may include, but are not limited to display cases, art, architectural features, wall articulation, landscaping, or seating, provided they are attractive to pedestrians, are built to human scale, and provide safety through informal surveillance.

Response: The proposed use of the site is primarily industrial, and does not appear to be subject to the provisions of 1005.03E.

D. Requirements for roof design:

1. For buildings with pitched roofs:

a. Eaves shall overhang at least 24 inches.

b. Roof vents shall be placed on the roof plane opposite the primary street.

Response: The proposed wholesale and warehouse will have pitched roofs with varying roof lines. The proposed roof vents will be placed on the east side of both the wholesale building and warehouse. They will not be visible from Sunnyside Rd., the primary street serving the site and main entrance to the facility. Where provided eaves have been designed to overhang by at least 24 inches. See sheet A3.11 for specific details.

E. Requirements for exterior building materials:

1. Use architectural style, concepts, colors, materials and other features that are compatible with the neighborhood's intended visual identity.

Response: There is not a neighborhood plan for the area that would suggest the intended visual identity. The applicant proposes to utilize a tilt up concrete wall paneling, stucco, and glazing on the façade of the primary building with cast stone wainscoting. Please see sheet A3.1 for specific materials. The warehouse is proposed to be tilt up construction with a high quality metal finish and windows. All proposed buildings will be provided with metal roofing.

2. Building materials shall be durable and consistent with the proposed use of the building, level and exposure to public view, exposure to natural elements, and ease of maintenance.

Response: The proposed materials were selected based on the clients experience with building materials and other facilities. They are high quality and durable for the proposed use.

3. Walls shall be surfaced with brick, tile, masonry, stucco, stone or synthetic equivalent, pre-cast masonry, gypsum reinforced fiber concrete, wood lap siding, architecturally treated concrete, glass, wood, or a combination of these or other high-image materials.

Response: Walls utilized for screening of equipment will be constructed of concrete. Retaining walls on site will be constructed of concrete or concrete block.

4. Notwithstanding Subsection 1005.04(E)(3) metal may be approved as an exterior building material through design review pursuant to Section 1102 for specific high-image surfaces, canopies, awnings, doors, screening of roof-mounted fixtures, or other architectural features.

Response: As stated above, the primary building, most visible to the public entering the site from SE Sunnyside road is constructed of concrete wall paneling, stucco, and glazing on the façade of the primary building with cast stone wainscoting. Please see sheet A3.1 for specific materials. The secondary buildings and all of the roofs are proposed to be constructed of a high quality and durable metal with an architectural finish.

G. Requirements to increase safety and surveillance:

1. Locate buildings and windows to maximize potential for surveillance of entryways, walkways, parking, recreation and laundry areas.

Response: The building is located at the front of the property near the main public entrance. There are windows along the front of the building where employees can monitor the entryway, parking, and public sidewalks. The main work areas for employees with the exception of front office employees occurs in areas that have controlled access. These are areas that include the warehouse and the main laydown yard. They will be well lit, and because of the sites location between two highly traveled roads, the areas are fairly visible to the public and police.

2. Provide adequate lighting for entryways, walkways, parking, recreation and laundry areas.

Response: The entire site is proposed to be lit with both building mounted equipment and individual pole lights. Please see sheet E1.01, the proposed lighting plan. All entryways, walkways, and parking areas are proposed to be lit as required.

3. Locate parking and automobile circulation areas to permit easy police patrol.

Response: Proposed public parking is located at the front of the property off of Sunnyside Road. There are windows along the front of the building where employees can monitor the entryway, parking, and public sidewalks. The main work areas for employees with the exception of front office employees occurs in areas that have controlled access. These are areas that include the warehouse and the main laydown yard. They will be well lit, and because of the sites location between two highly traveled roads, the areas are fairly visible to the public and police.

4. Design landscaping to allow for surveillance opportunities.

Response: Landscaping has been strategically located by a professional and licensed landscape architect. As proposed, landscaping is a mix of trees, shrubs, and ground cover. All areas are visible from the public right-of-way given the site's location and allows for ample opportunities for surveillance. Please see sheets L1.0, L1.1, and L1.2 for proposed landscaping.

5. Locate mail boxes where they are easily visible and accessible.

Response: The proposed development is a business, and will provide mail collection and delivery available within the business as opposed to a mail box.

6. Limit fences, walls and, except for trees, landscaping between a parking lot and a street to a maximum of 30 inches in height.

Response: This standard is contradictory to what's allowed for fencing and walls in other sections of the code. The fences are proposed to be chain link, and the walls are retaining walls along the perimeter of the site and within the loading and unloading area at the rear of

the site. Although they are over 30 inches in height, they do no preclude areas internal to the site from being easily surveilled by employees and law enforcement.

7. Locate play areas for clear parental monitoring.

Response: A play area is not proposed for this development. This standard is not applicable to the project.

H. Solar access requirements:

1. Except for uses with greater cooling needs than heating needs, such as many retail uses, concentrate window areas on the south side of buildings (within 20 degrees of due south) where there is good southern exposure.

Response: The proposed buildings will be provided with windows, or in the case of the proposed lumber sheds, open on three sides. There will be ample opportunity for passive lighting within the building. See sheet A3.1 for proposed window locations.

2. Provide overhangs, balconies, or other shading devices to prevent excessive summer heat gains.

Response: As mentioned previously in this narrative, the roof is provided with eaves. In conjunction with the added tree cover, the site should remain should be relatively shaded.

3. Use architectural features, shape of buildings, fences, natural landforms, berms, and vegetation to catch and direct summer breezes for natural cooling, and minimize effects of winter winds.

Response: The proposed development is open to the north and east. A portion of the site will also be open to the south and west. To the extent possible, winds can freely move across and around the site.

I. Requirements for compatibility with the intent of the design type or with the surrounding area. For purposes of Subsection 1005.04(I), design types are Centers, Station Communities or Corridor Streets as identified on Comprehensive Plan Map IV-8, Urban Growth Concept; X-CRC-1, Clackamas Regional Center Area Design Plan, Regional Center, Corridors and Station Community; X-SC-1, Sunnyside Corridor Community Plan, Community Plan Area and Corridor Design Type Location; or X-MC-1, McLoughlin Corridor Design Plan, Design Plan Area. The intent of these design types is stated in Chapter 4 or 10 of the Comprehensive Plan.

Response: The project is not located in a Center, Station Community or Corridor Street. Nor is the site located within a plan area specifically identified above. Comprehensive Map 4-8, Urban Growth Concept, identifies this area as Industrial. As a result, the development is subject to compatibility of the general surrounding industrial area.

6. Inside the Portland Metropolitan Urban Growth Boundary, use colors, materials and architectural designs to visually reduce the impact of large buildings.

Response: A sizable building footprint is necessary to accommodate the proposed use. The impact of the building massing is reduced by siting it on the interior of the project site, with setbacks of more than 60+ feet for the main buildings. The warehouse is placed behind the wholesale building and the visual impact of its scale will be minimized and broken up by the materials of the wholesale building. In addition, several mature trees will be retained and break up the larger facades which are expected to be visible from SE Foster/Safeway.Visual breaks are also created along the wall plane by integrating rows of windows and varying the exterior finish materials. The colors proposed in the exterior materials are warm, neutral tones.

7. In unincorporated communities, design structures to reflect and enhance the local character and to be in scale with surrounding development.

Response: As previously discussed, the scale of the building is comparable to those on surrounding properties in height and massing. The concrete and metal exterior materials proposed on the warehouse building echo the industrial character of this zoning district and the property immediately west of the site.

8. In rural and natural resource areas, use materials, colors and shapes that imitate or complement those in the surrounding areas, such as those used in typical farm structures.

Response: This standard is not applicable to this proposal.

9. In open space or scenic areas, use natural color tones, lines and materials which blend with the natural features of the site or site background.

Response: This site is not designated as an open space or scenic area. This standard is not applicable.

J. Requirements for screening mechanical equipment:

1. Rooftop mechanical equipment, except for solar energy systems, shall be screened from view by the use of parapet walls or a sight-obscuring enclosure around the equipment. The screen shall be constructed of one of the primary materials used on the primary facades, and shall be an integral part of the building's architectural design.

2. Ground mounted mechanical equipment shall be located away from the intersection of two public streets, to the extent practicable, and shall be screened by ornamental fences, screening enclosures, or landscaping that blocks at least 80% of the view.

3. Wall mounted mechanical equipment shall not be placed on the front of a building or on a façade that faces a street. Wall mounted mechanical equipment that extends six inches or more from the outer building wall shall be screened from view from the streets; from residential, public, and institutional properties; and from public areas of the site or adjacent sites through one of the screening techniques used in 1005.04(J)(1) or (2).

Response: Mechanical equipment is proposed to be located within the interior of the building or ground mounted, and will be screened by a landscaping and concrete screen walls. See sheet A3.1 for details.

K. Requirements for specialized structures in industrial zoning districts:

2. In the BP and LI Districts, silos, towers, and other specialized storage or processing structures are prohibited unless they are enclosed in a building that complies with the other applicable standards of Subsection 1005.04, or unless they are approved as part of a conditional use.

Response: This Subsection pertains to requirements for projects located on sites within the GI, BP and LI Zoning Districts. The site is located in the RC and RI Zoning District and is not subject to the specialized requirements of this Subsection.

1005.05 OUTDOOR LIGHTING

A. Outdoor lighting devices:

1. Shall be architecturally integrated with the character of the associated structures, site design and landscape.

Response: Proposed lighting will be integrated into the site and consists of both building mounted lighting and individual pole mounted lighting. See sheet E1.01 for specific details.

2. Shall not direct light skyward.

Response: Proposed lighting will be shielded and directed to the ground. No proposed lighting will be directed skyward.

3. Shall direct downward and shield light; or direct light specifically toward walls, landscape elements or other similar features, so that light is directed within the boundaries of the subject property;

Response: Noted. All proposed lighting will be shielded, directed to the ground, and located interior of the site as required. See sheet E1.01for specific details.

4. Shall be suitable for the use they serve, e.g. bollard lights along walkways, pole mounted lights for parking lots;

Response: As proposed, lighting will be building mounted or located on individual poles with the sole intent of lighting the areas that are intended to be lighted. See sheet E1.01 for specific details.

5. Shall be compatible with the scale and intensity of uses they are serving. Height of pole mounted fixtures shall not exceed 25 feet or the height of the tallest structure onsite, whichever is less; and

Response: Noted. None of the pole mounted fixtures will exceed 25 feet in height.

6. At entrances, shall be glare-free. Entrance lighting may not exceed a height of 12 feet and must be directed downward.

Response: Lighting at the entrance of the facility will be building mounted, less than 12 feet high, and directed downward as required. See sheet E1.01 for specific details.

B. The following are exempt from Subsection 1005.05(A):

1. Temporary lights used for holiday decorations;

2. Street lights regulated in Section 1006, Utilities, Street Lights, Water Supply, Sewage Disposal, Surface Water Management, and Erosion Control; *and*

3. Lighting associated with outdoor recreation uses such as ball fields or tennis courts.

Response: The applicant acknowledges the exemptions for Subsection 1005.05(A).

1005.06 ADDITIONAL REQUIREMENTS
Development shall comply with a minimum of one of the following techniques per 20,000 square feet of site area. Regardless of site size, a minimum of one and a maximum of five techniques are required. Partial site area numbers shall be rounded.

Response: The pre-application conference notes confirmed the project is required to meet at least five of the additional requirements listed in this section. Techniques associated with Items 2, 3, 4, and 5 are selected for this project.

B. Use passive solar heating or cooling techniques to reduce energy consumption. Examples of techniques:

1. *Modulate building masses to maximize solar access.*
2. ***For developments with more than one structure, locate taller structures to minimize negative impacts on solar access for the development site and adjacent sites.***
3. ***Locate buildings to maximize windbreaks.***
4. ***Locate structures and landscaping to avoid winter shading on the south side and optimize summer shading on the west and southwest sides of buildings.***
5. ***Utilize deciduous trees to provide summer shade and allow winter sun.***
6. *Utilize deciduous vines on fences, trellises, and arbors to provide summer shade.*
7. *Locate and form berms to protect buildings and exterior use spaces against winter winds or utilize dense evergreens or conifers to screen winter wind and protect against hostile winter elements.*
8. *Provide skylights or clerestory windows to provide natural lighting, and/or solar heating of interior spaces.*

Response: The project has utilized the bolded techniques above to reduce energy consumption through passive solar heating or cooling techniques. The location of the new primary buildings on the site are located far enough from surrounding structures on the site and adjacent sites to ensure that their access to solar heating or cooling is not precluded by the proposed development. To create conditions for summer shading and allow winter sun, deciduous trees are proposed on the west and south sides of the building in compliance with Items B4 and B5.

C. ***Use highly reflective (high albedo) materials on roof surfaces.***

Response: Metal roofing material is proposed as a highly reflective roof surface for the all on-site building. See sheet A3.11 for proposed building materials.

1006 – UTILITY LINES & FACILITIES

1006.01 GENERAL STANDARDS

A. The location, design, installation, and maintenance of all utility lines and facilities shall be carried out with minimum feasible disturbance of soil and site consistent with the rules and regulations of the surface water management regulatory authority.

Response: The applicant acknowledges this standard. Please reference sheet 3.0 for the location of proposed utilities. These designs were prepared by licensed engineers, with expertise in the rules and regulations of the surface water management regulatory authority.

B. All development that has a need for electricity, natural gas, and communications services shall install them pursuant to the requirements of the utility district or company serving the development. Except where otherwise prohibited by the utility district or company, all such facilities shall be installed underground.

Response: The applicant acknowledges this standard. All new utility lines will be placed underground and in compliance with the requirements of the utility district or company providing service. Compliance with this standard will be confirmed at the time of building permit review.

C. Coordinated installation of necessary water, sanitary sewer, and surface water management and conveyance facilities is required.

Response: The applicant acknowledges this standard. The installation of all utility facilities will be coordinated in conformance with this standard.

D. Easements shall be provided along lot lines as deemed necessary by the County, special districts, and utility companies. Easements for special purpose uses shall be of a width deemed appropriate by the responsible agency.

Response: Noted. Utility easements will be provided where required. It should be noted that all proposed utilities located on site will be located on a single parcel once all of the lots have been consolidated, and the only easements necessary will be for those utilities that are public.

1006.02 STREET LIGHTS

Street lights are required for all development inside the Portland Metropolitan Urban Growth Boundary. The following standards apply:

A. Street lighting shall be installed pursuant to the requirements of Clackamas County Service District No. 5 and the electric company serving the development. A street light shall be installed where a new road intersects a County road right-of-way and, in the case of subdivisions, at every intersection within the subdivision.

B. Areas outside Clackamas County Service District No. 5 shall annex to the district through petition to the district.

Response: Noted. The applicant understands that they will be required to annex to the lighting district as required.

1006.03 WATER SUPPLY

A. All development which has a need for, or will be provided with, public or community water service shall install water service facilities and grant necessary easements pursuant to the requirements of the district or company serving the development.

B. Approval of a development that requires public or community water service shall be granted only if the applicant provides a preliminary statement of feasibility from the water system service provider.

1. The statement shall verify that water service, including fire flows, is available in levels appropriate for the development and that adequate water system capacity is available in source, supply, treatment, transmission, storage and distribution. Alternatively, the statement shall verify that such levels and capacity can be made available through improvements completed by the developer or the system owner.

2. If the statement indicates that water service is adequate with the exception of fire flows, the applicant shall provide a statement from the fire district serving the subject property that states that an alternate method of fire protection, such as an on-site water source or a sprinkler system, is acceptable.

3. The statement shall be dated no more than one year prior to the date a complete land use application is filed and need not reserve water system capacity for the development.

Response: Approval for water service to the site was approved by the Board of the Sunrise Water Authority on December 18, 2019. A statement of feasibility was provided in writing from Elizabeth Edgar, PE on January 17, 2019 and is provided as Appendix D.

1006.04 SANITARY SEWER SERVICE

A. All development that has a need for sanitary sewers shall install the facilities pursuant to the requirements of the district or company serving the development.

B. Approval of a development that requires sanitary sewer service shall be granted only if the applicant provides a preliminary statement of feasibility from the sanitary sewage treatment service provider and the collection system service provider.

1. The statement shall verify that sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system is available to serve the development or can be made available through improvements completed by the developer or the system owner.

2. The service provider may require preliminary sanitary sewer system plans and calculations for the proposed development prior to signing a preliminary statement of feasibility.

3. The statement shall be dated no more than one year prior to the date a complete land use application is filed and need not reserve sanitary sewer system capacity for the development.

Response: Sanitary sewer service is not available in this location. As proposed, the site would be provided with sewer service through a septic system that is being designed by Aqua Resource Design and Consulting, LLC.

1006.06 SURFACE WATER MANAGEMENT AND EROSION CONTROL

The following surface water management and erosion control standards apply: A. Positive drainage and adequate conveyance of surface water shall be provided from roofs, footings, foundations, and other impervious or near-impervious surfaces to an appropriate discharge point.

B. The requirements of the surface water management regulatory authority apply. If the County is the surface water management regulatory authority, the surface water management requirements of the Clackamas County Roadway Standards apply.

Response: A licensed, professional engineer designed the stormwater management plan and prepared the preliminary stormwater report in compliance with County standards. A statement of feasibility was signed and provided by Sally Curran of Clackamas County on December 13, 2019. As proposed, drainage will be treated and detained on-site in underground facilities. Please reference the grading and drainage plans provided on sheet 4.0, the statement of feasibility from Mrs. Curran provided as Appendix E, and the preliminary stormwater report provided as Appendix F.

C. Approval of a development shall be granted only if the applicant provides a preliminary statement of feasibility from the surface water management regulatory authority. The statement shall verify that adequate surface water management, treatment and conveyance is available to serve the development or can be made available through improvements completed by the developer or the system owner.

1. The surface water management regulatory authority may require a preliminary surface water management plan and report, natural resource assessment, and buffer analysis prior to signing the preliminary statement of feasibility.

2. The statement shall be dated no more than one year prior to the date a complete land use application is filed and need not reserve surface water treatment and conveyance system capacity for the development.

Response: A Statement of Preliminary Feasibility for surface water management, signed and dated by Department of Transportation and Development (DTD) staff on December 13, 2019, is provided as Appendix E.

D. *Development shall be planned, designed, constructed, and maintained to:*

1. Protect and preserve existing natural drainage channels to the maximum practicable extent;

2. Protect development from flood hazards;

3. Provide a system by which water within the development will be controlled without causing damage or harm to the natural environment, or to property or persons within the drainage basin;

4. Ensure that waters drained from the development are substantially free of pollutants, including sedimentary materials, through such construction and drainage techniques as sedimentation ponds, reseeding, and phasing of grading; and

5. Ensure that waters are drained from the development in such a manner that will not cause erosion to any greater extent than would occur in the absence of development.

Response: The applicant acknowledges this requirement. The project is designed by a licensed, professional engineer and complies with these requirements.

E. Where culverts cannot provide sufficient capacity without significant environmental degradation, the County may require the watercourse to be bridged or spanned.

Response: This standard does not apply. The site does not have an exposed watercourse on the property.

F. If a development, or any part thereof, is traversed by any watercourse, channel, stream, creek, gulch, or other natural drainage channel, adequate easements for surface water management purposes shall be provided to the surface water management regulatory authority.

Response: This standard does not apply. The site does not have an exposed watercourse on the property.

G. Channel obstructions are not allowed, except as approved for the creation of detention, retention, or hydropower facilities approved under this Ordinance. Fences with swing gates may be utilized.

Response: This standard does not apply. The site does not have an exposed watercourse on the property.

H. The natural drainage pattern shall not be substantially altered at the periphery of the subject property. Greatly accelerated release of stored water is prohibited. Flow shall not be diverted to lands that have not previously encountered overland flow from the same upland source unless adjacent downstream owners agree.

Response: A licensed, professional engineer designed the grading and stormwater plan in compliance with these requirements. The natural drainage pattern is not substantially altered at the periphery of the property. The drainage plan is provided on Civil Sheet C4.0. The preliminary stormwater report is provided as Appendix F.

I. A surface water management and erosion control plan is required for significant residential, commercial, industrial, and institutional development. The plan shall include:

1. The methods to be used to minimize the amount of runoff siltation and pollution created from the development both during and after construction; and

2. Other elements required by the surface water management authority.

Response: A preliminary stormwater report, stormwater plan and erosion control plan are provided in the application plan set. Please reference Civil Sheets 3.0, 4.0, and Appendix F.

1007 – ROADS & CONNECTIVITY

1007.01 GENERAL PROVISIONS

B. Right-of-way dedications and improvements shall be required of all new developments, including partitions, subdivisions, multifamily dwellings, two- and three-family dwellings, condominiums, single-family dwellings, and commercial, industrial, and institutional uses, as deemed necessary by the Department of Transportation and Development and consistent with Section 1007, Chapters 5 and 10 of the Comprehensive Plan, and the Clackamas County Roadway Standards.

Response: Sidewalks are already provided along SE Sunnyside Road and Highway 212. The applicant proposes to provide ½ street improvements along SE Foster Road and SE Damascus Lane as required. Where right-of-way dedications and further improvements are required, the developer will concur so long as the required improvements are proportional to the impacts of the development.

C. New developments shall have access points connecting with existing private, public, county, or state roads.

3. Access control shall be implemented pursuant to Chapter 5 of the Comprehensive Plan and the Clackamas County Roadway Standards considering best spacing for pedestrian access, traffic safety, and similar factors as deemed appropriate by the Department of Transportation and Development.

Response: The proposed development provides a total of four accesses onto the site. One access would be provided from SE Damascus Lane, two accesses would be provided off of SE Foster Road, and a primary public access would be provided into the site from SE Sunnyside Road. Please see sheet 3.0 for specific locations and spacing.

4. Approaches to public and county roads shall be designed to accommodate safe and efficient flow of traffic and turn control where necessary to minimize hazards for other vehicles, pedestrians, and bicyclists.

Response: Noted. Approaches to the County roads will be designed to be compliant with the county design and spacing standards for access.

5. Joint access and circulation drives utilizing reciprocal easements shall be utilized as deemed necessary by the Department of Transportation and Development. In the NC District, joint street access for adjacent commercial developments shall be required.

Response: Joint access is not proposed. This standard is not applicable to the proposed development.

10. Inside the Portland Metropolitan Urban Growth Boundary:

a. The development shall have no more than the minimum number of driveways required by the Department of Transportation and Development on all arterial and collector streets.

b. For properties having more than one street frontage, driveways shall be located on the street with the lowest functional classification, if feasible.

c. Driveways shall be no wider than the minimum width allowed by the Clackamas County Roadway Standards.
d. Driveways shall be located so as to maximize the number of allowed onstreet parking spaces, the number of street trees, and optimum street tree spacing.

Response: Noted. As mentioned previously, the applicant is proposing four accesses into the site. The proposed accesses have been located to meet the county spacing standards for access onto local and arterial streets. See sheet 3.0 for specific locations.

D. Street alignments, intersections, and centerline deflection angles shall be designed according to the standards set forth in Chapters 5 and 10 of the Comprehensive Plan and the Clackamas County Roadway Standards.

Response: The project does not create new streets. This standard is not applicable to the application review.

E. All roads shall be designed and constructed to adequately and safely accommodate vehicles, pedestrians, and bicycles according to Chapters 5 and 10 of the Comprehensive Plan and the Clackamas County Roadway Standards. Development-related roadway adequacy and safety impacts to roadways shall be evaluated pursuant to the Clackamas County Roadway Standards and also to Oregon Department of Transportation standards for state highways.

Response: The project does not create new roads. However, half street road improvements are proposed on Foster Road and Damascus Lane. These improvements are designed to comply with Clackamas County Roadway Standards and are depicted on Civil Sheet 3.0. The road section for Foster Road shows a 5-foot wide sidewalk, 4 ½-foot planter, standard curb and gutter, 8-foot bike lane, 12-foot travel lane, and 7-foot turn lane. The Damascus Lane section depicts a 5-foot wide sidewalk and standard curb and gutter. Road widening of 3 ½ feet is proposed to accommodate this improvement.

F. Roadways shall be designed to accommodate transit services where transit service is existing or planned and to provide for the separation of motor vehicles, bicycle, and pedestrian traffic, and other modes as appropriate.

Response: Transit service is not provided within a mile of the project site. Roadway improvements do not necessitate the accommodation of transit services at this time.

G. The needs of all modes of transportation shall be balanced to provide for safe and efficient flow of traffic. Where practical, pedestrian crossing lengths shall be minimized and the road system shall be designed to provide frequent pedestrian connections.

Response: The development site is located within a rural unincorporated area. New sidewalks are being constructed along SE Foster Road and SE Damascus Lane, but pedestrian crossings are expected to remain at the signalized intersection of SE Foster Road and Highway 212. The County has not indicated any additional needs.

C. Requirements for Pedestrian and Bicycle Facility Construction: Within the Portland Metropolitan Urban Growth Boundary (UGB), sidewalks, pedestrian pathways, and accessways shall be constructed as required in Subsection 1007.04 for subdivisions, partitions, multifamily dwellings, three-family dwellings, attached single-family dwellings where three or more dwelling units are attached to one another, and commercial, industrial, or institutional developments, except that for structural additions to existing commercial, industrial, or institutional buildings, development of such facilities shall be required only if the addition exceeds 10 percent of the assessed value of the existing structure, or 999 square feet.

Response: Noted. As stated previously, there are new pedestrian and bicycle facilities being constructed along SE Damascus Lane and SE Foster Road accordingly.

D. Requirement for Sidewalk Construction: Within the UGB, sidewalks shall be constructed, as required in Subsection 1007.04(F), for two-family dwellings, detached single-family dwellings, attached single-family dwellings where two dwelling units are attached to one another, and manufactured dwellings outside a manufactured dwelling park.

Response: This project is a development within a Rural Commercial and Rural Industrial zoning district. This standard is not applicable.

E. Sidewalks or Pedestrian Pathways in Unincorporated Communities: In an unincorporated community, either a sidewalk or a pedestrian pathway shall be constructed on arterial or collector street frontage(s) of a lot upon which a subdivision, partition, multifamily dwelling, three-family dwelling, attached single-family dwelling where three or more dwelling units are attached to one another, or a commercial, industrial, or institutional development is proposed.

Response: New sidewalks are proposed to be constructed along SE Foster Road and SE Damascus Lane as required.

F. Sidewalk Location: Sidewalks required by Subsection 1007.04(C) or (D) shall be constructed on:

1. Both sides of a new or reconstructed road, except that sidewalks may be constructed on only one side of the road if:

a. The road is not a through road;

b. The road is 350 feet or less in length and cannot be extended; or

c. In consideration of the factors listed in Subsection 1007.02(B)(3).

2. The street frontage(s) of a lot upon which a subdivision, partition, multifamily dwelling, three-family dwelling, attached single-family dwelling where three or more dwelling units are attached to one another, or a commercial, industrial, or institutional development is proposed; and

3. Local or collector road street frontage(s) of a lot upon which a two-family dwelling, a detached single-family dwelling, an attached single-family dwelling where two dwelling units are attached to one another, or a manufactured dwelling is proposed. This requirement shall be imposed as a condition on the issuance of a conditional use permit, building permit, or manufactured dwelling placement permit, but

a. The requirement shall be waived if the dwelling is a replacement for one destroyed by an unplanned fire or natural disaster; and

b. The sidewalk requirement shall apply to no more than two street frontages for a single lot.

Response: As stated previously, there are new pedestrian and bicycle facilities being constructed along SE Damascus Lane and SE Foster Road accordingly. The facilities are only proposed along the side of the street where the project fronts.

1007.06 STREET TREES

A. Within the Portland Metropolitan Urban Growth Boundary, street trees are required on all road frontage—except frontage on private roads or access drives-- for subdivisions, partitions, multifamily dwellings, three-family dwellings, attached single-family dwellings where three or more dwelling units are attached to one another, and commercial, industrial, or institutional developments, except that for structural additions to existing commercial, industrial, or institutional buildings, street trees are required only if the addition exceeds 10 percent of the assessed value of the existing structure, or 999 square feet. Street trees shall comply with the following standards:

1. Partial or complete exemptions from the requirement to plant street trees may be granted on a case-by-case basis. Exemptions may be granted, for example, if the exemption is necessary to save existing significant trees which can be used as a substitute for street trees.

2. Street trees to be planted shall be chosen from a County-approved list of street trees (if adopted), unless approval for planting of another species is given by the Department of Transportation and Development.

3. Location and planting of street trees may be influenced by such conditions as topography, steep terrain, soil conditions, existing trees and vegetation, preservation of desirable views, and solar access.

4. Planting of street trees shall be coordinated with other uses which may occur within the street right-of-way, such as bikeways, pedestrian paths, storm drains, utilities, street lights, shelters, and bus stops.

5. Street trees at maturity shall be of appropriate size and scale to complement the width of the street or median area.

Response: Street trees are proposed within the SE Foster Road and SE Damascus Lane street frontage. Please refer to Landscape Sheet L1.1 for detailed information on the tree locations, size and species.

1007.07 TRANSPORTATION CONCURRENCY FACILITIES

A. Subsection 1007.07 shall apply to the following development applications: design review, subdivisions, partitions, and conditional uses.

B. Approval of a development shall be granted only if the capacity of transportation facilities is adequate or will be made adequate in a timely manner. The following shall be exempt from this requirement:

1. Development that is located:

a. In the Light Industrial, General Industrial, or Business Park District; and

b. North of the Clackamas River; and

c. West of Highway 224 (south of Highway 212) or 152nd Drive (north of Highway 212); and

d. South of Sunnyside Road (east of 82nd Avenue) or Harmony Road (west of 82nd Avenue) or Railroad Avenue (west of Harmony Road); and e. East of Interstate 205 (south of Milwaukie Expressway) or the city limits of Milwaukie (north of the Milwaukie Expressway).

Response: The project does not create new roads. However, half street road improvements are proposed on Foster Road and Damascus Lane. These improvements are designed to comply with Clackamas County Roadway Standards and are depicted on Civil Sheet 3.0. The road section for Foster Road shows a 5-foot wide sidewalk, 4 ½-foot planter, standard curb and gutter, 8-foot bike lane, 12-foot travel lane, and 7-foot turn lane. The Damascus Lane section depicts a 5-foot wide sidewalk and standard curb and gutter. Road widening of 3 ½ feet is proposed to accommodate this improvement.

1009 – LANDSCAPING

1009.01 GENERAL PROVISIONS

A. Landscaping materials shall be selected and sited to produce a hardy and low-maintenance landscaped area with an emphasis on fast-growing plants. Selection shall include consideration of soil type and depth, spacing, exposure to sun and wind, slope and contours of the subject property, building walls and overhangs, and compatibility with existing vegetation to be preserved. Notwithstanding the requirement for hardiness, annuals are permitted as provided in Subsection 1009.01(B).

Response: Acknowledged by the applicant. A Registered Landscape Architect, in compliance with the County's installation and maintenance requirements, prepared the landscape plans.

B. A variety of plants, intermixed throughout landscaped areas, shall be provided, as follows:

1. Evergreen and deciduous;

2. Trees, shrubs, and groundcover;

3. Plants of varying textures;

4. Plants of varying widths and heights at maturity; and

5. Plants with seasonal color interest (e.g., foliage, flowering perennials, annuals).

Response: Proposed landscaping includes a variety of plants as illustrated in Sheets L1.0, L1.1, and L1.2. The proposed plantings include Trees, shrubs, and groundcover as required.

C. The planting of invasive non-native or noxious vegetation shall be prohibited, and existing invasive non-native or noxious vegetation shall be removed.

Response: Acknowledged by the applicant. Please reference the *Planting Schedule* on Sheet L1.2 for a list of all planting materials - trees, shrubs, grasses, and groundcover - proposed for this project.

D. Landscaped areas shall not be used for other purposes, such as storage or display of automobiles, equipment, merchandise, or materials.

Response: This requirement is acknowledged by the applicant. No landscaped areas are proposed for storage or display uses.

E. Landscaping of the unimproved area between a lot line and the improved portion of an adjacent road right-of-way shall be required when there are no immediate plans to develop or otherwise disturb the unimproved area, and one or more of the following apply:

1. The subject property is located inside the Portland Metropolitan Urban Growth Boundary;

Response: This standard applies to the project because it is located within the Metropolitan Urban Growth Boundary. The site is proposed with improvements that extend across the entirety of the site. This standard is met.

F. Landscaping shall be used to highlight public entrances to buildings. If—due to the depth of a front setback, a required walkway, or both—there is insufficient area to permit a typical, in-ground landscaping bed between a public entrance and a front lot line, this requirement may be met with trellises, hanging baskets, or planters, any of which shall include plants.

Response: Acknowledged by the applicant. Compliance will be demonstrated during submittal of final landscape plans.

G. Where feasible, landscaping shall be required adjacent to walkways and other areas intended for pedestrian use.

Response: Noted. Where feasible, landscaping has been provided adjacent to the new sidewalks on site. See sheet L 1.0.

H. Existing significant plants, terrain, and other natural features shall be incorporated into the landscaping design and development if such features are required to be retained by other provisions of this Ordinance or if otherwise feasible.

Response: No significant plants, terrain, or other natural features have been identified on the site.

1009.02 MINIMUM AREA STANDARDS

A. Table 1009-1, Minimum Landscaped Area, establishes the minimum percentage of the area of the subject property that shall be landscaped.

1. The minimum landscaped area shall be calculated after subtracting any public dedications from the area of the subject property.

2. Landscaping in adjacent rights-of-way shall not count toward compliance with the minimum landscaped area.

3. Requirements for surface parking and loading area landscaping, screening and buffering, scenic roads landscaping, landscaping strips, and recreational areas and facilities set forth in Section 1009 apply regardless of whether compliance with those requirements results in landscaping a greater percentage of the subject property than is required by Table 1009-1.

Excerpt of Table 1009-1: Minimum Landscaped Area

Zoning District	Minimum Landscaped Area
RC & RI	15 percent

Response: Sheet L1.1 provides the area breakdowns of the site. As proposed. 15.6% of the site will be landscaped meeting this standard.

4. A minimum of 75 percent of the minimum landscaped area required by Table 1009-1—excluding any area occupied by pedestrian amenities, active recreational areas, or edible gardens—shall be landscaped with native or drought-tolerant plants.

Response: Acknowledged by the applicant. Please reference the *Planting Schedule* on Sheets L1.0 through L1.2 for a list of all planting materials - trees, shrubs, perennials, grasses, vines, and groundcover - proposed for this project. Full compliance with this requirement will be demonstrated at the time of site development permit review, when the specific quantity and precise location of the plant species identified in on the Design Review landscape plans will be provided in greater detail.

5. Outdoor recreational areas required by Subsection 1009.08(A), as well as outdoor recreational areas in the MRR District, shall count toward the minimum landscaped area required by Table 1009-1, except that impervious surface area exceeding 25 percent of the outdoor recreational area shall be excluded.

Response: Subsection 1009.08(A) requires outdoor recreational areas for specific types of residential development. Housing is not proposed for this project, nor is the site located in a MRR District. This standard is not applicable.

1009.03 SURFACE PARKING AND LOADING AREA LANDSCAPING

Surface parking and loading areas shall be landscaped as follows:

A. Surface parking areas that include more than 15 parking spaces shall comply with the following landscaping requirements:

1. Twenty-five square feet of landscaping per parking space, excluding perimeter parking spaces, shall be provided, except that the standard shall be reduced to 20 square feet for each parking space developed entirely with porous pavement.

Response: This standard is applicable to the 55 parking spaces (41 customer + 15 staff) proposed on the site plan. However, a total of 34 of those spaces are perimeter to the parking lot. With perimeter parking spaces excluded from the landscape calculation for this standard, the overall minimum interior parking lot landscaping requirement is based on 21 stalls. Subsequently, the minimum overall square footage of interior parking lot landscaping required for this site is 525 square feet (e.g. 25 SF * 21 stalls). The project exceeds this requirement,

providing approximately 1481 square feet of interior landscaping in the parking areas. Landscape Sheet L1.1 provides the landscape calculation for the interior landscaping proposed.

2. One landscape swale located between two rows of parking spaces, as shown in Figure 1009-1, is required for every six rows of parking spaces, unless all parking spaces are developed entirely with porous pavement. Additional swales beyond the minimum requirement are allowed.

a. For the purpose of Subsection 1009.03(A)(2), a "row" of parking spaces is one space deep, meaning that where two spaces abut at their ends, it is considered two "rows".

Response: Figure 1009-1 speaks to double loaded parking rows and the idea behind this standard appears to require a swale between the two rows of parking. This condition does not occur on the proposed plan, and is therefore not applicable to this development.

3. Interior landscaping not developed as swales pursuant to Subsection 1009.03(A)(2) shall comply with the following standards:

a. It shall be arranged in areas at the ends of rows of parking or between parking spaces within rows of parking.

b. It may join perimeter landscaping as long as the interior landscape area extends at least four feet into the parking area from the perimeter landscape line.

c. Landscaping that abuts, but does not extend into, the parking area may be included as interior landscaping if all of the following are met:

i. The abutting landscaped area must be in addition to required perimeter landscaping;

ii. Only the first 10 feet of the abutting landscaped area, measured from the edge of the parking area, may be included as interior landscaping; and

iii. The landscaped area is not abutting and parallel to required perimeter landscaping. See Figure 1009-2.d. The interior length and width of landscaped areas shall be a minimum of four feet.

Response: This standard is met. Please reference Landscape Sheets L1.0 and L1.1 for the location of and materials specified for interior landscaping. Standard landscape planters are at least 4 feet in width and are distributed across the parking area, in between stalls and at the end of rows of parking.

4. Interior landscaped areas, including swales, shall include a minimum of one tree located every eight interior parking spaces, or fraction thereof, except in the OA, VA, VCS, and VO Districts, where a minimum of one tree shall be located every six interior parking spaces.

a. Where necessary to accommodate other design considerations, variable spacing of the trees required by Subsection 1009.03(A)(4) is allowed, but in no case shall there be less than one tree planted in every 12 parking spaces.

b. The species of trees required shall be determined on the basis of the growth habit and the need to provide maximum shading of surface parking areas.

Response: A total of 55 passenger vehicle spaces are proposed on the site (41 customer spaces + 15 staff spaces). To comply with this standard, the project proposes 7 trees (e.g. 55 / 8) within the interior parking areas. These trees are distributed with variable spacing, not exceeding a frequency of at least one every 12 stalls. Please reference the planting plan on Landscape Sheets L1.0-L1.2. Landscape calculations are provided on Landscape Sheet L1.1. There are 5 trees located within the customer parking area and another two spaces in the employee parking area.

B. Perimeter landscaping requirements for surface parking and loading areas adjacent to abutting lots or rights-of-way are as follows:

1. A landscaping strip with a minimum width of five feet shall be provided adjacent to the perimeter of the surface parking or loading area, except:

a. In the OA, VA, VCS, and VO Districts, the minimum width shall be 10 feet;

b. In the BP and LI Districts, the minimum width shall be 15 feet abutting a front lot line; and

c. In the GI District, the minimum width shall be 10 feet abutting a front lot line.

Response: None of the exceptions listed in this Subsection apply to the RI and RC zoning districts. This standard is not applicable.

2. The required landscaping strips shall comply with the following standards:

a. Sufficient low shrubs shall be planted to form a continuous screen three feet high and 95 percent opaque, year-round; or a three-foot-high masonry wall or berm may be substituted for the shrubs. When applied along front lot lines, the screen or wall is to be placed along the interior side of the landscaping strip and shall be 30 inches high instead of three feet high.

b. In addition, one tree is required for every 30 linear feet of landscaping strip, or as otherwise required to provide a tree canopy over the landscaping strip.

c. Ground cover plants must fully cover the remainder of the landscaped area.

Response: The landscaping strips around the perimeter are landscaped with an irrigated shrub bed. The *Planting Schedule* shown on any of the attached Landscape Plans (Sheets L1.0 through L1.2) includes a variety of shrub species and sizes, with mature heights noted in the planting legend. The proposed perimeter landscaping also includes groundcover plants, and trees that are spaced 30-feet on center as required.

3. A perimeter landscape strip is not required for a surface parking or loading area adjacent to an abutting lot if one or more interior driveways connect the two lots and if the abutting lot also is developed with a surface parking or loading area adjacent to the shared lot line.

Response: Noted by the applicant. The site area is comprised of five tax lots. The surface parking lot extends across multiple tax lots. Pursuant to this allowance, perimeter landscaping is not required along the boundary of the tax lots with common ownership. It should be noted that the lots will be consolidated, and that the perimeter of the overall parcel is landscaped according to these standards.

4. Required walkways may cross perimeter landscaping strips.

Response: Acknowledged by the applicant.

1009.04 SCREENING AND BUFFERING

A. Screening shall be used to eliminate or reduce the visual impacts of the following:

1. Service areas and facilities, such as loading areas and receptacles for solid waste or recyclable materials;

2. Storage areas;

3. Ground-mounted rainwater collection facilities with a storage capacity of more than 100 gallons;

4. Parking lots within or adjacent to an Urban Low Density Residential, VR-5/7, VR-4/5, RA-1, RA-2, RR, RRFF-5, FF-10, FU-10, or HR District; and

5. Any other area or use, as required by this Ordinance.

Response: All service and mechanical equipment are screened by a combination of landscaping and screening walls as required.

B. Screening shall be accomplished by the use of sight-obscuring evergreen plantings, vegetated earth berms, masonry walls, sight-obscuring fences, proper siting of disruptive elements, building placement, or other design techniques.

Response: Proposed screening includes landscaping and masonry screen walls as required. See the architectural plans for locations and dimensions.

C. Screening shall be required to substantially block any view of material or equipment from any point located on a street or accessway adjacent to the subject property. Screening from walkways is required only for receptacles for solid waste or recyclable materials. A sight-obscuring fence at least six feet in height and up to a maximum of 10 feet in height shall be required around the material or equipment.

Response: The proposed development utilizes a combination of landscaping to block the view of materials and equipment from the surrounding rights-of-way. The trash enclosure as proposed is interior to the site and screened by a masonry wall as required. See sheet 3.0 for details. The Clackamas County Sustainability & Solid Waste is in discussions with the owner to determine alternative methods of storage given the lumber yard operation. Any modification will be submitted separately.

D. Buffering shall be used to mitigate adverse visual impacts, dust, noise, or pollution, and to provide for compatibility between dissimilar adjoining uses. Special consideration shall be given to buffering between residential uses and commercial or industrial uses, and in visually sensitive areas.

Response: In this instance, the surrounding uses are similar uses. To the extent necessary, buffering is provided through landscaping and setbacks.

E. Buffering shall be accomplished by one of the following:

3. A landscaping strip with a minimum width of five feet and including:

a. A masonry wall or sight-obscuring fence a minimum of six feet in height. The wall or fence is to be placed along the interior side of the landscaping strip;

b. Evergreen vines, evergreen trees, or evergreen shrubs, any of which shall be spaced not more than five feet apart; and

c. Low-growing evergreen shrubs and evergreen ground cover covering the balance of the area; or

Response: Adverse visual impacts are not anticipated for this project and the site does not abut dissimilar adjoining uses. This is an industrial area with long established uses. A buffer is not warranted beyond the standard requirements for providing 5-foot (15-feet at front property line) perimeter landscaping around parking areas and screening mechanical equipment from the street.

F. Required walkways shall be accommodated, even if such accommodation necessitates a gap in required screening or buffering.

Response: The standard is acknowledged by the applicant.

1009.06 LANDSCAPING STRIPS

A. In the BP and LI Districts, a landscaping strip a minimum of 15 feet wide shall be provided abutting front lot lines.

B. In the GI District, a landscaping strip a minimum of 10 feet wide shall be provided abutting front lot lines.

C. In all other zoning districts, except SCMU, a landscaping strip a minimum of five feet wide shall be provided abutting front lot lines. (See Subsection 1005.10(L) for additional SCMU landscaping requirements.)

1. This requirement will be waived or reduced in the NC, PMU, and VCS Districts, which are districts that have no minimum front setback standard, to the extent necessary to accommodate a building with a front setback of less than five feet.

2. If—due to the depth of a front setback and the need to accommodate a required walkway, required pedestrian amenities, or both—there is insufficient area to permit a five-foot-wide landscaping strip, the landscaping strip may be reduced in width or the landscaping requirement may be met with a linear arrangement of trellises, hanging baskets, or planters, any of which shall include plants.

Response: A varying landscape strip is provided along the front lot line. The proposed landscape strips do not fall below five feet in width as required. See sheets L1.0 – L1.2 for specific locations and details for the proposed planting strips.

1009.07 FENCES AND WALLS

A. Fences and walls shall be of a material, color, and design complementary to the development.

Response: The proposed use is industrial and includes chain link fencing consistent with the fence types on surrounding developments.

1009.08 RECREATION AREAS AND FACILITIES

A. An outdoor recreational area shall be provided in developments of two-family, three-family, or multifamily dwellings in the MR-1, MR-2, and HDR Districts, and in developments of three-family or multifamily dwellings, including mixed-use developments that include these uses, in the SCMU District, as follows:

1. A minimum of 200 square feet of usable outdoor recreational space per dwelling unit shall be provided for studio, one- bedroom, and two-bedroom units. The minimum shall be increased to 300 square feet per dwelling unit for units with three or more bedrooms.

2. Outdoor recreational areas may be designed for passive or active recreation, including edible gardening.

3. Outdoor recreational areas shall be designed for adequate surveillance opportunities.

4. Outdoor recreational areas shall be conveniently located and accessible to all dwelling units.

Response: As a commercial/industrial development, the project is not subject to the outdoor recreational standards intended for residential mixed-use development.

1009.09 EROSION CONTROL

A. Graded areas shall be re-vegetated with suitable plants to ensure erosion control.

B. Netting shall be provided, where necessary, on sloped areas while ground cover is being established.

Response: A grading plan is provided as sheet 4.0 of the civil plan set. A more formal grading and erosion control plan will be provided along with the construction documents prior to any on-site work.

1009.10 PLANTING AND MAINTENANCE

A. Impervious weed barriers (e.g. plastic sheeting) are prohibited.

B. Plants shall not cause a hazard. Plants over walkways, sidewalks, pedestrian pathways, and seating areas shall be pruned to maintain a minimum of eight feet below the lowest hanging branches. Plants over streets, bikeways, accessways, and other vehicular use areas shall be pruned to maintain a minimum of 15 feet below the lowest hanging branches.

C. Plants shall be of a type that, at maturity, typically does not interfere with above or below-ground utilities or paved surfaces.

D. Plants shall be installed to current nursery industry standards.

E. Plants shall be properly guyed and staked to current nursery industry standards as necessary. Stakes and guys shall not interfere with vehicular or pedestrian traffic, shall be loosened as needed to prevent girdling of trunks, and shall be removed as soon as sufficient trunk strength develops, typically one year after planting.

F. Landscaping materials shall be guaranteed for a period of one year from the date of installation. The developer shall either submit a signed maintenance contract for the one-year period or provide a performance surety pursuant to Section 1311, Completion of Improvements, Sureties, and Maintenance, covering the landscape maintenance costs for the one-year period.

G. Plants shall be suited to the conditions under which they will be growing. As an example, plants to be grown in exposed, windy areas that will not be irrigated shall be sufficiently hardy to thrive under these conditions. Plants shall have vigorous root systems, and be sound, healthy, and free from defects and diseases.

H. When planted, deciduous trees shall be fully branched, have a minimum caliper of two inches, and have a minimum height of eight feet.

I. When planted, evergreen trees shall be fully branched, have a minimum height of eight feet, and have only one leader.

J. Shrubs shall be supplied in minimum one-gallon containers or eight-inch burlap balls with a minimum spread of 12 inches.

K. Ground cover shall be planted a maximum of 30 inches on center with a maximum of 30 inches between rows. Rows of plants shall be staggered. Ground cover shall be supplied in minimum four-inch containers, except that the minimum shall be reduced to two and one-quarter inches or equivalent if the ground cover is planted a minimum of 18 inches on center.

L. Plants shall be spaced so that ground coverage three years after planting is expected to be 90 percent, except where pedestrian amenities, rainwater collection systems, or outdoor recreational areas count as landscaping pursuant to Subsection 1009.02. Areas under tree drip lines count as ground coverage.

M. Irrigation of plants shall be required, except in wooded areas, wetlands, and in river and stream buffers. The irrigation system shall be automatic, except that hose bibs and manually operated methods of irrigation may be permitted in small landscaped areas close to buildings. Automatic irrigation systems are subject to the following standards:

1. An automatic irrigation controller shall be required for irrigation scheduling.

2. *The system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.*
3. *In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.*
4. *Narrow or irregularly shaped areas, including turf lawn, less than eight feet in width in any direction shall be irrigated with subsurface or low volume irrigation.*
5. *Overhead sprinkler irrigation is prohibited within two feet of any impervious surface unless:*

a. *The landscaped area is adjacent to permeable surfacing and no runoff occurs; or*
b. *The adjacent impervious surfaces are designed and constructed to drain entirely to landscaping; or*
c. *The irrigation designer specifies an alternative design or technology that complies with Subsection 1009.10(M)(2).*

N. *Appropriate methods of plant care and landscaping maintenance shall be provided by the property owner. Pruning shall be done to current nursery industry standards.*
O. *Plants shall be protected from damage due to heavy foot traffic or vehicular traffic by protective tree grates, pavers, or other suitable methods.*

Response: Acknowledged by the applicant. Please reference the detailed landscape plans for information provided on plant size, spacing, and proposed irrigation.

1010.09 COMMERCIAL SIGNS IN INDUSTRIAL DISTRICTS

A. Commercial Freestanding Signs:

1. Number: Only one sign shall be allowed for a development or complex, even when more than one tax lot or ownership is included in the development, unless approved through design review criteria 1010.09.A.1.(a-f).

B. Building Commercial Signs:

1. Number: The maximum sign area may be distributed among any number of signs.
2. Maximum size:

a. If there is not a freestanding sign on the same site frontage, then one and one-half square feet of sign area per linear footage of the occupant's primary building wall.
b. If there is a freestanding sign on the same site frontage, then one square foot of sign area per linear footage of the occupant's primary building wall.
c. Wall signs based on the sign rights of a primary building wall may be placed on a secondary building wall; they may not be placed onto another primary building wall.
d. Each tenant shall be allowed a minimum 32 square feet of building sign area.
e. In no case shall a building sign exceed 200 square feet.

3. Design: Building signs shall be incorporated into the design of the building, and shall not be placed in locations which interrupt, detract from, or change the architectural lines of the building.
4. Illumination: Building signs may be internally or externally illuminated, subject to Subsection 1010.02(I).

Response: The requirements for review of signage is acknowledged by the applicant. Although the new structures are proposed on the portion of the site designated as a Rural

Industrial Zoning District, signage is not proposed under this application. A signage plan is provided for reference, but the applicant is aware of the fact that future signage is subject to ZDO standards and approval criteria under separate permits.

1015 – PARKING AND LOADING

1015.01 General Standards

A. Inside the Portland Metropolitan Urban Growth Boundary (UGB), parking, loading, and maneuvering areas shall be hard-surfaced, unless a permeable surface is required for surface water management pursuant to the regulations of the surface water management authority or in order to comply with Subsection 1006.06.

Response: All proposed parking, loading, and maneuvering areas are proposed to be paved as required.

D. Motor vehicle parking, bicycle parking, and loading areas shall be separated from one another.

Response: Motor vehicle parking and bicycle parking is separate. Customer parking is provided directly off of SE Sunnyside Road and is separated from the employee parking, loading, and maneuvering areas by a controlled access area located to the rear of the main building.

E. Required parking spaces and loading berths shall not be:

a. Rented, leased, or assigned to any other person or organization, except as provided for under Subsection 1015.02(D)(2)(a) for shared parking or Subsection 1015.04(C) for shared loading berths.

b. Used for storing or accumulating goods or storing a commercial or recreational vehicle, camper, or boat, rendering the space(s) useless for parking or loading operations.

c. Occupied by the conducting of any business activity, except for permitted temporary uses (e.g., farmers' markets).

Response: Noted. None of the proposed parking is proposed to be utilized as prohibited by the above standards.

1015.02 Motor Vehicle Parking Area Standards

A. Off-street parking areas shall be designed to meet the following requirements:

1. Off-street motor vehicle parking areas shall be provided in defined areas of the subject property. No area shall be considered a parking space unless it can be shown that the area is accessible and usable for that purpose and has required maneuvering area for vehicles. Required backing and maneuvering areas shall be located entirely onsite.

Response: The onsite parking areas are designed by a licensed, professional engineer with knowledge in the county engineering and zoning standards for vehicle parking and

maneuvering. The design of parking and maneuvering areas comply with this standard. Please reference Civil Sheet 3.0.

2. Automobile parking spaces shall be a minimum of 8.5 feet wide and 16 feet long, except that parallel spaces shall be a minimum of 8.5 feet wide and 22 feet long.

Response: The project complies with this standard. All parking spaces are striped to exceed the minimum required dimension of 8 ½ feet in width and 16 feet in length. Dimensioned parking spaces are shown on Civil Sheet 3.0, and are designed to be 10 feet wide by 19 feet in depth.

3. A minimum of 25 percent of required parking spaces shall be no larger than 8.5 feet wide and 16 feet long.

Response: The project complies with this standard. All parking spaces proposed for passenger vehicles exceed the minimum width of 8.5 feet and a length of 16 feet. The majority of vehicle trips expected to the site are contractor vehicles and likely to be larger than a passenger vehicle.

4. Parking areas shall comply with minimum dimensions for curb length, stall depth, and aisle width established by the Clackamas County Roadway Standards; these dimensions are based on the orientation (e.g., 45-degree, 90-degree), length, and width of the spaces.

Response: The project engineer designed the parking areas in compliance with the minimum dimensions required by the Clackamas County Standards for 90-degree parking. Please reference sheet 3.0 for detailed information.

5. Double-loaded, ninety-degree angle parking bays shall be utilized where possible.

Response: The layout of the site along with the width of the site dictates the layout of the parking. Double loaded parking is not possible on the site.

6. A minimum of one parking space or five percent of the required spaces, whichever is greater, shall be marked and signed for use as carpool/vanpool spaces. These spaces shall be the closest employee automobile parking spaces to the building entrances normally used by employees, but shall not take priority over any spaces required for individuals with disabilities.

Response: None of the proposed parking spaces are currently designated for carpool/vanpool spaces, but the applicant is willing to designate parking to meet the standard as required.

7. In parking lots greater than one acre, major onsite circulation drive aisles and lanes crossing to adjacent developments shall not have parking spaces accessing directly onto them.

Response: Noted. The primary parking lot is less than one acre in size. Employee parking is located behind a gated access to the rear of the facility. There are no drive aisles or lanes onto adjacent developments.

8. Where feasible, shared driveway entrances, shared parking and maneuvering areas, and interior driveways between adjacent parking lots shall be required.

Response: It is not feasible to share driveways, parking, or maneuvering areas between adjacent parking lots, as this business is a standalone business similar to the surrounding businesses.

9. Except for parallel spaces, parking spaces heading into landscaped areas or along the perimeter of a parking lot shall be provided with a sturdy tire stop at least four inches high and located two feet within the space to prevent any portion of a car within the lot from extending over the property line.

Response: Acknowledged by the applicant. Compliance with this requirement will be demonstrated at the time of building permit review.

10. For parking spaces heading into a landscaped area, the area in front of the tire stop that is included in the parking space dimension may be landscaped instead of paved or graveled according to the following standards:

a. Landscaping shall be ground cover plants only;

b. The area in front of the tire stop that is included in the parking space dimension shall be in addition to the required minimum dimension for a landscape planter; and

c. The landscaped area in front of the tire stop may count toward overall site landscaping requirements established in Table 1009-1, Minimum Landscaped Area. However, it may not count toward perimeter landscaping requirements established in Section 1009.03(B)(1).

Response: Noted. As currently proposed, the entire parking stall would be paved.

B. Parking Minimums: The minimum number of parking spaces listed in Table 1015-1, Automobile Parking Space Requirements, applies unless modified in Subsection 1015.02(D).

C. Parking Maximums:

1. Within the UGB, the parking maximums listed in Table 1015-1, Urban Zone A, apply when an area has 20-minute peak hour transit service within one-quarter mile walking distance for bus transit or one-half mile walking distance for light rail transit.

2. Within the UGB, areas not meeting the requirements of Subsection 1015.02(C)(1), are subject to the parking maximums listed in Table 1015-1, Urban Zone B.

Minimum & Maximum Parking Allowance by Use

Land Use Category	*Classification*	*Minimum Parking Spaces*	*Maximum Parking Spaces (Urban Zone B –*

		per 1,000 SF	*not close to 20 min transit)*
Office Uses		*2.7*	*4.1*
Retail/Commercial		*4.1*	*6.2*
Warehouse and Storage *Distribution & Terminals*	*0 to 49,999 SF* *50,000 SF +*	*0.3* *0.2*	*None* *None, if less than 150,000 SF*

Applicable content from Table 1015-1: Automobile Parking Space Requirements

Response: The closest transit stop is located more than 1 mile from the project site. As a result, the site is subject to Urban Zone B parking maximum standards.

Vehicle Parking Compliance Table by Use

Use	Square Footage	Minimum Requirement	Maximum Allowed	Proposed
Office	1,267	4	5	5
Retail/Commercial	2,246	10	14	14
Warehouse/ Storage/ Terminal	17,941	6	No Max	37

D. Exceptions to Parking Requirements:

1. *Parking maximums in Table 1015-1 may be increased for the following:*
   - *a. Parking spaces in parking structures;*
   - *b. Fleet parking spaces;*
   - *c. Designated employee carpool spaces;*
   - *d. User-paid spaces; and*
   - *e. Parking spaces for vehicles for sale, lease, or rent.*

Response: The site is expected to employ up to 35 employees and given the location, they are not likely to carpool or take transit. There are no proposed exceptions to the parking maximums. The site complies with the standards as proposed.

1015.03 BICYCLE PARKING STANDARDS

A. Bicycle parking areas shall meet the following on-site locational requirements:

1. Bicycle parking racks shall be located in proximity to an entrance but shall not conflict with pedestrian needs.

Response: Bicycle parking for employees will be provided within the warehouse. The client does not expect patrons to ride their bikes to the facility but is also willing to allow parking inside as well. See sheet A1.01 for the proposed location of the public bicycle parking.

2. At least 75 percent of the bicycle parking spaces shall be located within 50 feet of a public entrance to the building.

Response: As mentioned above, parking will be provided within the building.

3. Bicycle parking may be provided within a building, if the location is easily accessible for bicycles.

Response: The applicant would propose to provide parking within the building as suggested above.

4. Bicycle parking for multiple uses, or a facility with multiple structures, may be clustered in one or several locations within 50 feet of each building's entrance.

Response: Noted. As proposed, bicycle parking will be provided within the warehouse or office.

5. If the bicycle parking is not easily visible from the street or main building entrance, then a sign must be posted near the building entrance indicating the location of the parking facilities.

Response: The applicant acknowledges this standard. Compliance with this standard will be evaluated with detailed construction drawings during the building permit stage.

B. Bicycle parking shall be designed to meet the following requirements:

1. When more than seven bicycle parking spaces are required, a minimum of 50 percent of the spaces shall be covered. All of the required bicycle spaces for schools, park-and-ride lots, congregate housing facilities, and multifamily dwellings shall be covered.

Response: Less than seven bicycle parking spaces are required. Covered spaces are not required.

7. The minimum number of bicycle parking spaces listed in Table 1015-2, Minimum Required Bicycle Parking Spaces, are required. If a listed use is located with the Portland Metropolitan Urban Growth Boundary (UGB), it shall have a minimum of two bicycle parking spaces or the number required by Table 1015-2, whichever is greater.

Excerpt of Table 1015-2: Minimum Required Bicycle Parking Spaces

Land Use Category	***Minimum Bicycle Parking Spaces***
Retail and Commercial including offices and clinics	*1 per 2,500 SF, up to 50,000 SF of building area*
Warehouses and industrial buildings without attached offices	*1 per 10,000 SF of building area*

Response: As proposed, the development would be required to provide 3 bicycle parking spaces. As stated previously, those spaces can be accommodated within the warehouse or office.

8. New multifamily residential, commercial, and institutional developments within the UGB shall designate short-term bicycle parking (less than four hours) and long-term bicycle parking (four or more hours) spaces as needed for the development.

Response: This standard does not apply, as the development is not residential, commercial or institutional in nature.

1015.04 OFF-STREET LOADING STANDARDS

A. No area shall be considered a loading berth unless it can be shown that the area is accessible and usable for that purpose, and has maneuvering area for vehicles.

B. In cases of expansion of a building or use, that prior to the expansion, does not meet the minimum loading berth requirements in Table 1015-3, Minimum Required Off-Street Loading Berths, the following provisions shall apply:

1. *The minimum number of additional loading berths required shall be based only on the floor area or capacity added and not on the area or capacity existing prior to the expansion.*
2. *If the expansion covers any pre-expansion loading berths, lost loading berths shall be replaced, in addition to any required additional berths.*

C. In the event several uses occupy a single structure or parcel of land and share the same loading berths, the total requirement for off-street loading shall be reduced by up to 25 percent of the sum of the requirements of the several uses computed separately.

D. The minimum off-street loading berths listed in Table 1015-3 are required.

Land Use Category	Unit of Measurement	Number of Loading Berths	Minimum Required Dimension
Industrial, Manufacturing, Warehousing, Storage	Under 5,000	None	60 feet x 12 feet x 14 feet high
	5,000 to 16,000	1	
	16,001 to 40,000	2	
	40,001 to 64,000	3	
Commercial Uses	Under 5,000	None	35 feet x 12 feet x 14 feet high
	5,000 to 24,999	1	
	25,000 to 49,999	2	
	50,000 to 100,000	3	

Response: The commercial component of the site is less than 5,000 square feet and does not require a loading birth. The entire laydown area is intended as a loading and maneuvering area and provides enough space for more than two semi-trucks at any given time. See sheets A1.01 for floor areas and sheet 3.0 for the laydown area.

1021 – REFUSE & RECYCLING STANDARDS FOR COMMERCIAL, INDUSTRIAL & MULTI-FAMILY DEVELOPMENTS

1021.02 APPLICABILITY

Section 1021 applies to all development and expansions of the following uses pursuant to the application and procedural Design Review requirements of Section 1102:

B. Institutional, commercial and industrial developments.

Response: As a commercial/industrial development, the standards of this section apply to the project.

1021.04 GENERAL PROVISIONS

All commercial, industrial, and multifamily development shall comply with the standards set forth in these provisions. Modifications may be granted when consistent with the local franchised solid waste and recycling collection firm's service requirements pursuant to Subsection 1021.10. Additionally:

A. Compactors, containers, and drop boxes shall be located on a level Portland Cement concrete pad, a minimum four inches thick, at ground elevation or other location compatible with the local franchise collection firm's equipment at the time of construction. The pad shall be designed to discharge surface water runoff to avoid ponding.

Response: Acknowledged by the applicant. Compliance with this standard will be demonstrated by the construction documents at the time of building permit review.

B. Recycling and Solid Waste Service Areas:

1. Recycling receptacles shall be designed and located to serve the collection requirements for the specific type of material.

2. The recycling area shall be located in close proximity to the garbage container areas and be accessible to the local franchised collection firm's equipment.

3. Recycling receptacles or shelters located outside a structure shall have lids and be covered by a roof constructed of water and insect resistive material. The maintenance of enclosures, receptacles and shelters is the responsibility of the property owner.

Response: Noted. A solid waste enclosure is proposed to be located along the west property edge and will be screened by a masonry wall. See Sheet A1.01 for location, and dimensions

C. Special Wastes or Recyclable Materials:

1. Environmentally hazardous wastes defined in Oregon Revised Statutes 466.005 shall be located, prepared, stored, maintained, collected, transported, and disposed in a manner acceptable to the Oregon Department of Environmental Quality.

Response: The applicant acknowledges Subsection C.1. The property owner is responsible for managing any environmentally hazardous wastes in compliance with these regulations.

2. Containers used to store cooking oils, grease, or animal renderings for recycling or disposal shall not be located in the principal recyclable materials or solid waste storage areas. These materials shall be stored in a separate storage area designed for such purpose.

Response: Storage of the materials listed in this section are not proposed on this site. This standard is not applicable to this proposal.

D. Screening and Buffering:

Screening and buffering shall be in accordance with Section 1009.04:

Response: Refer to Section 1009.04 earlier in this narrative where compliance with screening and buffering requirements are outlined.

1021.05 ENCLOSURES AND GATES

A. Gates shall be designed to permit sufficient service access for local franchised solid waste collection equipment and personnel.

Response: Noted. A detail of the proposed gates is provided on the landscape sheets of the proposed plan set. As proposed, the development will comply with this standard.

B. The gate swing shall be free of obstructions and have restrainers in the open and closed positions.

Response: The applicant acknowledges this standard. Compliance with this standard will be demonstrated by the detailed construction documents at the time of building permit review.

C. Enclosures constructed of wood or chain link fencing material shall contain a two- to four-inch high bumper curb at ground level located 12 inches inside the perimeter of the outside walls of the enclosure or fencing to prevent damage from container impacts.

Response: The applicant acknowledges this standard. Compliance with this standard will be demonstrated by the detailed construction documents at the time of building permit review.

D. Enclosures constructed of concrete, brick, and masonry block or similar type materials shall contain a bumper curb described in Subsection 1021.05(C) or a bumper rail to prevent damage from container impacts. The rail shall be secured by anchor bolts recessed in the rail within the perimeter walls of the enclosure at a height compatible with the service receptacle.

Response: The applicant acknowledges this standard. Compliance with this standard will be demonstrated by the detailed construction documents at the time of building permit review.

E. All areas around the receptacles shall be kept free of obstructions and accumulations of waste matter, grease, oil, water, and standing water.

Response: Noted.

1021.06 RECEPTACLE DESIGN STANDARDS

The following provisions shall apply to the design and location of receptacles.

A. Containers: Enclosures shall be designed consistent with the following standards:

1. Length and width of the service container.

Response:

2. A minimum of two feet, including pad area, shall be provided around the sides and rear of each container.

Response: demonstrated in A1.01

3. A minimum three feet, including pad area, shall be provided in front of each container for maneuverability in depositing garbage or recyclable materials. In cases where the containers face each other, a minimum four feet shall be provided.

Response: demonstrated in A1.01 – concrete curb extends over 4'

4. Containers two cubic yards or less in size shall be provided with a minimum nine feet of unobstructed overhead or vertical clearance for servicing.

Response: three are shown

5. Containers greater than two cubic yards in size shall be provided with a minimum 20 feet of unobstructed overhead or vertical clearance for servicing.

Response: There are no structures or utility lines above proposed enclosure location

B. Drop Boxes and Compactors:

1. The size of the pad shall be at least 14 feet wide and at least five feet longer than the length of the drop box or compactor.

2. Setbacks:

a. The pad shall be located a minimum of two feet from any perimeter wall or structure.

b. Drop boxes and compactors shall be located a minimum of five feet from any combustible wall, structure, opening, or overhang. This may be reduced to a minimum of two feet provided the pad is located adjacent to a noncombustible wall, structure, opening, or overhang.

3. Loading dock areas shall have a guide rail and bumper stop placed at ground level or at dock level where the rear of the drop box or compactor is to rest to protect any enclosure, wall, or structure from damage due to loading or unloading.

4. Compactors shall be compatible with collection equipment and weight limits prescribed by state and local law. The local franchised collection firm shall be consulted for equipment compatibility and service demands.

5. Weekly collection and disposal of putrescible waste is required by the Clackamas County Solid Waste and Waste Management Ordinance. More frequent collection may be required to prevent nuisance conditions when use and capacity of the receptacle(s) is inadequate to provide clean and safe conditions.

6. The maintenance of privately owned compactors and the area surrounding the compactor is the responsibility of the property owner.

Response: The project does not propose a drop box or compactor. These standards are not applicable.

1021.07 VEHICLE ACCESS

A. The minimum safe vehicular access to the front of a service container pad, shelter, or enclosure shall be a length of 45 feet and width of 12 feet.

Response: The proposed enclosure is provided with head on access from the east, and will be coordinated with the hauler. See sheet 3.0 for detailed location and access.

B. Vehicle access to service a drop box or compactor shall include the pad length as required in Subsection 1021.07(A) plus a minimum of 65 feet in front of the loading hook placement position.

Response: A trash compactor is not proposed for this project. This standard is not applicable.

C. The vehicular access to a pad or enclosure shall be hard-surfaced consistent with the off-street parking provisions of Section 1015.

Response: Compliance with this standard will be demonstrated at the time of detailed construction drawing review.

D. In the absence of an on-site through street or driveway, a cul-de-sac with a minimum 50-foot turning radius shall be provided for vehicle maneuvering at the end of a private dead end street or driveway. A standard emergency services hammerhead turnaround, consistent with the County's standards for road improvements, may be granted in lieu of the cul-de-sac when the design is approved by the local fire district.

Response: The site provides adequate driveway, maneuvering and circulation area for access by emergency services. Please reference Sheet 6 for the emergency vehicle access plan.

E. The percent of grade for access to the pad or enclosure shall not exceed three percent. Exceptions may be granted when compatible with the equipment manufacturer's specifications and consistent with Subsection 1021.10.

Response: Acknowledged by the applicant. Compliance with this standard will be demonstrated at the time of permit review.

1021.08 SIGNS

"No Parking" signs shall be placed in a prominent location on the enclosure, or shelter, and painted on the pavement in front of the enclosure, or shelter, to provide unobstructed and safe access for servicing receptacles. Signs clearly identifying recycling containers and type of recyclable material shall be placed on each respective container and maintained at all times.

Response: Acknowledged by the applicant. Compliance with this standard will be demonstrated at the time of permit review.

1102 – DESIGN REVIEW

1102.01 PURPOSE AND APPLICABILITY

Section 1102 is adopted to provide standards, criteria, and procedures under which design review may be approved. Design review is required for:

A. Development, redevelopment, expansions, and improvements in commercial and industrial zoning districts, except for uses approved through a zone change to NC District;

Response: Design Review is applicable to the project because the scope of work proposes redevelopment and improvements within the RI and RC Zoning Districts.

1102.02 SUBMITTAL REQUIREMENTS

In addition to the submittal requirements identified in Subsection 1307.07(C), an application for design review shall include:

A. A narrative describing the proposed use;

Response: This document contains a narrative describing the proposed use, project improvements, as well as findings for the applicable development standards and approval criteria. This standard is met.

B. An engineering geologic study, if required pursuant to Section 1002, Protection of Natural Features, or 1003, Hazards to Safety;

Response: The proposed development does not take place on slopes greater than or equal to 20 percent and less than or equal to 35 percent. Pursuant to Sections 1002 and 1003, an engineering geologic study is not required for the proposed development.

C. Preliminary statements of feasibility, if required pursuant to Section 1006, Utilities, Street Lights, Water Supply, Sewage Disposal, Surface Water Management, and Erosion Control;

Response: Preliminary statements of feasibility have been requested and are provided in the appendices as required.

D. A transportation impact study, if required pursuant to Section 1007, Roads and Connectivity;

Response: A transportation impact study, prepared by Todd Mobley of Lancaster Mobley Engineering and dated January 14, 2020 is provided in the index to this application.

E. Calculations demonstrating compliance with Section 1012, Lot Size and Density, if applicable;

Response: The standards of this section are not applicable to the application. Section 1012 applies to subdivisions, partitions, replats, conditional uses for manufactured home parks and dwellings, and specific housing projects.

F. A vicinity map showing the location of the subject property in relation to adjacent properties, roads, bikeways, pedestrian access, utility access, and manmade or natural site features that cross the boundaries of the subject property;

Response: A vicinity map is provided on the cover Sheet 1.0.

G. An existing conditions map, drawn to a scale of not less than one inch equals 50 feet, showing:

1. Contour lines at two-foot intervals for slopes of 20 percent or less within an urban growth boundary; contour lines at five-foot intervals for slopes exceeding 20 percent within an urban growth boundary; contour lines at 10- foot intervals outside an urban growth boundary; source of contour information.

2. Slope analysis designating portions of the site according to the following slope ranges and identifying the total land area in each category: zero to 20 percent, greater than 20 percent to 35 percent, greater than 35 percent to 50 percent, and greater than 50 percent;

3. Drainage;

4. Potential hazards to safety, including areas identified as mass movement, flood, soil, or fire hazards pursuant to Section 1003;

5. Natural features, such as rivers, streams, wetlands, underground springs, wildlife habitat, earth mounds, and large rock outcroppings;

6. Wooded areas, significant clumps or groves of trees, and specimen conifers, oaks, and other large deciduous trees. Where the site is heavily wooded, an aerial photograph, at a scale of not more than 1 inch equals 400 feet, may be submitted and only those trees that will be affected by the proposed development need be sited accurately;

7. Overlay zoning districts regulated by Section 700, Special Districts;

8. Noise sources;

9. Sun and wind exposure;

10. Significant views;

11. Structures, impervious surfaces, utilities, onsite wastewater treatment systems, landscaping, driveways and easements (e.g., access, utility, storm drainage). Note whether these will remain or be removed and provide dimensions of driveways and easements; and

12. All of the following that are on or adjacent to the subject property, including dimensions and, if applicable, names: existing roads, platted unconstructed roads, railroad rights-of-way, bikeways, curbs, sidewalks, pedestrian pathways, accessways, and trails.

Response: Please reference this information on the existing conditions plan provided on Civil Sheet C2.0.

H. A proposed site plan, drawn to a scale of not less than one inch equals 50 feet, showing:

1. The subject property, including contiguous property under the same ownership as the subject property, and adjacent properties;

2. Property lines and dimensions for the subject property. Indicate any proposed changes to these;

3. Natural features to be retained;

4. Location, dimensions, and names of all existing or platted roads or other public ways, easements, and railroad rights-of-way on or adjacent to the subject property;

5. The location of at least one temporary benchmark and spot elevations;

6. Location and dimensions of structures, impervious surfaces, and utilities, whether proposed or existing and intended to be retained. For phased developments, include future buildings;

7. Approximate location and size of storm drainage facilities;

8. Relation to transit; parking and loading areas, including dimensions and number of individual parking and loading spaces and drive aisles; bicycle racks; walkways; and pedestrian crossings;

9. Orientation of structures showing windows and doors;

10. Location and type of lighting;

11. Service areas for waste disposal, recycling, loading, and delivery;

12. Location of mail boxes;

13. Freestanding signs; and

14. Pedestrian amenities;

Response: No natural features are present on the site. New signage, pedestrian amenities and mailboxes are not proposed. The remaining information is contained on a combination of civil and architectural plan sheets in the attached plan set.

I. A grading plan, drawn to a scale of not less than one inch equals 50 feet, showing location and extent of proposed grading, general contour lines, slope ratios, slope stabilization proposals, and natural resources protection consistent with Sections 1002 and 1003;

Response: Grading Plans, drawn to a scale of 1"=40-0", is provided on Sheet 4.0.

J. Architectural drawings, including:

1. Building elevations, including any building signs. Identify the dimensions, area, color, materials, and means of illumination of such signs. Identify and show dimensions of any electronic message center or other changeable copy sign areas;

2. Building sections;

3. Floor plans;

4. Color and type of building materials; and

5. Elevation of freestanding sign(s). Identify the dimensions—including total height and height between bottom of sign and ground, area, color, materials, and means of illumination. Identify and show dimensions of any electronic message center or other changeable copy sign areas; and

6. Gross floor area, in square feet, of each structure; floor area ratio if a minimum floor area ratio standard applies; and number of dwelling units;

Response: Architectural plans are included in the attached plan sheet, and illustrate the information called for in this subsection.

K. A general landscaping plan, drawn to a scale of not less than one inch equals 50 feet, showing the elements required on the proposed site plan and:

1. Existing plants and groups of plants proposed;

2. Description of soil conditions; plans for soil treatment such as stockpiling of topsoil or addition of soil amendments; and plant selection requirements relating to soil conditions;

3. Erosion controls, including plant materials and soil stabilization, if any;

4. Irrigation system;

5. Landscape-related structures such as fences, terraces, decks, patios, shelters and play areas; and

6. Open space and recreational areas and facilities, if applicable.

Response: This information is provided on Landscape Sheets L1.0 through L1.2.

L. A transportation improvement plan that includes proposed cross-sections for roads to be constructed or improved, including widths of travel lanes, bikeways, sidewalks, curbs, pedestrian pathways, and landscape strips. Identify proposed landscape plan for landscape strips, including street tree type, size and location. Identify proposed dedication of right-of-way.

Response: New roads are not proposed with this development. However, street improvements are shown on Civil Sheet 5.0. Landscaping in the right-of-way is depicted on the landscape sheets.

1102.03 APPROVAL CRITERIA

Design review requires review as a Type II application pursuant to Section 1307, Procedures, and shall be subject to the following standards and criteria:

A. The proposed development shall be subject to Section 1000, Development Standards, and the standards of the applicable zoning district.

Response: This document outlines the applicable standards and approval criteria from the Zoning Development Ordinance and provides findings of the project's compliance with these requirements.

B. As part of design review in the RCO District and for the PMU1 site, a master plan shall be required if the proposed development does not meet the minimum floor area ratio for the entire site (where phased compliance is permitted by Table 510- 2, Dimensional Standards in the Urban Commercial and Mixed-Use Zoning Districts) or if compliance with Table 510-3: Site-Specific Requirements for the PMU District, is not being achieved for the entire PMU1 site. The master plan shall demonstrate that it is feasible to achieve full compliance with a future phase of development that is not reliant upon adding additional stories to existing or proposed structures or demolishing structures built after the RCO or PMU District was applied to the subject property.

Response: This criterion is not applicable. The project is not located in the RCO or PMU1 Zoning District. A master plan is not applicable.

C. As part of design review of development of any portion of the OA District, a master plan shall be required for the subject property and all contiguous lots with a Comprehensive Plan land use designation of Office Apartment. The master plan shall include a plan for consolidation of motor vehicle accesses for the entire Office Apartment site that

complies with the access targets of Comprehensive Plan Map X-SC-5, Sunnyside Corridor Community Plan Sunnyside Road Access Management Targets.

Response: This criterion is not applicable. The project is not located in the AO Zoning District. A master plan is not applicable.

III. Conclusion

This design review narrative and appendices demonstrate compliance with Clackamas County's applicable approval criteria or the ability to demonstrate compliance, with further clarification as a condition of approval, at the time of building permit review. The applicant respectfully requests that the County approve this Design Review proposal.

IV. Appendices

DESIGN REVIEW PRE-APPLICATION CONFERENCE

Post-Meeting Notes and Follow Up Memo

ZPAC0098-19

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
LAND USE & ENVIRONMENTAL PLANNING DIVISION
Development Service Building, 150 Beavercreek Road, Oregon City OR 97045
Phone: (503) 742-4500 Fax: (503) 742-4550

LOCATION: Room 209, Planning, DSB

DATE & TIME: September 11, 2019, 10:00 a.m.

STAFF CONTACT: Anthony Riederer, AICP - Phone: (503) 742-4528 - E-mail: ariederer@clackamas.us

APPLICANT: Melinda McMillian of Ankrom Moisan, on behalf of Parr Lumber

LEGAL DESCRIPTION: 23E05D 01900, 02000, 02001, 02205, 02213

SITE ADDRESS: 19855 SE Sunnyside Road, Damascus, OR

NOTE: The information contained in this memo is follow up to issues and topics raised in the pre-application conference. It is preliminary nature and is designed to act as a guide to relevant ZDO sections.

When it is submitted for land use approval, the proposal will reviewed against all applicable ZDO sections and, through that process, additional considerations may come to light.

SUSTAINABILITY NOTES:

- The standards of ZDO 1021 will determine ultimate design/placement of enclosure.
- Please refer to memo provided by Emily Murkland of Clackamas

STREET LIGHTING AND SDC's:

- Street lighting will be required along all frontages, and could potentially be supporting on existing PGE poles.
- The site will need to annex into CCSD #5, and will be charged once annually at the prevailing rate per linear foot of street frontage.
- The provided SDC estimate is 'worst case' and may be reduced based on uses proposed at final building permit and any additional information provided about the structures currently on the site that have previously paid SDCs.
- Please contact Wendi Coryell for a revised estimate, subject to new information provided by the applicant.

ENGINEERING NOTES:

- A traffic study will be required for the proposed development. Please coordinate that with Christian Snuffin, of Clackamas Engineering.
    - Scoping to be determined in coordination with ODOT.
- The proposed changes to the site circulation and parking will required a development permit from Clackamas County Engineering.
- The site development plans must be stamped by a civil engineer.
- Damien Ln does not have adequate site distance for site access, may be addressed through traffic study.
    - If site access is not permitted, no frontage improvement will be required. If it is used for site access, standard ½ street improvements will be required.
- See Engineering Memo for improvements required along Foster.
- Storm drainage will be reviewed by the Engineering Division and will generally follow WES standards.

ODOT NOTES:

- There are significant safety issues along Highway 212 which will require review and potential resolution.
- Turning radii should be demonstrated on submitted site access/circulation drawings.
- The traffic impact/trip generation memo should reflect the rates from the ITE manual.

CLACKAMAS FIRE NOTES:

- Have a pre-construction meeting with Clackamas Fire to establish safe access during construction.
- Commercial buildings of greater than 1000 square feet will require fire access and water supply plans as part of Design Review submittal.
- FDC/Sprinkler connections could be impacted by Sunnyside Road.
- Gates to site should be set back at least 30 feet from road and sized for access by fire apparatus.
- Be sure to make sure addressing and signage is plainly visible on finished site for ease of identification to emergency responders.
- Clackamas Fire needs 1500 gpm to be available for fire suppression.
    - There may be alternative means and methods available to modify this, through close consultation with Clackamas Fire.
- Contact information for questions is provided.

SUNRISE WATER NOTES:

- The existing water system was built in the 1960s under different code and anticipated needs.
- There is restricted service in this area, by order of the Sunrise Water Authority Board.
- Available fire flow is 1000 gpm.
- SDCs will be determined by meter size with separate meters for domestic and fire lines.

- Plans will need to be submitted to Sunrise Water directly, separate from Design Review Application.

PLANNING DIVISION NOTES:

- Please pay particular attention to Sections 1002, 1005, 1007, 1009, 1010, 1015, and 1021.

CLACKAMAS COUNTY

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
PLANNING AND ZONING DIVISION
150 Beavercreek Rd, Oregon City, OR 97045
Phone: (503) 742-4500, FAX: 503-742-4550

Pre Application Conference – 9/11/2019 @ 10:00

ZPAC0098-19 – Parr Lumber in Damascus Area

Name	Agency / Dept	Phone	E-mail
Anthony Riederer	Clackamas Co. DTD, Planning & Zoning Division (Design Review)	503-742-4528	ariederer@clackamas.us
Chris Alldredge	Parr Lumber	(503)614-2534	chrisal@parr.com
melinda mcmillan	Ankrom Moisan Arch.	801.669.2546	melindam@ankrommoisan.com
Ken Valentine	HHPR	503-221-1131	dan@hhpr.com Ken@hhpr.com
Brad Farmer	Parr Lumber	503-614-2539	bradfc parr.com
SALLY CURRAN	Clack. Co. DTD	503-742-4711	scurran@clackamas.us
Matt Amos	CFD #1	503-742-2661	Matt.Amos@clackamasfire.com
MICHAEL ROBINSON	SCHWABE, WILLIAMSON	503 796 3556	MRCBIXON@schwabe.com
WENDI CORYELL	Eng - SDC - Street Issues DTD - CLACKAMAS	503-742-4657	wendicor@clackamas.us
AVI TAYAR	ODOT	503-731-8221	ABRAHAM.TAYAR@ODOT.STATE.US
Elizabeth Edgar	Sunrise Water	503-7101-0270	eedgar@sunrisewater.co

DESIGN REVIEW PRE-APPLICATION CONFERENCE

ZPAC0098-19

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
LAND USE & ENVIRONMENTAL PLANNING DIVISION
Development Service Building, 150 Beavercreek Road, Oregon City OR 97045
Phone: (503) 742-4500 Fax: (503) 742-4550

LOCATION: Room 209, Planning, DSB

DATE & TIME: September 11, 2019, 10:00 a.m.

STAFF CONTACT: Anthony Riederer, AICP - Phone: (503) 742-4528 - E-mail: ariederer@clackamas.us

APPLICANT: Melinda McMillian of Ankrom Moisan, on behalf of Parr Lumber

LEGAL DESCRIPTION: 23E05D 01900, 02000, 02001, 02205, 02213

SITE ADDRESS: 19855 SE Sunnyside Road, Damascus, OR

TOTAL AREA INVOLVED: Approximately 5.52 Acres

PRESENT ZONING: RC and RI (Rural Commercial and Rural Industrial)

PROPOSAL: New construction of a number of buildings and significant site work uniting five taxlots for use as a wholesale building material/supply store. Scope of work includes the new construction, modified site access, parking, circulation, landscape, and other site elements.

APPLICABLE AGENCIES & STAFF:

1. County Planning: Anthony Riederer, (503) 742-4528, ariederer@clackamas.us
2. County Engineering: Sally Curran, (503) 742-4711, scurran@clackamas.us
3. County Building: Richard Carlson, (503) 742-4769, richardcar@clackamas.us
4. Clackamas Fire: Matt Amos, matt.amos@clackamasfire.com
5. Clackamas Fire: Michael Bouman, (503) 742-2661, mike.boumann@clackamasfire.com
6. Sunrise Water: Elizabeth Edgar, (503) 761-0220, eedgar@sunrisewater.com
7. SDC charges: Wendi Coryell, (503) 742-4657, wendicor@co.clackmas.or.us
8. County Sustainability: Emily Murkland, (503) 742-4460, emurkland@clackamas.us

ZDO ORDINANCE STANDARDS:

Note: The information contained in this memo is introductory in nature and is designed to act as a guide to relevant ZDO sections. This is an initial review and is based on the information submitted by the applicant for the pre-application conference.

When the proposal is submitted for design review/land use approval, it will reviewed against all applicable ZDO sections and, through that process, additional considerations may come to light.

1. ZDO Sections 513 (Rural Commercial) and 604 (Rural Industrial)

   The proposed use (retailing of building materials) is permitted in both the RC and RI Districts.

   Dimensional Standards – Rural Commercial:

   - Minimum Lot Size: None
   - Minimum Front: 30 feet
   - Minimum Rear: 10 feet. (If the rear lot line abuts a residential zoning district, the minimum shall be 20 feet.)
   - Minimum Side: 10 feet. (If the side lot line abuts a residential zoning district, the minimum shall be 20 feet.)
   - Building Height: None

   Dimensional Standards – Rural Industrial:

   - Minimum Lot Size: None
   - Minimum Front: 30 feet
   - Minimum Rear: 0 feet. (If the rear lot line abuts a residential zoning district, the minimum is 30 feet plus five feet for each 10-foot increase in building height over 35 feet. Height increments of less than 10 feet shall be rounded up to the nearest 10-foot increment..)
   - Minimum Side: 0 feet. (If the side lot line abuts a residential zoning district, the minimum is 30 feet plus five feet for each 10-foot increase in building height over 35 feet. Height increments of less than 10 feet shall be rounded up to the nearest 10-foot increment.)
   - Maximum Building Floor Space per Commercial Use in an Unincorporated Community: 4,000 square feet
   - Maximum Building Floor Space per Industrial Use in an Unincorporated Community: 40,000 square feet
   - Building Height: None

2. ZDO Section 1005 – Site and Building Design

   1005.03: General Site Design Standards

   If feasible, cluster buildings within single and adjacent developments for efficient sharing of site circulation elements and other amenities, per 1005.03(A).

If feasible, design the site so that so that the longest building elevations can be oriented within 20 degrees of true south in order to maximize the south-facing dimensions, per 1005.03(B)

Provide on-site walkways that meet the standards of 1005.03(D).

1005.04: Building Design

Design all facades visible from a public or private street or accessway such that they comply with the design standards of 1005.04(A).

Design public building entrances such that they are defined, highly visible, and sheltered by an overhang of at least 4 feet, to comply with the standards of 1005.04(B)(1).

The design of the roofline shall include eaves which project no less than 24 inches from the façade or, if flat, be defined by cornice or other architectural treatment to provide visual interest, as per 1005.04(D).

Design buildings so as to comply with the exterior building material standards of 1005.04(E).

> Please note 1005.04(E)(3), which provides guidance as to the materials that are acceptable for façade surfaces. "Walls shall be surfaced with brick, tile, masonry, stucco, stone or synthetic equivalent, pre-cast masonry, gypsum reinforced fiber concrete, wood lap siding, architecturally treated concrete, glass, wood, or a combination of these or other high-image materials."

Fully address the applicable standards related to architectural design features, colors, materials, scale, and minimizing impacts on adjacent uses as provided in 1005.04(I)

1005.04(I)(1): Use shapes, colors, materials, textures, lines, and other architectural design features that enhance the design type area and complement the surrounding area and development.

1005.04(I)(3): Use building orientation and physical design, including setbacks and modulations, to ensure a development is compatible with other activities onsite, nearby properties, intended uses and the intent of the design type.

1005.04(I)(7): In unincorporated communities, design structures to reflect and enhance the local character and to be in scale with surrounding development.

Locate and design mechanical equipment so that it is screened as per the standards provided in 1005.04(J).

1005.05: Outdoor Lighting

Design outdoor lighting to comply with the standards in 1005.05(A) and demonstrate compliance with these standards.

1005.06: Additional Requirements

As a portion of a larger site, the project area for this project measures to approximately 240,500 square feet of site area. Section 1005.06 requires projects to meet one 'additional requirement' for every 20,000 square feet of site area, up to a maximum of 5.

The project will be required to meet at least five (5) of the additional requirements listed in 1005.06.

1005.07: Modifications

Modification of any standard identified in **Subsections 1005.03 and 1005.04** may be approved as part of design review if the proposed modification will result in a development that achieves the purposes stated in Subsection 1005.01 as well or better than the requirement listed.

It is the responsibility of the applicant to 'make the case' as to how any proposed modification satisfies this requirement.

4. ZDO Section 1006 - Utility Lines & Facilities

Location, design, installation, and maintenance of utility lines and facilities shall be carried out with minimum feasible disturbance of soil/site and consistent with rules/regulations of districts for surface water management, per 1006.01(A).

New electric, gas, communications services shall be installed pursuant to the requirements of the district/company serving the development and installed underground, unless prohibited by utility district or company, per 1006.01(B).

Easements shall be provided along property lines as deemed necessary by the Department of Transportation and Development, special districts, and utility companies, as per 1006.01(D).

Street lights shall be provided in accordance with 1006.02.

Development that has need for, or will be provided with, public or community water shall install water service facilities and grand necessary easements pursuant to the requirements of the district or company serving the development, per 1006.03(A).

Approval of a development that requires public or community water service shall be granted only if the applicant provides a preliminary statement of feasibility from the water system service provider, per 1006.03(B).

The development shall install facilities pursuant to the requirement of the district or company serving the site, per 1006.04(A).

Approval of a development that requires sanitary sewer service shall be granted only if the applicant provides a preliminary statement of feasibility from the sanitary sewage treatment service provider and the collection system service provider, per 1006.04(B).

Approval of a development shall be granted only if the applicant provides a preliminary statement of feasibility from the surface water management regulatory authority. Per 1006.06(C).

5. ZDO Section 1007 & 1015 - Roads, Circulation & Parking

Circulation, frontage improvements, and site access to be reviewed by Clackamas County Engineering.

Vehicle access to the site is indicated as multiple driveways off of SE Foster, SE Sunnyside, and SE Damascus.

In an Unincorporated Community, a sidewalk or a pedestrian pathway shall be constructed on arterial or collector street frontage(s) of a lot upon which a…
…commercial, industrial, or institutional development is proposed, per 1007.04(D) and to the standards of 1007.04(F).

Please review the "General Standards" of 1015.01 to ensure that all parking facilities comply either in their current configuration or under proposed modifications.

Motor vehicle parking shall meet the standards of Section 1015.02 as appropriate per the project design. Please note that parking is based on the use of the building, not the underlying zoning.

Bicycle parking will be required, per 1015.03. Please review these standards to ensure project compliance.

Off-street loading berths will be required, per 1015.04. Please review these standards to ensure project compliance.

6. ZDO Section 1009 - Landscaping

The landscape design shall fully address the general provisions as provided per 1009.01.

The application shall demonstrate that the site design meets or exceeds the 15% minimum landscaped area requirement as provided per Table 1009-1.

This area shall not include landscaping in adjacent rights-of-way.

The requirements of landscaping, screening and buffering, landscape strips, and outdoor recreation areas set in 1009 apply regardless of whether those areas exceed 15% of the site area.

Surface parking and loading area landscaping will be required per 1009.03.

Required screening and buffering shall be demonstrated to comply with the requirements of 1009.04.

The project design shall comply with the landscaping strip requirements of 1009.06(C).

Fences and walls shall comply with the standards of 1009.07.

Graded areas shall be revegetated to ensure erosion control, per 1009.09.

All landscaped areas and new plantings shall be selected, installed, and maintained per the standards of 1009.10.

7. ZDO Section 1010 - Signs

All signs must meet standards of ZDO Subsection 1010.06 (Commercial Signs in Commercial and Industrial Districts), where applicable.

8. ZDO Section 1021 - Refuse and Recycling Standards

Please indicate location and dimensions and design of recycling and solid waste areas on plans and include site plans and elevation drawings which demonstrate compliance with the pertinent standards listed in ZDO Section 1021.

These include general design standards, the design of enclosures, gates, and receptacles, vehicle access, and requirements for the placement of signs.

For information on hauling and capacity requirements, please contact Emily Murkland of Clackamas County's Sustainability and Solid Waste program and Hoodland Disposal and Recycling, the local trash/recycling hauler.

APPLICANT SUBMITTED QUESTIONS:

- How does the circulation diagram work with future traffic changes in area?
- What are the plans for the intersection of SE Sunnyside and Highway 211?
- Could a drainage easement be granted across the flag lot 'pole'?
- Are there differing street improvement requirements for Damascus Lane vs SE Foster?
- What street improvements will be required along Lots 5 and 1, given the unusual conditions of each?

Minimum Completeness Checklist for Design Review Applications

For additional detail on these requirements please see ZDO 1307.07(C) and 1102.02.

1. Pre-application conference held
2. Project narrative
    a. Narrative should indicate how proposed design meets all applicable ordinance standards
3. Required Statement(s) of Feasibility
4. Site plan that illustrates the following:
    a. Property and surrounding area (and uses) at reasonable scale.
    b. Boundary lines and dimensions of property.
    c. At least one temporary benchmark.
    d. Natural features.
    e. Location, dimensions of all streets, etc.
    f. Location, dimensions of existing structures.
    g. Approximate location and size of storm water facilities.
    h. Relation to transit.
    i. Parking areas, showing number and dimension of spaces and maneuverability.
    j. New structures: footprints and building setbacks
    k. Orientation of buildings (eg, entrances, etc.)
    l. Site lighting plan
    m. Loading areas, maneuverability
    n. Waste/recycling areas, containers
5. Grading plan, if earthwork is proposed.
6. Landscape Plan
7. Architectural Elevations
8. Building Material / Colors Samples
9. Signage plan, if any proposed
10. Transportation improvement plan

Please keep in mind that it is the applicant's responsibility to clearly demonstrate how a proposal meets all applicable ZDO criteria. Frequently, solely meeting the minimum submittal requirements may not provide enough information for staff to make a defensible finding that a project complies with all ordinance standards.

Processing Time

Upon receipt of a complete application, processing time will take approximately 6-8 weeks.

PRE-APPLICATION INFORMATION FROM TRAFFIC ENGINEERING AND DEVELOPMENT REVIEW

All information is considered informal, based on current Zoning and Development Ordinance requirements, current Roadway Standards requirements, and current Comprehensive Plan requirements. The information presented here is subject to change as revisions are made to the aforementioned documents and in the formal Design Review Process. Prior to the submittal of a Design Review application, the applicant is encouraged to contact staff to insure that these pre-application comments reflect the current standards.

FILE NO. ZPAC098-19-D

PROJECT: Wholesale Lumber, Sunnyside Rd, Foster Rd, Damascus Ln

LEGAL: 23E05D 02205, 02000, 02001 and 02213

DATE: September 11, 2019

Engineering staff: Sally Curran 503-742-4711
scurran@clackamas.us

SECTION 1 – COMMENTS AND REQUIREMENTS

1) **DEVELOPMENT PERMIT** - Applicant will be required to obtain a Development Permit from the County Engineering Section prior to the issuance of a Building Permit. The applicant shall pay the minimum Development Permit fee for commercial/industrial/multi-family development at the time of permit application. The final permit fee will be calculated at the current fee structure for commercial/industrial/multi-family development at the time of the Development Permit application. At this time, that fee is based on the approved engineer's estimate and is equal to 8.83% of the cost of public roadway improvements and 5% of the cost for onsite improvements associated with parking and maneuvering. Issuance of a Development Permit is dependent upon the formal approval, by Engineering staff, of a set of plans in compliance with Roadway Standards section 140. These plans shall also illustrate road or street frontage features, including any existing and proposed pavement striping for a distance of 200 feet beyond the limits of the property lines. The plans shall be signed and stamped by a Professional Engineer registered in the State of Oregon.

2) **SITE ACCESS** – A traffic impact study (TIS) will be required per Section 295 of the Clackamas County Roadway Standards. Evaluate Site access at SE Sunnyside Road, SE Sunnyside Road and Highway 212, Driveway access to SE Foster Road and SE Damascus Lane and Foster Road intersection. Per Zoning And Development Ordinance Subsection 1007.07 Concurrency, intersections serving development sites are required to meet capacity standards. Contact Christian Snuffin for details on scoping 503-742-4716 (CSnuffin@co.clackamas.or.us) Coordinate with ODOT for scoping related to the state highway.

   Access to SE Damascus Lane may not be permitted due to limited sight distance to the north.

   SE Sunnyside Road is currently classified as a major Arterial. (There is some long range planning being looked at for this area which may change the classification of Sunnyside at this intersection and perhaps even remove the connection to Highway 212, however, these ideas are in the very preliminary stages and nothing concrete has been proposed.) SE Foster Road is a minor arterial. Access is not likely to be permitted to Sunnyside Road due higher functional classification and concurrency standards. (If access is allowed, it would be dependent on the TIS and would most likely be right in/right out.)

   A driveway to SE Foster Road will need to align with the existing Safeway Driveway. A minimum 28-foot wide driveway approach is required. A wider driveway may be permitted for truck turning movements.

3) **PARKING** – Applicant shall provide adequate on site circulation for the parking and maneuvering of all vehicles anticipated to use the site, including a minimum of 24 feet of back up maneuvering room for all 90-

degree parking spaces. Loading spaces shall also be afforded adequate maneuvering room. The applicant shall show the paths traced by the extremities of the anticipated large vehicles (garbage and recycling trucks, fire apparatus, delivery trucks), including off-tracking, on the site plan to insure adequate turning radii are provided for the large vehicles maneuvering on site. An onsite turnaround, which would meet the requirements of the local Fire District and allow fire apparatus to turn around on site, is required. All parking and maneuvering areas shall be paved.

Parking spaces shall meet minimum and maximum *ZDO* section 1015 requirements, both in number and dimensions. The plans shall list the number of parking spaces required and the number of parking spaces provided. The applicant shall label all compact, carpool, handicap, and loading berth spaces on the plans.

All curbs shall typically be type "C", or curb and gutter if curb line slope is less than one percent, if they carry, direct or channel surface water. Alternative curbs will be considered when it is determined by the Clackamas County Department of Transportation and Development that type "C" curbs or curb and gutter are not appropriate. Extruded curbs for carrying, directing or channeling surface water, or used as a vehicle wheel stop, shall not be allowed.

A reciprocal access easement will be required for the property to the east.

4) **FRONTAGE IMPROVEMENTS** – Applicant shall design and construct the following improvements along the entire site frontages:

   Sunnyside Road: Sunnyside road is currently classified as a major arterial, but due to unknown future plans for this roadway, required frontage improvements will be limited. At a minimum, the applicant shall provide a 5-foot wide sidewalk along the project frontage that meets current ADA and County standards. Other improvements will be those required by the development as demonstrated in the TIS.

   Damascus Lane: If there is no access permitted along Damascus Lane, no frontage improvements will be required. Access to Damascus Lane will only be permitted if adequate sight distance is provided along Foster Road at the intersection of Damascus Lane and Foster Road. If access to Damascus Lane is granted, up to one-half street improvements to County Local Road Standards shall be required.

   Foster Road:

   a) Dedicate right of way as necessary to a minimum one-foot behind the back of sidewalk.

   b) Street widening to provide an 8-ft wide bike lane.

   c) Standard curb or curb and gutter, and drainage facilities in conformance with Water Environment Services requirements and *Clackamas County Roadway Standards* Chapter 4.

   d) A 5-foot wide sidewalk behind a 5-foot wide landscape strip with street trees.

   e) A minimum 28-ft wide concrete driveway approach, per Standard Drawing D650.

   f) Construct offsite pavement tapers per Roadway Standards Section 250, as required.

5) Applicant shall provide and implement a signing and pavement-marking plan for onsite parking and circulation. This plan shall be reviewed and approved by Engineering and the local Fire Marshal prior to the applicant being issued a Development permit.

6) Applicant shall provide and maintain adequate intersection sight distance at the site driveways.

7) **STORM DRAINAGE** – Provide a stormwater management plan to treat and convey runoff from new impervious surfaces (building and parking and maneuvering area) per Roadway Standards Chapter 4 and Water Environment Services Standards. The area in the vicinity of the site has limited downstream conveyance with adjacent properties flooding. Detention and infiltration of stormwater on-site will be necessary so runoff from the site is not greater than it is today.

8) **Prior to the issuance of a building permit** the applicant shall submit to Clackamas County Engineering Office **written approval from the local Fire District for the planned access, circulation and water source supply.**

9) Following Design Review approval, plans shall be designed and stamped by a Professional Engineer registered in the State of Oregon.

SECTION 2 - ENGINEERING REVIEW PROCESS OVERVIEW

1) The development of a project has several phases requiring Engineering staff review. The first phase is this pre-application meeting where preliminary information is provided allowing applicants to better understand the Engineering requirements and applicant's expenses associated with a proposed project. Prior to a submittal for Design Review, Engineering staff is available to assist the applicant in the development of the plans to help insure that the application is complete and note concerns that may affect the application.

2) The next phase is Engineering staff's review of a project. This is typically performed after a formal Design Review application is submitted by an applicant and Planning staff provides notice to Engineering staff of the proposed project. At this phase, Engineering staff provides written comments to Planning staff and often recommends conditions of approval for incorporation into a land use decision.

3) Following a land use approval of a proposal by Planning staff or a Hearings Officer, typically with conditions, Engineering staff offers an opportunity to applicants to meet with Engineering staff to review conditions of approval during the appeal period. This allows applicants a clearer understanding of the conditions of approval, how those conditions financially impact the applicant's proposal and also allows the applicant to better understand the appropriate level of detail for the engineering that will be necessary in the next phase of a project. Furthermore, the sequencing of requirements to obtain building permits, record plats or obtain a certificate of occupancy may be discussed. Contact Deana Mulder, 503-353-4710, to discuss the aforementioned issues.

4) Engineering is then involved in the next phase of the project. In this phase, applicants typically submit detailed engineered construction plans for review and approval. Once the plans are approved, a permit for construction activities may be issued. The detailed construction plans typically include all required street and frontage improvements, access improvements, parking improvements, and site circulation improvements for vehicles, bicycles and pedestrians. These plans are typically provided for all commercial, industrial, multifamily and conditional use applications.

5) During construction, an Engineering inspector will visit the site to monitor the work to help insure that the construction is in accordance with the conditions of approval. When the applicant believes all necessary work has been completed, the applicant would request a final inspection and Engineering staff would then review the file and inspect the site to determine if all conditions of approval had been met or if additional work was still needed to achieve compliance with all of the Engineering related conditions of approval.

6) For the Design Review application, the applicant shall provide revised, more detailed street, site, grading and drainage plans in conformance with the requirements for preliminary development plans. This shall include, but is not limited to right-of-way lines verified by a professional survey, edges of pavements, curbs, adjacent driveways and driveways on both sides of the roads, outlines of existing structures on adjacent lots and outlines of existing structures on lots on the opposite sides of the roadways. All illustrated features shall be dimensioned. See section 1102 of the *Clackamas County Zoning and Development Ordinance* for specific requirements. Submitted Plans shall be stamped "PRELIMINARY" or "NOT FOR CONSTRUCTION".

Oregon
Kate Brown, Governor

Dep. .ment of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

October 9, 2019

ODOT #9256

ODOT Response

Project Name: Parr Lumber Wholesale	**Applicant:** Brad Farmer & Melinda McMillan
Jurisdiction: Clackamas County	**Jurisdiction Case #:** ZPAC0098-19
Site Address: 19855 SE Sunnyside Rd, Damascus, OR	**Legal Description:** 02S 03E 005D **Tax Lot(s):** 01900
State Highway: OR 212	**Mileposts:** 2.50

The site of this proposed land use action is adjacent to OR 212 (Clackamas-Boring Highway). ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation. **Please direct the applicant to the District Contact indicated below to determine permit requirements and obtain application information.**

COMMENTS/FINDINGS

ODOT has reviewed the submitted materials for the Parr Lumber facility in Damascus. The proposal includes a new wholesale store in the approximate location of an existing building and warehouse. Additional lots will be used for lumber storage, loading, staging, drainage fields, parking, and stormwater management.

ODOT has concerns regarding impacts to the intersection of OR 212 and SE Sunnyside Road as well as the intersection of OR 212 and SE Foster Road. ODOT recommends the County require a traffic impact analysis (TIA) that includes both of these intersections in the scope. Additionally, the TIA should address site circulation and crash rates within the vicinity of the proposed development.

All alterations within the State highway right of way are subject to the ODOT Highway Design Manual (HDM) standards. Alterations along the State highway but outside of ODOT right-of-way may also be subject to ODOT review pending its potential impact to safe operation of the highway. If proposed alterations deviate from ODOT standards a Design Exception Request must be prepared by a licensed engineer for review by ODOT Technical Services. Preparation of a Design Exception request does not guarantee its ultimate approval. Until more detailed plans have been reviewed, ODOT cannot make a determination whether design elements will require a Design Exception.

Note: Design Exception Requests may take up to 3 months to process.

All ODOT permits and approvals must reach 100% plans before the District Contact will sign-off on a local jurisdiction building permit, or other necessary requirement prior to construction.

ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL

Traffic Impacts

☒ The applicant shall submit a traffic impact analysis to assess the impacts of the proposed use on the State highway system. The analysis must be conducted by a Professional Engineer registered in Oregon. **Contact the ODOT Traffic representative identified below and the local jurisdiction to scope the study.**

Please send a copy of the Land Use Notice 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: Kate Wihtol	503.731.3049 Kate.H.WIHTOL@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 abraham.tayar@odot.state.or.us
District Contact: Loretta Kieffer	503.667.7441 loretta.l.kieffer@odot.state.or.us

SUNRISE WATER
AUTHORITY

RESOLUTION 2019-07

A RESOLUTION OF SUNRISE WATER AUTHORITY ANNOUNCING THE INFEASIBILITY OF NEW SERVICE ABOVE ELEVATION 470 FEET AND ADVOCATING FOR THE INCLUSION OF CONCURRENT AVAILABLE AND ADEQUATE WATER SERVICE AS AN APPROVAL CRITERION FOR LAND USE DEVELOPMENT PROPOSALS ON PROPERTIES ABOVE 470 FEET IN ELEVATION IN THE CITY OF HAPPY VALLEY

WHEREAS, the City of Happy Valley is rapidly growing and issuing building permits for properties within the city limits located east of SE 172nd Avenue; and

WHEREAS, the City of Happy Valley is currently undertaking plans to annex and zone new areas for building and development within the Pleasant Valley-North Carver area through its Pleasant Valley-North Carver Comprehensive Plan process; and

WHEREAS, Sunrise Water Authority has limited service capacity above 470-foot elevation in the areas of present and future growth within the City of Happy Valley, especially east of SE 172nd Avenue and throughout the Pleasant Valley-North Carver area that is currently being planned; and

WHEREAS, Sunrise Water Authority's 20-year capital plan does not identify a remedy to this service restriction until such time as the storage, pumping, and transmission capacity in the Sunridge Pressure Zone is expanded;

NOW, THEREFORE, the Board of Commissioners of Sunrise Water Authority hereby resolves that:

1. The Board of Commissioners directs Sunrise Water Authority staff to participate in the Pleasant Valley-North Carver Comprehensive Plan process and coordinate with the City of Happy Valley and other applicable land use authorities in developing appropriate approval criteria pertaining to the availability and adequacy of water service to properties above the 470 foot elevation in: (a) portions of the City of Happy Valley east of SE 172nd Avenue and (b) throughout the Pleasant Valley-North Carver area, in acknowledgement of the current impracticality and infeasibility of water service locations that cannot be adequately served until such time as sufficient storage, pumping, and transmission capacity are built in the future to properly serve those areas.
2. The Board of Commissioners hereby advocates for the City of Happy Valley and all other applicable land use authorities to require the assurance of concurrent adequate and available water service as a formal approval criterion that will apply to all properties above 470 feet in elevation throughout the City of Happy Valley, and as part of the Happy Valley Land Development Code and Comprehensive Plan.
3. The Board of Commissioners reserves the right to comment and recommend approval or denial of any such application for future service in these areas on a case-by-case basis, subject to information and data provided by staff, applicant, or other technically qualified source.

Resolution moved by BARTH Seconded by HAWES.
Adopted by the Board of Commissioners of Sunrise Water Authority this 22 day of May 2019 by the following vote:

Ayes 6 Nays Ø

SUNRISE WATER AUTHORITY

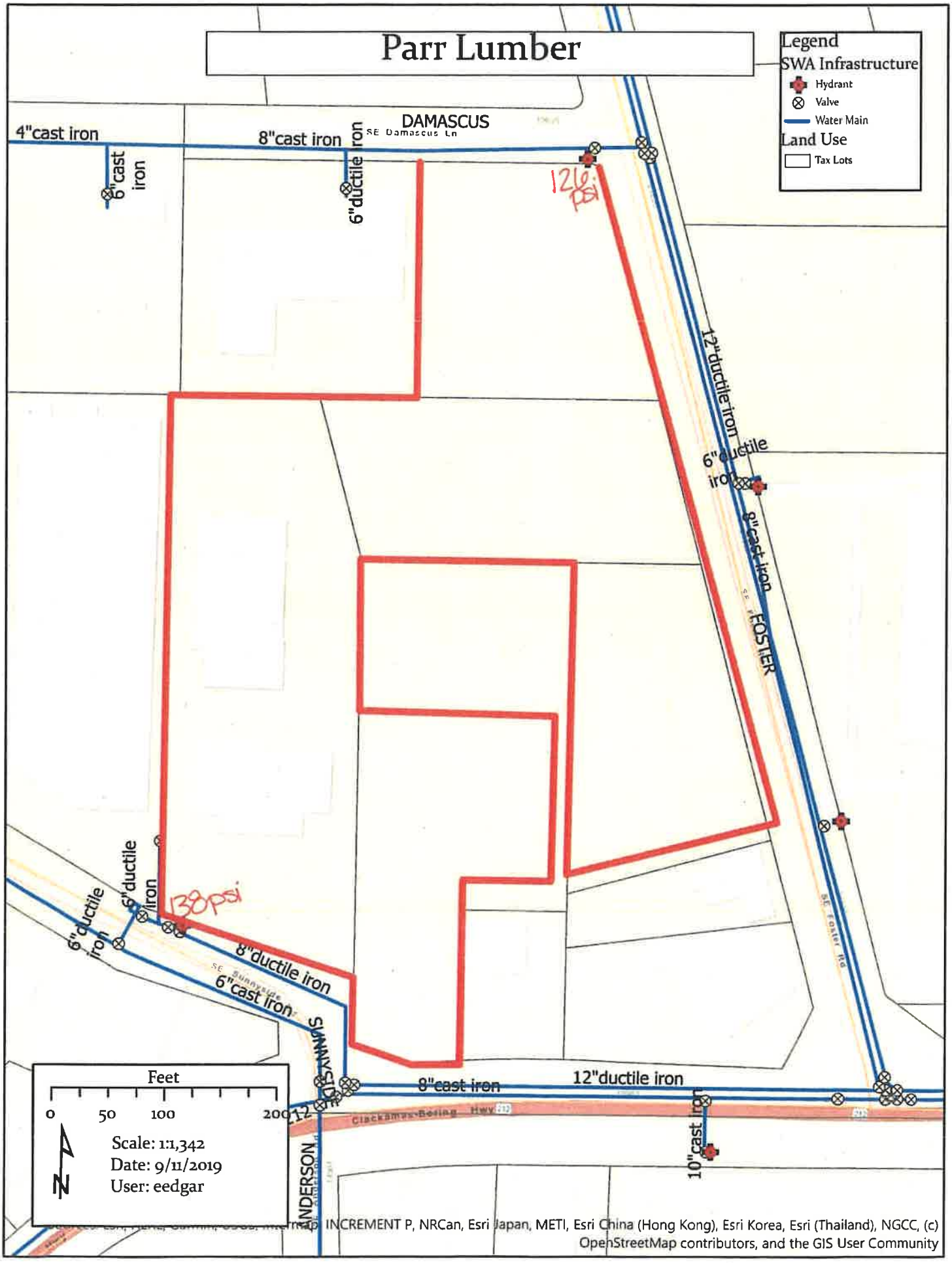
Ernie Platt, Chair

Eric Hofeld, Secretary

SYSTEM DEVELOPMENT CHARGES
with CASH DISCOUNT
AS OF FEBRUARY 1, 2019
PLUS
STANDARD METER INSTALLATION CHARGES
AS OF FEBRUARY 1, 2019

METER SIZE	INSTALL CHARGE	ERU	SDC CHARGE	TOTAL	GALLONS PER MINUTE
5/8 x 3/4"	$700	1.0	$8,989	$9,689	15-20
Full 3/4"	$700	1.5	$13,483	$14,183	30
1"	$800	2.5	$22,472	$23,272	50
1 1/2"	$800	5.0	$44,945	$45,745	100
2"	$1,000	8.0	$71,912	$72,912	160
3"	$2,300	15.0	$134,835	$137,135	
4"	$2,900	25.0	$224,725	$227,625	
6" *		50.0	$449,450		
8" *		80.0	$719,120		
10" *		115.0	$1,033,735		

*The install charges for these meters are calculated individually.


Parr Lumber
Legend
SWA Infrastructure
Hydrant
Valve
Water Main
Land Use
Tax Lots
DAMASCUS
SE Damascus Ln
4"cast iron
8"cast iron
6"cast iron
6"ductile iron
126 psi
12"ductile iron
6"ductile iron
8"cast iron
FOSTER
SE Foster Rd
6"ductile iron
6"ductile iron
138psi
8"ductile iron
6"cast iron
SE Sunnyside
SUNNYSIDE
8"cast iron
12"ductile iron
Clackamas-Boring Hwy
10"cast iron
ANDERSON
Feet
0
50
100
200
Scale: 1:1,342
Date: 9/11/2019
User: eedgar
INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Fire Safety During Construction

The purpose of this document is to outline the minimum requirements in Clackamas Fire District #1 for subdivisions and commercial buildings during construction, alteration, and demolition. The following items, along with the requirements on OFC Chapter 33, and NFPA 241 will be inspected and enforced by the fire district during activities regulated by the referenced standards.

Fire Safety Program: In accordance with NFPA 241 Chapter 7 a fire safety program shall include provisions for: Housekeeping, on-site security, fire protection systems, pre fire coordination with the fire district, fire district notification, protection of existing structures and equipment from exposure fires.

Temporary Offices and Sheds: Separation of the structures shall be in accordance with table 4.2.1 in NFPA 241.

Table 4.2.1 Separation Distances

Temporary Structure Exposing Wall Length		Minimum Separation Distance	
m	ft	m	ft
6	20	9	30
9	30	11	35
12	40	12	40
15	50	14	45
18	60	15	50
>18	>60	18	60

Hot Work: Shall be conducted in accordance with OFC Chapter 35. Permits are not required, but records of the operations should be maintained on site for 48 hours after the hot work has been completed. The fire district shall be notified prior to any hot work operation that will required fire protection or detection systems to be taken out of service. A fire watch is required in areas with combustible materials, and shall continue for no less than 30 minutes after operations are completed, or two hours after roofing operations. The fire watch

shall have a fire extinguisher with a rating of not less than 2-A:20-B:C within 30 feet of the operation. A pre hot work check shall be completed prior to work.

Access: Approved access for fire fighting shall be provided within 100 feet of all fire fighting equipment. (Stand Pipes, FDC's, Hydrants)

Water Supply: Hydrants shall be in service, and available for use prior to the arrival of combustible material on site.

Standpipes: In buildings required to have stand pipes, not less than one shall be provided for use during construction. Hose connections shall be in place adjacent to stairs, and be extended to within one floor of the highest point of construction.

Means of Egress: In buildings greater than 50 feet, or 4 stories in height, shall have at least one temporary **Lighted** stairway. This stairway shall remain clear of obstructions and be readily available for use.

Portable Fire Extinguishers: Structures under construction, alteration, and demolition shall be provided with not less than one 2-A:10-B:C portable fire extinguisher within 75 feet of all portions of the building. Additional fire extinguishers shall be placed at each stairway where combustible materials are present, in every storage shed. Additional fire extinguishers shall be available for other hazardous operations.

Waste Disposal: Accumulations of combustible waste shall be removed for the structure at the end of every work shift.

Storage of Flammable and Combustible Liquids and Gasses: No more than 60 gallons of Class I and II liquids shall be stored in or within 50 feet of the structure. Storage areas shall be marked with "No Smoking" signs. Appropriate NFPA 704 placards shall be in place.

For Additional Information Please Refer to the Following:

Temp Heating equipment OFC Section 3303, NFPA 241 Section 5.2

Smoking Restrictions OFC 3304, NFPA 241 Section 5.3

Explosive Materials OFC 3307, NFPA 241 Section 5.6

Roofing Operations OFC 3317, NFPA 241 Chapter 9

Clackamas Fire District #1
Fire Prevention Office

E-mail Memorandum

To: Anthony Riederer, Planning and Zoning

From: Matt Amos, Fire Inspector, Clackamas Fire District #1

Date: 9/10/2019

Re: Parr Lumber Wholesale ZPAC0098-19

This review is based upon the current version of the Oregon Fire Code (OFC), as adopted by the Oregon State Fire Marshal's Office. The following items should be addressed by the applicant:

A Fire Access and Water Supply plan is required for subdivisions and commercial buildings over 1000 square feet in size or when required by Clackamas Fire District #1. The plan shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, FDC location (if applicable), building square footage, and type of construction. The applicant shall provide fire flow tests per NFPA 291, and shall be no older than 12 months. Work to be completed by experienced and responsible persons and coordinated with the local water authority.

Prior to the start of the project, a pre-construction meeting shall be held with Clackamas Fire District #1. The project manager/contractor is responsible for developing a written fire safety program. This program shall be made available for review by Clackamas Fire District #1. The plan should address the following:

a. **Good Housekeeping**
b. **On-site security**
c. **Fire protection systems**
    i. **For construction operations, installation of new fire protection systems as construction progress**
    ii. **For demolition operations, preservation of existing fire protection systems during demolition**
d. **Development of a pre-fire plan with the local fire department**
e. **Consideration of special hazards resulting from previous occupancies**
f. **Protection of existing structures and equipment from exposure fires resulting from construction, alteration and demolition operations.**

For additional information please refer to the Oregon Fire Code Chapter 33, and NFPA 241.

Access:

2930 S.E. Oak Grove Blvd. • Milwaukie, OR 97267 • 503-742-2660

1. Provide address numbering that is clearly visible from the street.
2. Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants) and an unobstructed vertical clearance of not less than 13 feet 6 inches.

Water Supply:

1) All new buildings shall have a firefighting water supply that meets the fire flow requirements of the Fire Code. Maximum spacing between hydrants on street frontage shall not exceed 500 feet. Additional private on-site fire hydrants may be required for larger buildings. Fire sprinklers may reduce the water supply requirements. There are existing fire hydrants on Sunnyside Rd. and Foster Rd. A report, or test of the hydrant flow will be required to ensure there is an adequate water supply for the new buildings.

CLACKAMAS COUNTY

EBEN POLK, MANAGER
SUSTAINABILITY & SOLID WASTE

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD | OREGON CITY, OR 97045

To: Anthony Riederer

From: Emily Murkland

Subj: ZPAC0098- Parr Lumber

Garbage/Recycling Access and Storage

This review is based upon the current ZDO-1021 requirements adopted by Clackamas County. The purpose of this review is to provide applicants a better understanding of garbage and recycling enclosures, to ensure safe and adequate access and maneuverability. Sustainability and Solid Waste staff are available to assist in the development of garbage and recycling enclosures.

The dimensions of the garbage enclosure space are not made clear in the design plans. Plans with clear dimensional detail illustrating adherence to the requirements of ZDO 1021 are needed. Additionally, it is unclear whether the roadways the proposed enclosure provides sufficient turning radius for a garbage collection vehicle. Plans that clearly outline minimum maneuverability standards (bus 40), are required.

Please feel free to contact me to discuss proposed alternative plans: emurkland@clackamas.us, 503.742.4460.

Further information can be found here: https://www.clackamas.us/recycling/enclosure.html

Further information about the status of your application can be found here: https://accela.clackamas.us/citizenaccess/

Parr Lumber Damascus

Transportation Impact Study

Clackamas County, Oregon

Date:

January 14, 2020

Prepared for:
Bradley Farmer, Parr Lumber
Melinda McMillian, Ankrom Moisan Architecture

Prepared by:
Todd Mobley, PE
Terrington Smith, EI

REGISTERED PROFESSIONAL ENGINEER
54853PE
OREGON
JULY 9, 2001
TODD E. MOBLEY

RENEWS: 12/31/2020

LANCASTER ENGINEERING

321 SW 4th Ave., Suite 400 | Portland, OR 97204 | 503.248.0313 | lancasterengineering.com

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Executive Summary

1. A wholesale building supply store and lumber storage facility are proposed for development on approximately 5.52 acres of property located in Damascus, Oregon.

2. The proposed development is projected to generate a total of 56 trips during the morning peak hour, with 28 trips entering the site and 28 exiting. During the evening peak hour, 45 trips are expected to be generated, with 19 entering the site and 26 exiting.

3. Based on the detailed analysis, the intersection of Highway 212 at SE Sunnyside Road is not projected to operate acceptably based on v/c ratios under any analysis scenario, regardless of the proposed development. Planned large-scale transportation projects will improve operation at this intersection in the future and no mitigation is recommended as part of the proposed development.

4. Based on the review of the crash data, no trends indicative of a safety hazard were identified.

5. Left-turn lane warrants are projected to be met at the intersection of Highway 212 at SE Sunnyside Road upon completion of the proposed development. Installation of a left-turn lane is recommended.

6. Due to significant queues along the southbound leg of SE Sunnyside Road from the intersection with Highway 212, it is recommended that the site access to Sunnyside Road be limited to right turns in and right turns out only.

7. Transportation System Plans for Clackamas County and nearby cities such as Happy Valley call for significant changes to the arterial roadway network, in particular Sunnyside Road west of the project site. These revisions will alter travel routes and result in improved operation at the intersection of Highway 212 and Sunnyside Road. For this reason, there is no identified mitigation at the intersection. Additionally, warrants are satisfied for an eastbound left-turn lane at the intersection, which will improve operation and mitigate project impacts. Additional mitigation beyond the left-turn lane is not recommended and would not be proportional to the project's impacts at the intersection.

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Introduction

A property located in disincorporated Damascus, Oregon under the jurisdiction of Clackamas County has been proposed for the development of a wholesale building supply store and lumber storage facility owned and operated by Parr Lumber. The project site consists of five tax lots, 02205, 02213, 02000, 02001, 01900, which together comprise approximately 5.52 acres.

This report complies with the Transportation Impact Study (TIS) requirements set forth in Section 295 of the *Clackamas County Roadway Standards*[1] and examines the traffic impacts of the proposed development on the transportation system in the vicinity of the project site. The purpose of this report is to ensure safe and efficient performance of the transportation facilities that will be impacted by the proposed development.

All supporting data and calculations are included in the appendix to this report.

Location Description

The project site is located north of Oregon State Highway 212, south of SE Damascus Lane, east of SE Sunnyside Road, and west of SE Foster Road. There are currently two unused buildings onsite that will be removed during construction.

Based on input from Clackamas County Department of Transportation and ODOT, the following intersections have been selected for analysis:

- SE Damascus Lane at SE Foster Road
- Safeway Parking Lot Driveway (across from proposed site access) at SE Foster Road
- State Highway 212 at SE Foster Road
- State Highway 212 at SE Sunnyside Road

Access & On-Site Circulation

A total of four accesses are proposed for the site:

1. One access is proposed to Sunnyside Road. This is the primary public/wholesale entrance to the site and also serves a small parking area associated with the showroom. Access to the yard to the north and east of the building is through a gate, accessible from Sunnyside Road. Due to queuing on Sunnyside Road, this is proposed as a right-in, right-out only access.

[1] *Clackamas County Roadway Standards*, Adopted – April 2018.

2. A full-movement access is proposed to Foster Road, located opposite the north driveway to Safeway, which is on the east side of Foster Road. This driveway will be gated and is the primary access to the lumber yard north and east of the building.
3. A right-in, right-out only access is proposed to Foster Road near the southern end of the property's Foster Road frontage. This will be gated and will serve as secondary access to the lumber yard, providing an egress route for lumber and truss delivery trucks after they navigate through the site. This access makes the southeast portion of the yard functional since the lot would otherwise be isolated without it.
4. An entrance-only access is proposed to Damascus Lane on the north end of the site. This will be a gated access and is also important for delivery functions and on-site circulation.

Vicinity Streets

The proposed study area includes four roadways described in Table 1 below.

Table 1: Vicinity Streets Summary

Roadway	Jurisdiction	Functional Classification	Cross-Section	Speed	On-street Parking	Bicycle Lanes	Curbs	Sidewalks
State Highway 212	ODOT	Principal Arterial	2 to 4 Lanes	35 to 45 mph Posted	Not Permitted	Both Sides	Partial Both Sides	Partial Both Sides
SE Sunnyside Road	Clackamas County	Major Arterial	2 Lanes	40 mph posted	Partially Permitted	None	Partial East Side	Partial East Side
SE Foster Road	Clackamas County	Minor Arterial	2 to 3 Lanes	45 mph Posted	Not Permitted	Both Sides	Partial Both Sides	Partial East Side
SE Damascus Lane	Clackamas County	Local Street	2 Lanes	25 mph Statutory	Permitted Both Sides	None	None	None

Notes: Functional Classification based on the Clackamas County Road Functional Classification Map 5-4a

Study Intersections

A majority of site trips generated by the proposed development are expected to impact four nearby intersections of significance. A summarized description of these intersections is provided in Table 2 on page 4.

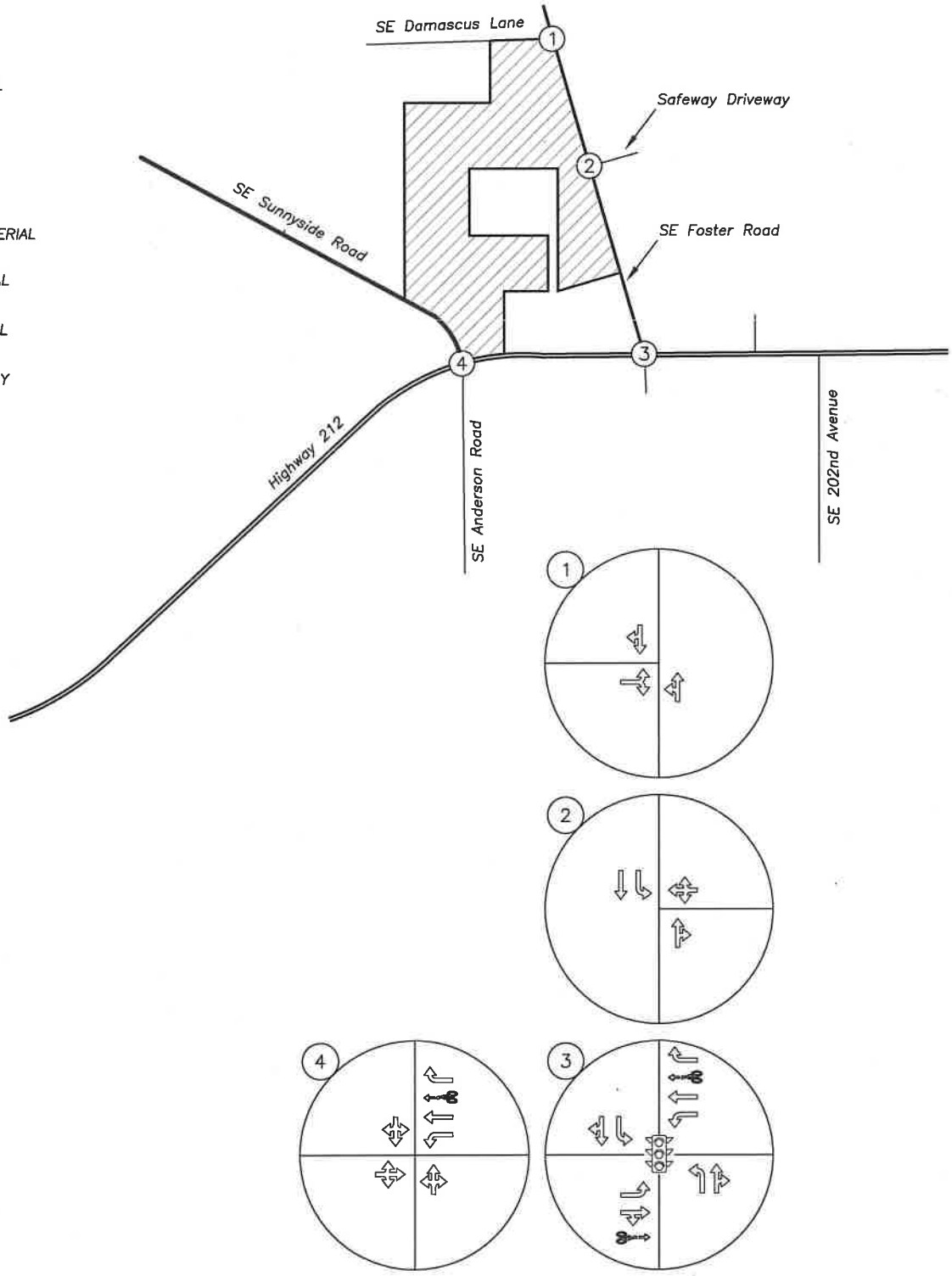
Table 2: Study Intersections

Number	Name	Geometry	Traffic Control	Phasing/Stopped Approaches
1	SE Damascus Lane at SE Foster Road	Three-Legged	Stop-Controlled	EB Stop Controlled Approach
2	Safeway Driveway at SE Foster Road	Three-Legged	Stop-Controlled	WB Stop Controlled Approach
3	SE Foster Road at State Highway 212	Four-Legged	Signalized	Permitted/Protected Left Turns on EB/WB Approaches
4	SE Sunnyside Road at State Highway 212	Four-Legged	Stop-Controlled	NB/SB Stop Controlled

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations is shown in Figure 1 on page 5.

LEGEND

- STUDY INTERSECTION
- STOP SIGN
- TRAFFIC SIGNAL
- BIKE LANE
- PROJECT SITE
- PRINCIPAL ARTERIAL
- MAJOR ARTERIAL
- MINOR ARTERIAL
- LOCAL ROADWAY



VICINITY MAP

no scale

FIGURE 1

Traffic Counts

Traffic counts were conducted at the study intersections on Tuesday, October 29th, 2019 from 4:00 to 6:00 p.m and on Wednesday, October 30th, 2019 from 7:00 to 9:00 a.m. Data corresponding to each intersection's individual morning and evening peak hour was used for analysis.

Figure 2 on page 11 shown the existing traffic volumes at the study intersection during the morning and evening peak hours.

Trip Generation & Distribution

Trip Generation

Trip generation estimates from all types of development are typically obtained from using trip rates published in the *Trip Generation Manual* [2] based on specific land uses. The ITE manual provides data for sites classified under Land Use Code 812, *Building Materials and Lumber Store*, which are described as a "free-standing building that sells hardware, building materials, and lumber".

It should be noted that, unlike the facilities studied for Land Use Code 812 which serve a wide customer base on a retail basis, the Parr Lumber facilities primarily serve wholesale contractors with dedicated accounts. Because of this, a traffic study of an existing Parr Lumber facility in Salem, Oregon was conducted and recorded in a technical memorandum dated June 21st, 2019. Site trips to and from the facility were counted over a 24-hour period to determine the trips generated during the morning and evening peak hours, as well as the weekday total. The technical memorandum is included in the appendix of this report.

Table 3 provides a comparison between the calculated trip rates for the Salem Parr Lumber facility and the trip rates provided in the ITE manual. Both trip rates reflect trips generated during the peak hours of adjacent street traffic.

Table 3: Comparison of Trip Rates Based on 1,000 Square Feet of Gross Floor Area

	AM Peak Hour			PM Peak Hour			Weekday
	In	Out	Total	In	Out	Total	Total
Parr Lumber Facility	50%	50%	1.41	43%	57%	1.13	14.48
ITE Land Use Code 812	63%	47%	1.57	47%	53%	2.06	18.05

[2] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

Based on the collected data at the Salem facility, it is anticipated that Parr Lumber facilities generate significantly less daily traffic as well as during the evening peak hour than what would be estimated using the average rate data in the *Trip Generation Manual*. For the purpose of this analysis, the trip rates obtained from the Salem facility were used to determine the trip generation of the proposed development.

The trip generation estimates are summarized in Table 4 below. Detailed trip generation calculations are included in the appendix of this report.

Table 4: Trip Generation Summary

	Units (1,000 SF)	AM Peak Hour			PM Peak Hour			Weekday
		In	Out	Total	In	Out	Total	Total
Parr Lumber Facility	39.5	28	28	56	19	26	45	572

The trip generation calculations show that the proposed development of the Parr Lumber wholesale store and storage facility is projected to generate a total of 56 trips during the morning peak hour, with 28 trips entering the site and 28 exiting. During the evening peak hour, 45 trips are expected to be generated, with 19 entering the site and 26 exiting. The proposed manufacturing facility is projected to the generate an estimated 572 trips on a typical weekday, with half entering and half exiting the site.

Trip Distribution

The directional distribution of site trips to and from the proposed development was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study area intersection.

The following trip distribution was estimated and used for analysis:

- 50 percent of trips will travel to/from the west along Highway 212
- 35 percent of trips will travel to/from the north along SE Sunnyside Road
- 10 percent of trips will travel to/from the east along Highway 212
- 5 percent of trips will travel to/from the north along SE Foster Road

There are four proposed accesses to the site. The first proposed access is located on the south side of SE Damascus Lane. This access is planned to be gated and entrance only.

The second and third proposed accesses are located along to west side of SE Foster Road and are planned to be gated. The northernmost proposed access along SE Foster Road lies across the street from the northern driveway of a Safeway grocer parking lot and the southernmost access along SE Foster Road is located approximately 400 feet to the south. The southernmost access is anticipated to be restricted to right-in right-

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out ingress/egress only. It was assumed that the majority of trips would exit the site via the northernmost proposed access along SE Foster Road.

The fourth access is located on the east side of SE Sunnyside Road, just north of the intersection of SE Sunnyside Road at Highway 212. This access would directly serve the proposed wholesale building and its parking lot. Approximately 50 percent of total site trips are expected to use this access.

The trip distribution and assignment for the proposed development during the AM and PM peak hours are shown in Figure 3 on page 12.

Operational Analysis

Future Traffic Volumes

To provide analysis of the impact of the proposed development on the existing transportation facilities, an estimation of future traffic volumes is required. In order to calculate future traffic volumes, a growth rate must be applied to the collected traffic volumes.

Since Highway 212 is under the jurisdiction of ODOT, traffic volumes collected for the intersections of Highway 212 at SE Sunnyside Road and SE Foster Road were seasonally adjusted to reflect the thirtieth highest hour as per ODOT's Analysis Procedures Manual. Using a map of seasonal trends, this portion of Highway 212 was determined to show a commuter trend. A seasonal adjustment factor of 1.057 was applied to through volumes on Highway 212.

The growth rate for traffic along Highway 212 was derived using ODOT's 2038 Future Volume Table in accordance with ODOT's Analysis Procedures Manual. Using data corresponding to mileposts 2.44 to 2.63 of ODOT highway number 174, an average linear growth factor of 1.028 was calculated for the two-year build-out scenario. The growth factors were applied to existing traffic volumes along Highway 212, SE Sunnyside Road, and SE Foster Road to obtain 2021 background volumes.

Figure 4 on page 13 shows 2021 background traffic volumes. Figure 5 on page 14 shows 2021 background volumes plus trips generated by the proposed development.

Capacity Analysis

Capacity and delay analyses were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual*[3] (HCM). Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which

[3] Transportation Research Board, *Highway Capacity Manual, 2000.*

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indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay.

The intersections of Highway 212 at SE Sunnyside Road and SE Foster Road are under the jurisdiction of ODOT. The applicable minimum operational standards for these facilities are established in the Clackamas County Comprehensive Plan and are based on the volume-to-capacity (v/c) ratio of the intersection. The v/c ratio compares the actual traffic demand at an intersection to the potential capacity of the intersection to determine the proportion that is utilized by traffic. According to the Clackamas County Comprehensive Plan, intersections with Highway 212 have a maximum allowable v/c ratio of 0.99.[4] Results of the capacity analysis are shown in Table 5 on page 10.

[4] Table 5-2a, *Clackamas County Comprehensive Plan*

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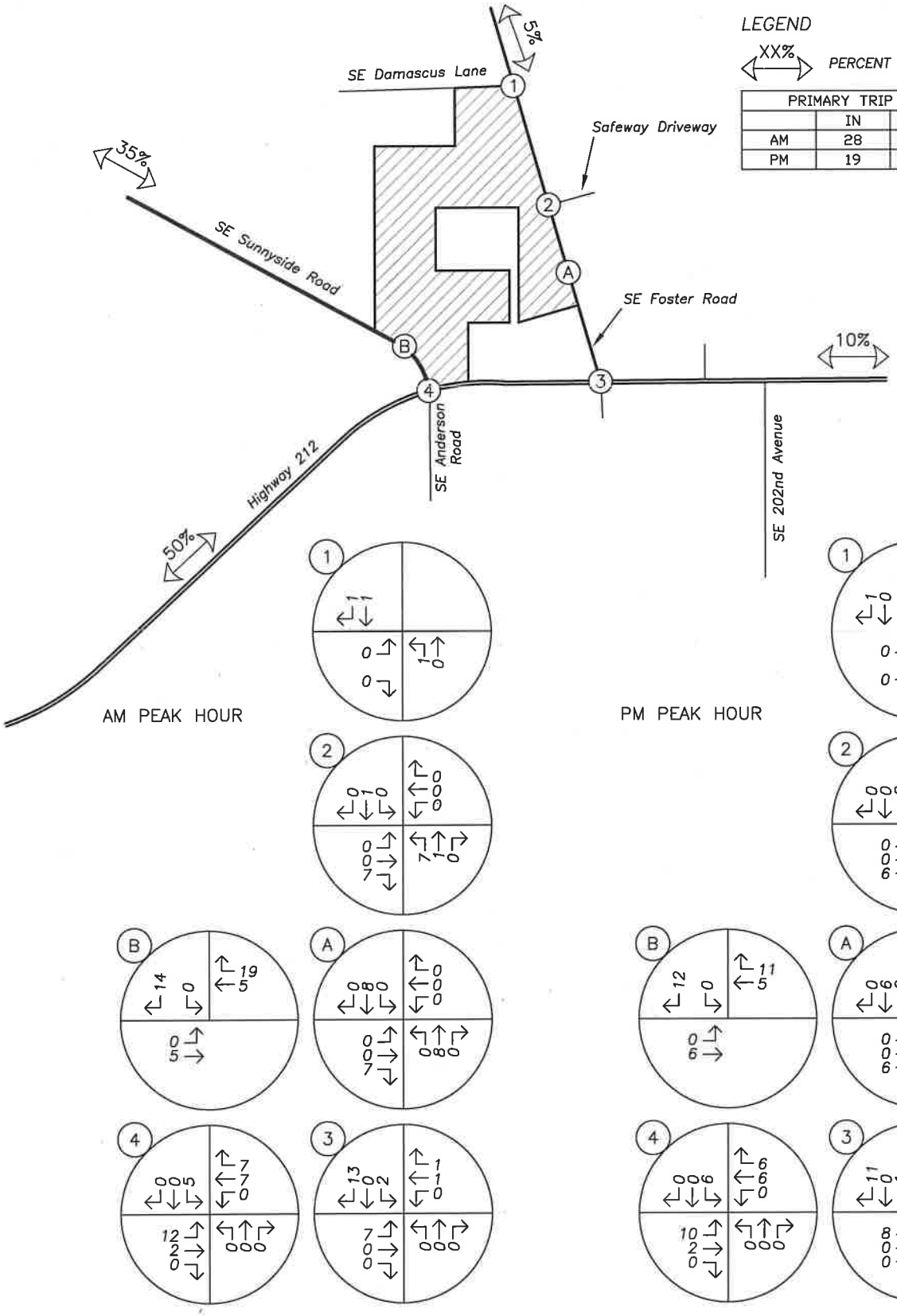
Table 5: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
1 SE Damascus Lane at SE Foster Road						
2019 Existing Conditions	A	8	0.00	A	10	0.01
2021 Background Conditions	A	9	0.01	A	10	0.01
2021 Buildout Conditions	A	9	0.01	A	10	0.01
2 Site Access at SE Foster Road						
2019 Existing Conditions	A	10	0.01	B	11	0.04
2021 Background Conditions	A	10	0.01	B	11	0.04
2021 Buildout Conditions	B	10	0.01	B	11	0.04
3 Highway 212 at SE Foster Road						
2019 Existing Conditions	C	27	0.78	C	33	0.89
2021 Background Conditions	C	30	0.80	C	35	0.92
2021 Buildout Conditions	C	30	0.81	C	35	0.92
4 Highway 212 at SE Sunnyside Road						
2019 Existing Conditions	**F**	**>120**	**>1.00**	**F**	**>120**	**>1.00**
2021 Background Conditions	**F**	**>120**	**>1.00**	**F**	**>120**	**>1.00**
2021 Buildout Conditions	**F**	**>120**	**>1.00**	**F**	**>120**	**>1.00**
A Site Access (Southern) at SE Foster Road						
2021 Buildout Conditions	A	9	0.01	A	10	0.01
B Site Access at SE Sunnyside Road						
2021 Buildout Conditions	B	10	0.02	B	11	0.04

BOLDED results indicate operation above acceptable jurisdictional standards.

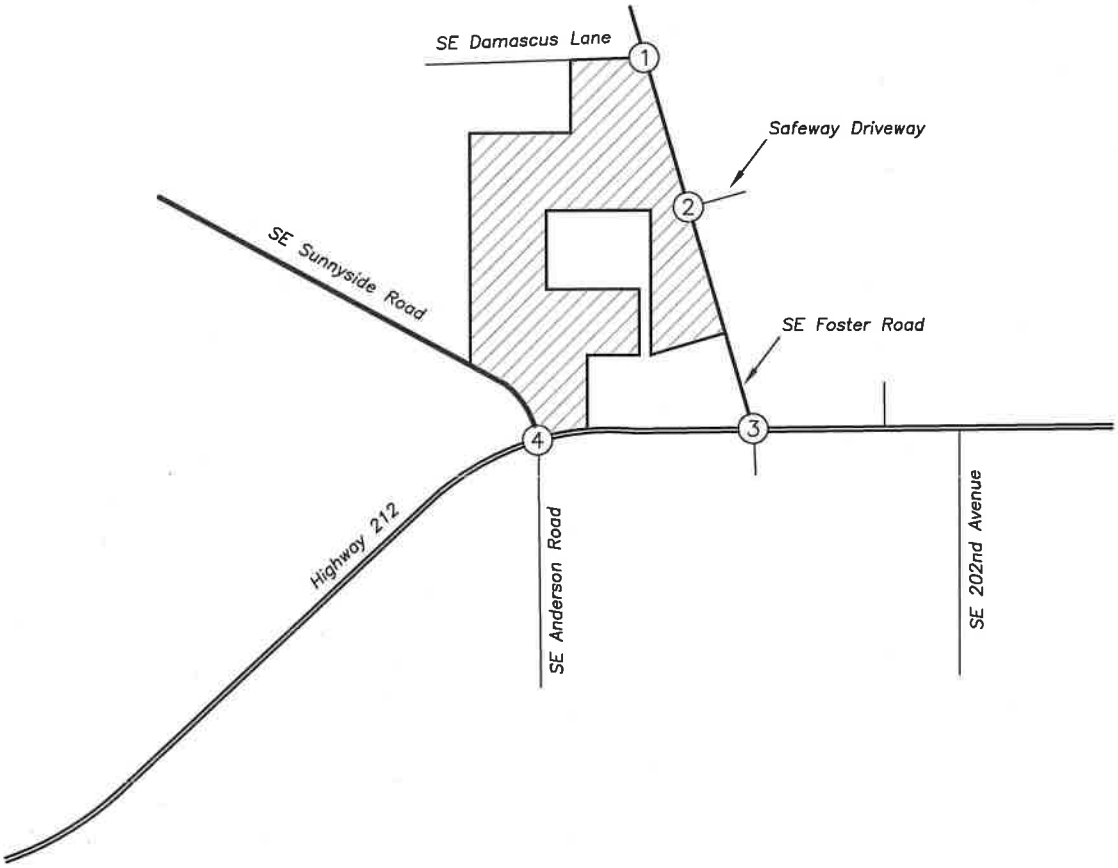
Based on the detailed analysis, the intersection of Highway 212 at SE Sunnyside Road currently operates with a v/c ratio greater than the County's maximum allowable v/c ratio of 0.99. The intersection is not listed to be improved in Clackamas County's Capital Improvement Plan, and is projected to operate over acceptable standards through year 2021 buildout conditions.



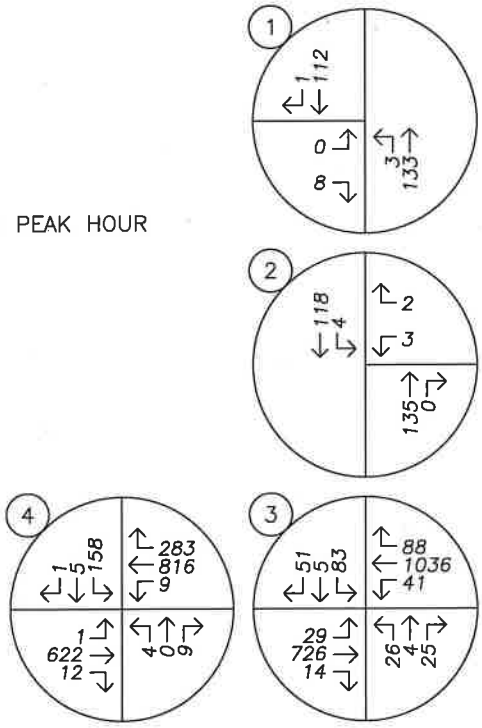
SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Site Trips
AM & PM Peak Hours

no scale

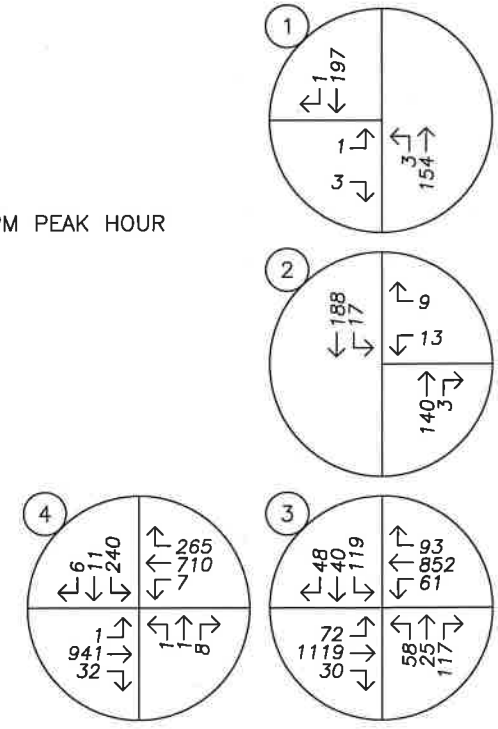
FIGURE 2



AM PEAK HOUR



PM PEAK HOUR

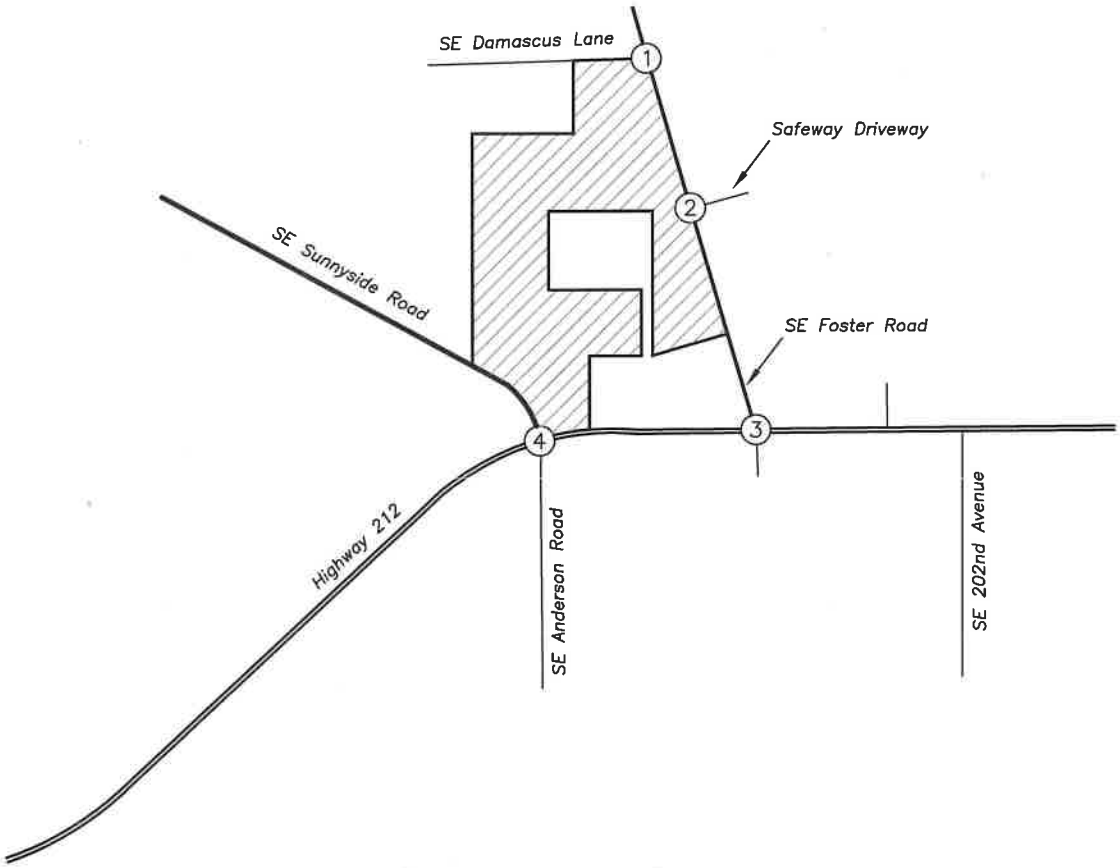


TRAFFIC VOLUMES
Year 2019 Existing Conditions
AM & PM Peak Hours

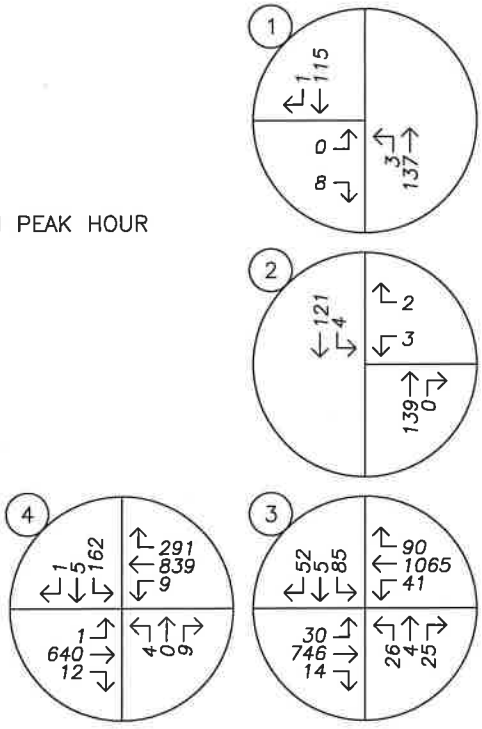
no scale

FIGURE 3

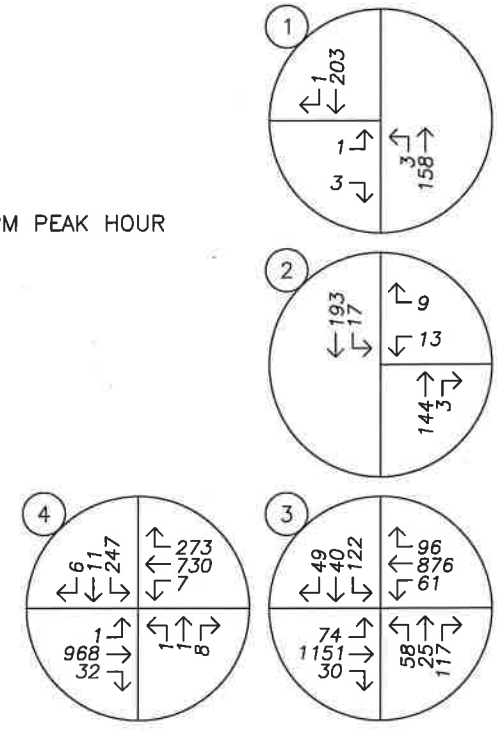
PAGE 12



AM PEAK HOUR



PM PEAK HOUR

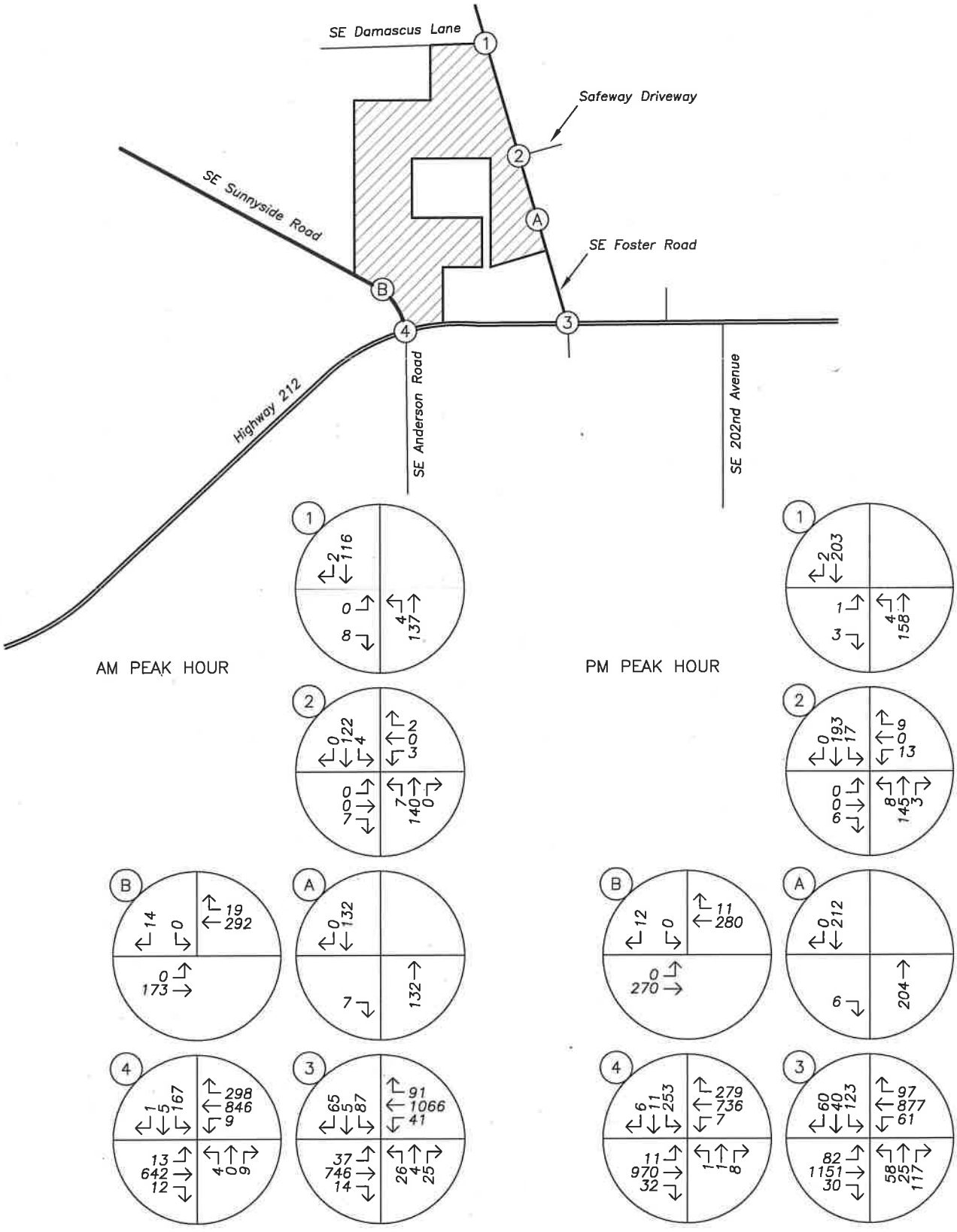


TRAFFIC VOLUMES
2021 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 4

PAGE 13



TRAFFIC VOLUMES
Year 2021 Background Plus Site Trips
AM Peak Hour

no scale

FIGURE 5

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Safety Analysis

Crash Analysis

Using data obtained from ODOT, a review was performed of the most recent five years of available crash data (January 2013 through December 2017). Crash rates were calculated under the common assumption that traffic counted during the evening peak hour represents ten percent of annual average daily traffic (AADT) at each intersection. Crash rates for each intersection were reported as crashes per million entering vehicles (CMEV) and were compared against the average and 90th percentile crash rates for intersections with similar approach configurations and traffic control types in order to determine whether safety mitigation is necessary or appropriate.

For a signalized four-legged intersection in an urban area, ODOT reports an average crash rate of 0.477 CMEV and a 90th percentile crash rate of 0.860 CMEV[5]. Intersections with a crash rate higher than the 90th percentile crash rate of similar intersections should be flagged for further analysis.

With regard to crash severity, ODOT classifies crashes in the following categories:

- Property Damage Only (PDO);
- Possible Injury – Complaint of Pain (Injury C);
- Non-Incapacitating Injury (Injury B);
- Incapacitating Injury – Bleeding, Broken Bones (Injury A); and
- Fatality or Fatal Injury.

Table 6 on page 16 provides a summary of crash types while Table 7 on page 16 summarizes crash severities and rates for each of the study intersections. Detailed crash reports are included in the technical appendix to this report.

[5] Oregon Department of Transportation, *Analysis Procedures Manual Version 2*. September, 2019.

Table 6: Crash Type Summary

	Intersection	Crash Type									Total Crashes
		Rear End	Turn	Angle	Fixed Object	Side Swipe	Head On	Other	Ped	Bike	
1	SE Damascus Lane at SE Foster Road	0	1	0	0	0	0	0	0	0	1
2	Site Access at SE Foster Road	0	0	0	0	0	0	0	0	0	0
3	Highway 212 at SE Foster Road	7	3	1	1	0	0	0	0	0	12
4	Highway 212 at SE Sunnyside Road	3	11	4	0	1	0	1	0	0	20

Table 7: Crash Severity and Rate Summary

	Intersection	Crash Severity					Total Crashes	AADT	Crash Rate
		PDO	C	B	A	Fatal			
1	SE Damascus Lane at SE Foster Road	1	0	0	0	0	1	3,590	0.15
2	Site Access at SE Foster Road	0	0	0	0	0	0	3,700	0.00
3	Highway 212 at SE Foster Road	8	3	1	0	0	12	26,340	0.25
4	Highway 212 at SE Sunnyside Road	7	10	3	0	0	20	22,230	0.49

BOLDED text indicates a crash rate in excess of 0.86 CMEV.

Based on the review of the crash data, no indications of trends or significant safety hazards were identified.

Warrant Analysis

Left-turn lane warrants were examined for the intersections of SE Damascus Lane at SE Foster Road and Highway 212 at SE Sunnyside Road. The left-turn lane warrants that were evaluated implement the design curves developed by the Texas Transportation Institute (TTI), as adopted by the Oregon Department of Transportation in its Analysis Procedures Manual. These turn lane warrants are evaluated based on the number of left-turning vehicles, the number of through travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

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Due to the eastbound left-turn movement experiencing less than 10 left-turning vehicles during an hour, left-turn lane warrants were not found to be met for the intersection of Highway 212 at SE Sunnyside Road under existing conditions. However, since there is a high sum of opposing and advancing volumes, the providing of a left-turn lane could reduce the risk of collisions in the through lanes. Accordingly, further analysis was conducted.

Based on the crash data review, there has been one instance when a stopped eastbound left-turning vehicle was rear-ended by a vehicle in the eastbound through lane. Since this is the only collision that otherwise could have benefited from a left-turn lane, there is no significant trend of collisions that require the installation of a left-turn lane under exiting conditions or year 2021 background conditions before the site is developed.

However, left-turn lane warrants were found to be met under year 2021 buildout conditions due to the eastbound left-turn movement projected to exceed 10 vehicles during an hour. The trip assignment shown in Figure 3 on page 12 shows the site generating 12 eastbound left-turning vehicles during the morning peak hour and 10 during the evening peak hour.

Left-turn lane warrants are not projected ot be met for the intersection of SE Damascus Lane at SE Foster Road under any of the analysis scenarios through the 2021 buildout year of the site.

Detailed left-turn lane warrant calculations are provided in the technical appendix of this report.

Sight Distance Analysis

Sight distance at the intersection of SE Damascus Lane at SE Foster Road was measured and evaluated in accordance with standards established in *A Policy of Geometric Design of Highways and Streets* [6]. For intersection sight distance, the driver's eye is assumed to be at a height of 3.5 feet above the pavement. The oncoming vehicle driver's eye height along the major-street approach is also assumed to be 3.5 feet above the pavement.

All locations along a major roadway from which vehicles are permitted to turn left across opposing traffic should have sufficient sight distance to accommodate the left-turn maneuver. Sight distance for left-turning vehicles on the major-street (SE Foster Road) was measured to ensure the vertical curve in SE Foster Road would not obstruct the necessary sight distance required for left-turning vehicles. Based on a posted speed of 45 mph, the recommended intersection sight distance to ensure a left-turn maneuver is 365 feet (per Case F, *Left Turns from Major Road* in the AASHTO Manual). Sight distance in advance of where vehicles would turn left from SE Foster Road onto SE Damascus Lane was measured to be 400 feet.

Based on the above measurements, adequate sight distance is available at the intersection of SE Damascus Lane at SE Foster Road to ensure safe operation of the intersection. Sight distance from the stop-controlled approach of SE Damascus Lane was not measured since the site driveway will serve entering vehicles only.

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[6] American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011.

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Queueing Analysis

A queueing analysis was conducted for the intersection of Highway 212 at SE Sunnyside Road under year 2021 buildout conditions to determine if southbound vehicle queues along SE Sunnyside Road would interfere with the proposed site access approximately 200 feet north of the intersection. The queue lengths were projected based on the results of a Synchro/SimTraffic simulation, with the reported values based on the 95th percentile queue lengths. The 95th percentile queue is a statistical measurement and means that, with 95 percent confidence, the average maximum queue will not exceed this length during the analysis period; however, given this is a statistical measurement based on probability, the 95th percentile queue length may theoretically never be met or observed in the field.

The projected 95th percentile queue lengths rounded to the nearest five feet during the morning peak hour and evening peak hour are 1,455 feet and 1,475 feet, respectively. Detailed queueing analysis worksheets are included in the technical appendix of this report.

Even though queued vehicles would be located on the opposite street side of the proposed access (and would not block the access), access restrictions are recommended to improve safety for drivers entering and exiting the site. If left turns were allowed at the driveway, vehicles entering the access from the southbound approach would need to wait in long queues during the peak hours before having the opportunity to turn left into the site, and vehicles making a left turn out of the site would need to wait until a gap forms in the queue to safely enter the southbound lane of SE Sunnyside Road. Signing and/or striping the driveway to be right-in right-out access only is recommended so that vehicles entering and exiting the site via SE Sunnyside Road will not need to experience these high delays.

Satisfaction of Approval Criteria

Section 1007.07 of the Clackamas County Zoning and Development Ordinance (ZDO) contains applicable transportation concurrency requirements. As stated in section 1007.07(C), adequate volume-to-capacity ratios and minimum level of services are established in the Clackamas County Comprehensive Plan Tables 5-2a and 5-2b.

The study area intersections meet Clackamas County's concurrency standards except for the intersection of Highway 212 at SE Sunnyside Road. For ODOT roadways and intersections in the project study area, the maximum v/c ratio is 0.99 during the PM peak hour. This intersection currently operates at a v/c ratio over 0.99 under all analysis scenarios.

Transportation System Plans for Clackamas County and nearby cities such as Happy Valley call for significant changes to the arterial roadway network, in particular Sunnyside Road west of the project site. These revisions will alter travel routes and result in improved operation at the intersection of Highway 212 and Sunnyside Road. For this reason, there is no identified mitigation at the intersection. Additionally, warrants are satisfied for an eastbound left-turn lane at the intersection, which will improve operation and mitigate project impacts. Additional mitigation beyond the left-turn lane is not recommended and would not be proportional to the project's impacts at the intersection.

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Conclusions

The intersection of Highway 212 and SE Sunnyside Road does not operate acceptably in any analysis scenario, regardless of the proposed lumber facility and wholesale store. Planned large-scale transportation projects will improve operation at this intersection in the future and no mitigation is recommended as part of the proposed development. The remaining intersections are expected to operate acceptably under all analysis scenarios.

An examination of the crash history at the study intersection shows no trends that are indicative of design deficiencies and no significant safety concerns.

Left-turn lane warrants for the intersection of Highway 212 at SE Sunnyside Road are projected to be met under year 2021 buildout conditions. Installation of a left-turn lane is recommended.

Sight distance along SE Foster Road is adequate for vehicles turning left onto SE Damascus Lane.

The queueing analysis shows that high delays could be experienced by vehicles making left turns into and out of the proposed site access along SE Sunnyside Road. Access restrictions are recommended to alleviate delays and improve safety for drivers intending to use this access.

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Appendix

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TRIP GENERATION CALCULATIONS

Land Use: Parr Lumber
Land Use Code: N/A
Variable: Gross Floor Area
Variable Value: 39.5

AM PEAK HOUR

Trip Rate: 1.41

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	28	28	56

PM PEAK HOUR

Trip Rate: 1.13

	Enter	Exit	Total
Directional Distribution	43%	57%	
Trip Ends	19	26	45

WEEKDAY

Trip Rate: 14.48

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	286	286	572

Technical Memorandum

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To: Brad Farmer, Parr Lumber

From: William R. Farley, PE

Date: June 21, 2019

Subject: Parr Lumber
Trip Rate Study

Introduction

This memorandum is written to provide an analysis of trip generation for a Parr Lumber facility and to calculate a rate to determine the number of trips that will be generated by the construction of a new facility. Data was collected at all accesses to a facility located at 4050 Salem Industrial Drive NE in Salem, Oregon, to determine the number of trips that are generated by an existing Parr Lumber facility.

Location Description

The Salem Parr Lumber facility is on approximately 8.04 acres located east of Salem Industrial Drive NE, north of Hyacinth Street NE, and south of Claxter Road NE. The facility has two accesses to Salem Industrial Drive serving customer parking along the front of a 12,565 square-foot customer area and a 20,090 square-foot warehousing area. Gates on the north and south sides of the building serve access to the lumber yard located behind the building where product is stored in the open or under covered areas.

Inside the customer area of the facility, a limited number of tools, appliances, cabinetry, doors, and windows are offered for sale while the warehouse area provides a storage area for larger items and weather-sensitive products. It is estimated that 90 percent of the customers visiting Parr Lumber are account holders and most of the products sold is distributed on company-owned vehicles. The customer area is not anticipated to attract people not visiting the site for other lumber products.

Figure 1 on the following page provides an aerial view of the existing Salem Parr Lumber facility.

Figure 1: Aerial view of the Parr Lumber facility in Salem, OR (image from Google Earth).

Trip Generation

Traffic volumes entering and exiting the Salem Parr Lumber facility were collected over a 24-hour period on Tuesday, May 14th, 2019, in order to identify the daily trip generation of the subject site.

Based on the collected data, the site generated 473 total daily trips with 236 trips entering and 237 trips exiting the facility. During the morning peak period between 7:00 AM and 9:00 AM, the site generated a peak of 46 hourly trips (starting at 8:00 AM) with 23 trips entering and 23 trips exiting. During the evening peak period between 4:00 PM and 6:00 PM, the site generated a peak of 37 hourly trips (starting at 4:00 PM) with 16 trips entering and 21 trips exiting.

Detailed data for traffic volumes captured at each of the site accesses is included in the technical appendix to this report.

Trip Rate

A trip rate was calculated using the size of the Salem Parr Lumber facility and the trip generation collected at the site accesses. Based on the gross floor area of the customer and warehousing areas, the Salem Parr Lumber facility is calculated to be generating a daily total of 14.48 trips per 1,000 square feet of gross floor area. During the morning peak hour, the facility is estimated to be generating 1.41 trips per 1,000 square feet of building area with 50 percent of trips entering the site and 50 percent of trips exiting. During the evening peak hour, the facility is estimated to be generating 1.13 trips per 1,000 square feet of building area with 43 percent of trips entering and 57 percent of trips exiting the site.

Since a significant amount of the site is dedicated to outdoor storage, trip rates were also calculated based on the size of the property. Based on the 8.04-acre site, the Salem Parr Lumber facility is calculated to be generating a daily total of 58.53 trips per acre of property. During the morning peak hour, the facility is estimated to be generating 5.72 trips per acre and during the evening peak hour, the facility is estimated to be generating 4.60 trips per acre.

Comparison to ITE Rates

The calculated trip rates for the Salem Parr Lumber facility was compared to data provided in the *Trip Generation Manual*[1] to see if the data is similar. The ITE manual provides data for site classified under Land Use Code 812, *Building Materials and Lumber Store*, which are described as a "free-standing building that sells hardware, building materials, and lumber. The lumber may be stored in the main building, yard, or storage shed." The data for the manual was surveyed in the 1980s and 2010s in California, New York, and Texas and is broken down into trip rates based on the gross floor area of the building (not including outside storage areas) or on the number of employees. The typical gross floor area of sites studied in the manual range from approximately 3,000 to 48,000 square feet, with approximately 75 percent of the data being from stores with less than 20,000 square feet.

It should be noted that, unlike the facilities studied for Land Use Code 812 which serve a wide customer base, the Parr Lumber facilities primarily serve contractors with dedicated accounts.

The ITE manual provides an average weekday trip rate of 18.05 trips per 1,000 square feet of gross floor area. During the morning peak hour of adjacent street traffic between 7:00 AM and 9:00 AM, the manual provides an average trip rate of 1.57 trips per 1,000 feet of gross floor area with 63 percent of the trips entering the site and 37 percent of trips exiting. During the evening peak hour of adjacent street traffic between 4:00 PM and 6:00 PM, the manual provides an average trip rate of 2.06 trips per 1,000 square feet of gross floor area with 47 percent of trips entering and 53 percent of trips exiting the site.

---

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

No comparable data for acreage is provided by the ITE manual.

Table 1 below provides a comparison between the calculated trip rates for the Salem Parr Lumber facility and the trip rates provided in the ITE manual.

Table 1: Comparison of Trip Rates Based on 1,000 Square Feet of Gross Floor Area

	AM Peak Hour			PM Peak Hour			Weekday
	Enter	Exit	Total	Enter	Exit	Total	Total
Parr Lumber Facility	50%	50%	1.41	43%	57%	1.13	14.48
ITE Land Use 812	63%	47%	1.57	47%	53%	2.06	18.05

Conclusions

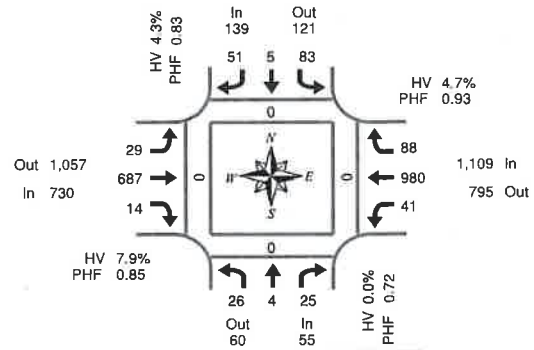
Based on the collected data at the Salem facility, it is anticipated that Parr Lumber generates significantly less daily traffic as well as during the evening peak hour than what would be estimated using the average rate data in the *Trip Generation Manual.*

If you have any questions regarding the analysis or if you need any further assistance, please don't hesitate in contacting us.

Total Vehicle Summary

All Traffic Data Services Inc

Clay Carney
(503) 833-2740



Peak Hour Summary
7:30 AM to 8:30 AM

SE Foster Rd & Hwy 212

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	0	3	0	9	0	5	0	1	36	2	0	2	75	5	0	141	0	0	0	0
7:05 AM	1	2	5	0	6	1	3	0	0	41	1	0	2	97	8	0	167	0	0	0	0
7:10 AM	2	0	2	0	8	0	4	0	6	41	2	0	3	76	5	0	149	0	0	0	0
7:15 AM	0	0	4	0	3	0	3	0	4	43	3	0	3	87	10	0	160	0	0	0	0
7:20 AM	2	2	2	0	10	1	7	0	1	42	1	0	1	81	5	0	155	0	0	0	0
7:25 AM	3	1	3	0	6	0	3	0	2	36	0	0	6	82	10	0	152	0	0	0	0
7:30 AM	2	0	0	0	10	0	5	0	5	51	3	0	4	88	9	0	177	0	0	0	0
7:35 AM	2	2	2	0	4	0	3	0	3	51	2	0	3	96	8	0	176	0	0	0	0
7:40 AM	4	0	4	0	9	2	9	0	0	52	1	0	3	84	4	0	172	0	0	0	0
7:45 AM	4	0	1	0	6	0	5	0	6	63	0	0	3	82	7	0	177	0	0	0	0
7:50 AM	4	0	0	0	3	0	6	0	3	53	1	0	3	68	8	0	149	0	0	0	0
7:55 AM	1	0	0	0	8	0	1	0	3	77	1	0	1	92	5	0	189	0	0	0	0
8:00 AM	1	1	3	0	9	1	1	0	2	73	1	0	6	74	12	0	184	0	0	0	0
8:05 AM	1	0	6	0	9	0	2	0	2	41	0	0	1	81	9	0	152	0	0	0	0
8:10 AM	1	1	2	0	2	0	2	0	2	49	2	0	5	84	8	0	158	0	0	0	0
8:15 AM	0	0	2	0	6	2	7	0	1	68	1	0	3	85	7	0	182	0	0	0	0
8:20 AM	2	0	3	0	8	0	4	0	1	54	1	0	6	79	5	0	163	0	0	0	0
8:25 AM	4	0	2	0	9	0	6	0	1	55	1	0	3	67	6	0	154	0	0	0	0
8:30 AM	3	2	2	0	7	2	4	0	4	69	0	0	3	75	1	0	172	0	0	0	0
8:35 AM	1	0	1	0	9	2	4	0	8	61	3	0	4	72	8	0	173	0	0	0	0
8:40 AM	1	1	4	0	10	1	2	0	4	55	5	0	5	80	9	0	177	0	0	0	0
8:45 AM	2	2	3	0	5	2	3	0	4	46	0	0	7	71	4	0	149	0	0	0	0
8:50 AM	3	2	2	0	12	1	1	0	3	57	0	0	7	84	5	0	157	0	0	0	0
8:55 AM	3	1	2	0	3	0	1	0	3	48	3	0	5	57	4	0	130	0	0	0	0
Total Survey	50	17	58	0	171	15	91	0	69	1,262	34	0	89	1,897	162	0	3,915	0	0	0	0

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	6	2	10	0	23	1	12	0	7	118	5	0	7	248	18	0	457	0	0	0	0
7:15 AM	5	3	9	0	19	1	13	0	7	121	4	0	10	250	25	0	467	0	0	0	0
7:30 AM	8	2	6	0	23	2	17	0	8	154	6	0	10	268	21	0	525	0	0	0	0
7:45 AM	9	0	1	0	17	0	12	0	12	193	2	0	7	242	20	0	515	0	0	0	0
8:00 AM	3	2	11	0	20	1	5	0	6	163	3	0	12	239	29	0	494	0	0	0	0
8:15 AM	6	0	7	0	23	2	17	0	3	177	3	0	12	231	18	0	499	0	0	0	0
8:30 AM	5	3	7	0	26	5	10	0	16	185	8	0	12	227	18	0	522	0	0	0	0
8:45 AM	8	5	7	0	20	3	5	0	10	151	3	0	19	192	13	0	436	0	0	0	0
Total Survey	50	17	58	0	171	15	91	0	69	1,262	34	0	89	1,897	162	0	3,915	0	0	0	0

Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	55	60	115	0	139	121	260	0	730	1,057	1,787	0	1,109	795	1,904	0	2,033	0	0	0	0
%HV	0.0%				4.3%				7.9%				4.7%				5.7%				
PHF	0.72				0.83				0.85				0.93				0.97				

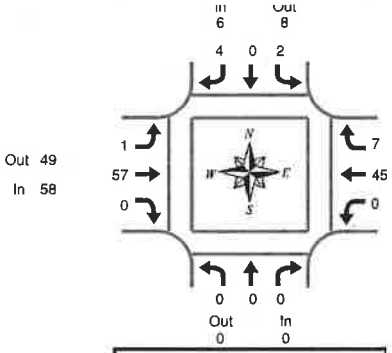
By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	26	4	25	55	83	5	51	139	29	687	14	730	41	980	88	1,109	2,033
%HV	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	7.8%	4.3%	3.4%	8.3%	0.0%	7.9%	0.0%	4.6%	8.0%	4.7%	5.7%
PHF	0.54	0.50	0.57	0.72	0.80	0.63	0.64	0.83	0.60	0.85	0.58	0.85	0.73	0.91	0.76	0.93	0.97

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	28	7	26	0	82	4	54	0	34	586	17	0	34	1,008	84	0	1,964	0	0	0	0
7:15 AM	25	7	27	0	79	4	47	0	33	631	15	0	39	999	95	0	2,001	0	0	0	0
7:30 AM	26	4	25	0	83	5	51	0	29	687	14	0	41	980	88	0	2,033	0	0	0	0
7:45 AM	23	5	26	0	86	8	44	0	37	718	16	0	43	939	85	0	2,030	0	0	0	0
8:00 AM	22	10	32	0	89	11	37	0	35	676	17	0	55	889	78	0	1,951	0	0	0	0

Heavy Vehicle Summary

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



SE Foster Rd & Hwy 212

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	1	0	1	0	2	0	2	3
7:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
7:10 AM	0	0	0	0	1	0	0	1	0	1	0	1	0	3	0	3	5
7:15 AM	0	0	0	0	0	0	0	0	0	5	0	5	0	3	1	4	9
7:20 AM	0	0	0	0	1	0	1	2	0	2	0	2	0	1	0	1	5
7:25 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	4	0	4	5
7:30 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	2	0	2	6
7:35 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
7:40 AM	0	0	0	0	1	0	0	1	0	3	0	3	0	0	1	1	5
7:45 AM	0	0	0	0	1	0	0	1	0	5	0	5	0	5	1	6	12
7:50 AM	0	0	0	0	0	0	1	1	0	6	0	6	0	6	1	7	14
7:55 AM	0	0	0	0	0	0	0	0	1	8	0	9	0	4	0	4	13
8:00 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	1	2	3	7
8:05 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	5	1	6	9
8:10 AM	0	0	0	0	0	0	0	0	0	5	0	5	0	3	0	3	8
8:15 AM	0	0	0	0	0	0	1	1	0	11	0	11	0	6	0	6	18
8:20 AM	0	0	0	0	0	0	1	1	0	3	0	3	0	4	0	4	8
8:25 AM	0	0	0	0	0	0	1	1	0	3	0	3	0	8	1	9	13
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	6	0	6	8
8:35 AM	0	0	0	0	2	0	0	2	2	2	0	4	0	3	2	5	11
8:40 AM	0	0	0	0	0	0	0	0	0	5	0	5	1	5	2	8	13
8:45 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	5	2	7	10
8:50 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	5	1	6	10
8:55 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	5
Total Survey	0	0	0	0	6	0	5	11	4	87	0	91	1	84	15	100	202

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

Interval Start TIme	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	1	0	0	1	0	3	0	3	0	6	0	6	10
7:15 AM	0	0	0	0	1	0	1	2	0	8	0	8	0	8	1	9	19
7:30 AM	0	0	0	0	1	0	0	1	0	9	0	9	0	3	1	4	14
7:45 AM	0	0	0	0	1	0	1	2	1	19	0	20	0	15	2	17	39
8:00 AM	0	0	0	0	0	0	0	0	0	12	0	12	0	9	3	12	24
8:15 AM	0	0	0	0	0	0	3	3	0	17	0	17	0	18	1	19	39
8:30 AM	0	0	0	0	2	0	0	2	2	9	0	11	1	14	4	19	32
8:45 AM	0	0	0	0	0	0	0	0	1	10	0	11	0	11	3	14	25
Total Survey	0	0	0	0	6	0	5	11	4	87	0	91	1	84	15	100	202

Heavy Vehicle Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Hwy 212			Westbound Hwy 212			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	6	8	14	58	49	107	52	59	111	116
PHF	0.00			0.50			0.73			0.68			0.74

By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	2	0	4	6	1	57	0	58	0	45	7	52	116
PHF	0.00	0.00	0.00	0.00	0.25	0.00	0.33	0.50	0.25	0.75	0.00	0.73	0.00	0.63	0.58	0.68	0.74

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

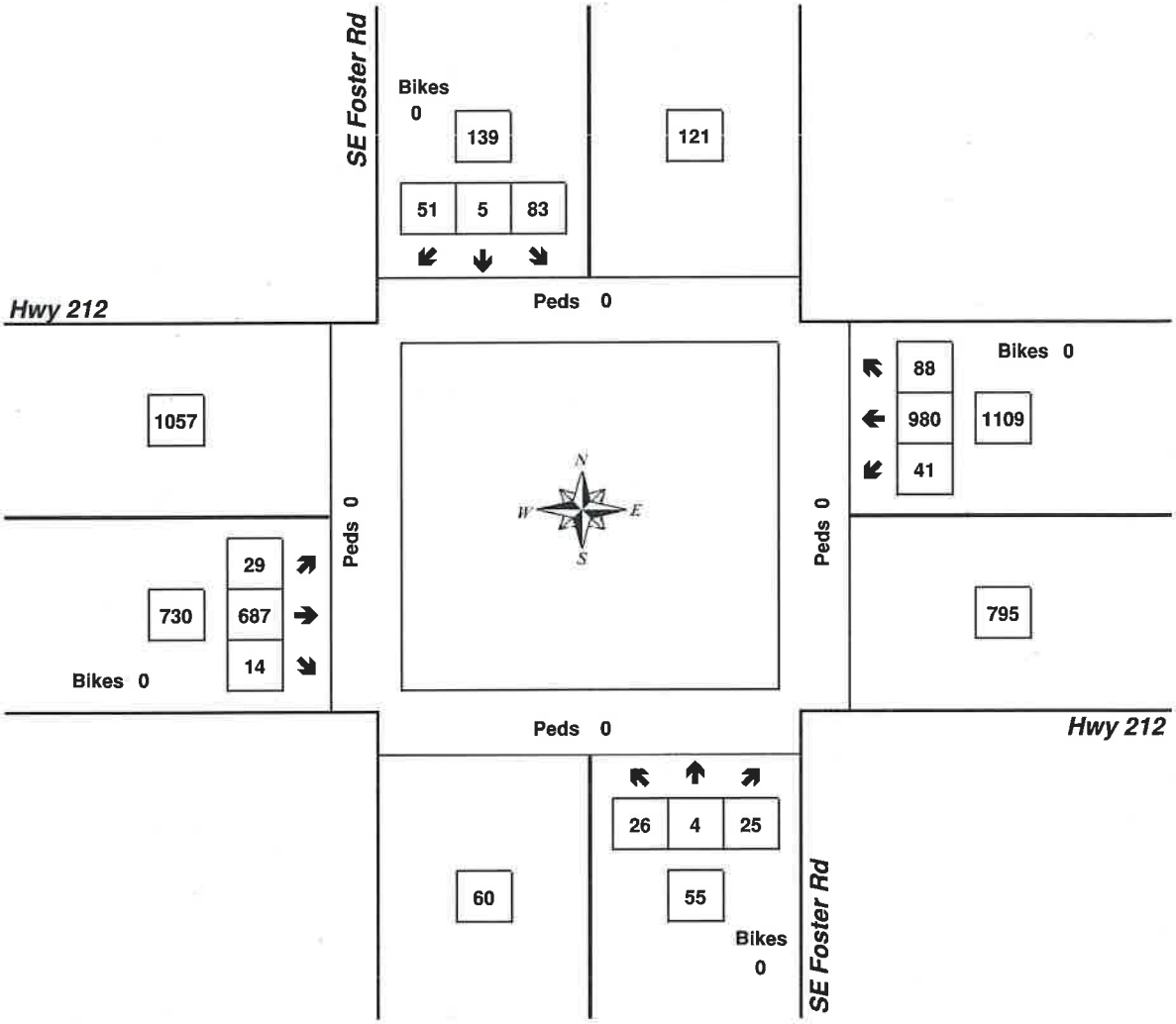
Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	4	0	2	6	1	39	0	40	0	32	4	36	82
7:15 AM	0	0	0	0	3	0	2	5	1	48	0	49	0	35	7	42	96
7:30 AM	0	0	0	0	2	0	4	6	1	57	0	58	0	45	7	52	116
7:45 AM	0	0	0	0	3	0	4	7	3	57	0	60	1	56	10	67	134
8:00 AM	0	0	0	0	2	0	3	5	3	48	0	51	1	52	11	64	120

Peak Hour Summary

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

SE Foster Rd & Hwy 212

7:30 AM to 8:30 AM
Wednesday, October 30, 2019

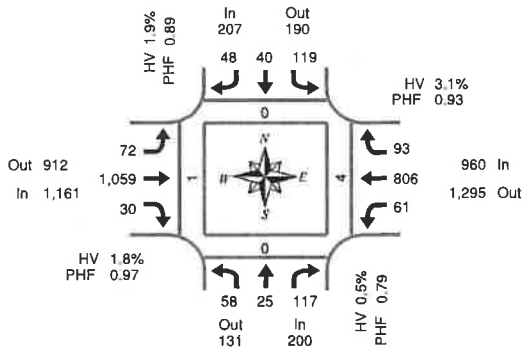


Approach	PHF	HV%	Volume
EB	0.85	7.9%	730
WB	0.93	4.7%	1,109
NB	0.72	0.0%	55
SB	0.83	4.3%	139
Intersection	0.97	5.7%	2,033

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
4:40 PM to 5:40 PM

SE Foster Rd & Hwy 212

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	7	3	10	0	12	3	8	0	6	73	3	0	6	71	3	0	205	0	0	0	0
4:05 PM	4	4	9	0	6	6	6	0	3	95	1	0	3	72	3	0	212	0	0	0	0
4:10 PM	5	1	9	0	10	3	5	0	7	87	3	0	7	78	6	0	221	0	0	0	0
4:15 PM	3	3	19	0	10	4	4	0	5	79	4	0	7	67	12	0	217	0	0	0	0
4:20 PM	5	3	11	0	7	4	3	0	5	96	1	0	3	76	6	0	220	0	0	0	0
4:25 PM	5	2	14	0	7	1	5	0	9	87	2	0	7	62	7	0	208	0	0	0	0
4:30 PM	9	2	6	0	19	1	4	0	3	74	1	0	0	63	10	1	192	0	0	2	0
4:35 PM	4	2	14	0	13	2	7	0	10	77	0	0	9	58	2	0	198	0	0	0	1
4:40 PM	1	1	6	0	4	3	7	0	3	97	3	0	5	83	4	0	217	0	0	2	0
4:45 PM	5	3	12	0	13	3	2	0	4	87	1	0	5	54	7	0	196	0	0	0	0
4:50 PM	5	3	9	0	11	9	4	0	7	81	2	0	8	73	6	0	218	0	0	0	0
4:55 PM	3	3	8	0	5	4	2	0	9	99	6	0	8	61	10	0	218	0	0	0	0
5:00 PM	3	2	8	0	15	2	6	0	7	82	1	0	7	66	5	0	204	0	0	0	0
5:05 PM	6	4	9	0	14	5	5	0	5	87	2	0	3	50	10	0	200	0	0	0	0
5:10 PM	4	3	10	0	2	2	3	0	6	102	1	0	4	81	7	0	225	0	0	0	0
5:15 PM	8	1	18	0	14	4	4	0	3	71	1	0	4	71	9	0	208	0	0	0	0
5:20 PM	3	1	10	0	10	1	4	0	9	93	4	0	4	68	9	0	216	0	0	0	1
5:25 PM	9	2	4	0	10	1	1	0	6	92	3	0	5	74	10	0	217	0	0	2	0
5:30 PM	7	2	15	0	12	4	8	0	7	73	1	0	3	54	5	0	191	0	0	0	0
5:35 PM	4	0	8	0	9	2	2	0	6	95	5	0	5	71	11	0	218	0	0	0	0
5:40 PM	5	3	7	0	19	6	2	0	4	94	1	0	2	54	8	0	205	0	0	0	0
5:45 PM	7	2	6	0	17	2	5	0	8	69	3	0	6	55	11	0	191	0	0	0	0
5:50 PM	4	2	10	0	10	3	1	0	9	84	0	0	5	61	4	0	193	0	0	0	0
5:55 PM	2	0	3	0	11	0	4	0	6	98	1	0	4	49	10	0	188	0	0	0	1
Total Survey	118	52	235	0	260	75	102	0	147	2,072	50	0	120	1,572	175	1	4,978	0	0	6	3

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	16	8	28	0	28	12	19	0	16	255	7	0	16	221	12	0	638	0	0	0	0
4:15 PM	13	8	44	0	24	9	12	0	19	262	7	0	17	205	25	0	645	0	0	0	0
4:30 PM	14	5	26	0	36	6	18	0	16	248	4	0	14	204	16	1	607	0	0	4	1
4:45 PM	13	9	29	0	29	16	8	0	20	267	9	0	21	188	23	0	632	0	0	0	0
5:00 PM	13	9	27	0	31	9	14	0	18	271	4	0	14	197	22	0	629	0	0	0	0
5:15 PM	20	4	32	0	34	6	9	0	18	256	8	0	13	213	28	0	641	0	0	2	1
5:30 PM	16	5	30	0	40	12	12	0	17	262	7	0	10	179	24	0	614	0	0	0	0
5:45 PM	13	4	19	0	38	5	10	0	23	251	4	0	15	165	25	0	572	0	0	0	1
Total Survey	118	52	235	0	260	75	102	0	147	2,072	50	0	120	1,572	175	1	4,978	0	0	6	3

Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	131	331	0	207	190	397	0	1,161	912	2,073	0	960	1,295	2,255	0	2,528	0	0	4	1
%HV	0.5%				1.9%				1.8%				3.1%				2.2%				
PHF	0.79				0.89				0.97				0.93				0.97				

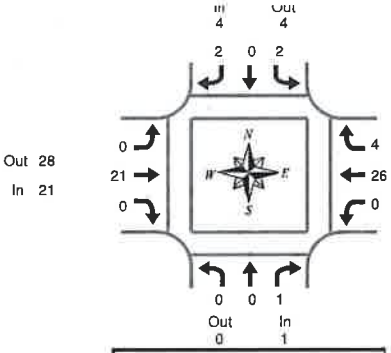
By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	58	25	117	200	119	40	48	207	72	1,059	30	1,161	51	806	93	960	2,528
%HV	0.0%	0.0%	0.9%	0.5%	1.7%	0.0%	4.2%	1.9%	0.0%	2.0%	0.0%	1.8%	0.0%	3.2%	4.3%	3.1%	2.2%
PHF	0.73	0.69	0.77	0.79	0.88	0.63	0.86	0.89	0.78	0.98	0.83	0.97	0.66	0.92	0.83	0.93	0.97

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				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	56	30	127	0	117	43	57	0	71	1,032	27	0	68	818	76	1	2,522	0	0	4	1
4:15 PM	53	31	128	0	120	40	52	0	73	1,048	24	0	66	794	88	1	2,513	0	0	4	1
4:30 PM	60	27	114	0	130	37	49	0	72	1,042	25	0	62	802	89	1	2,509	0	0	6	2
4:45 PM	62	27	118	0	134	43	43	0	73	1,056	28	0	58	777	97	0	2,516	0	0	2	1
5:00 PM	62	22	108	0	143	32	45	0	76	1,040	23	0	52	754	99	0	2,456	0	0	2	2

Heavy Vehicle Summary

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



SE Foster Rd & Hwy 212

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:40 PM to 5:40 PM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	2	1	3	7
4:05 PM	0	0	0	0	0	0	2	2	0	2	0	2	0	3	0	3	7
4:10 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	1	4	6
4:20 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	4
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	5
4:30 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	1	1	2	6
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:40 PM	0	0	0	0	0	0	1	1	0	2	0	2	0	1	0	1	4
4:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
4:50 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	4	4
5:00 PM	0	0	0	0	1	0	1	2	0	0	0	0	0	2	1	3	5
5:05 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	5	1	6	7
5:10 PM	0	0	1	1	0	0	0	0	0	4	0	4	0	3	0	3	8
5:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0	2	3
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:25 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
5:35 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	1	1	3
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2
5:55 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total Survey	0	0	1	1	3	0	4	7	0	42	0	42	0	46	10	56	106

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	2	3	0	8	0	8	0	7	1	8	19
4:15 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	8	2	10	15
4:30 PM	0	0	0	0	0	0	1	1	0	7	0	7	0	4	1	5	13
4:45 PM	0	0	0	0	0	0	0	0	0	8	0	8	0	9	1	10	18
5:00 PM	0	0	1	1	1	0	1	2	0	5	0	5	0	10	2	12	20
5:15 PM	0	0	0	0	1	0	0	1	0	2	0	2	0	5	0	5	8
5:30 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	2	2	4	8
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	1	1	2	5
Total Survey	0	0	1	1	3	0	4	7	0	42	0	42	0	46	10	56	106

Heavy Vehicle Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Hwy 212			Westbound Hwy 212			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	4	4	8	21	28	49	30	24	54	56
PHF	0.25			0.50			0.53			0.58			0.70

By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	1	1	2	0	2	4	0	21	0	21	0	26	4	30	56
PHF	0.00	0.00	0.25	0.25	0.50	0.00	0.50	0.50	0.00	0.53	0.00	0.53	0.00	0.65	0.33	0.58	0.70

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	3	4	0	28	0	28	0	28	5	33	65
4:15 PM	0	0	1	1	1	0	2	3	0	25	0	25	0	31	6	37	66
4:30 PM	0	0	1	1	2	0	2	4	0	22	0	22	0	28	4	32	59
4:45 PM	0	0	1	1	2	0	1	3	0	19	0	19	0	26	5	31	54
5:00 PM	0	0	1	1	2	0	1	3	0	14	0	14	0	18	5	23	41

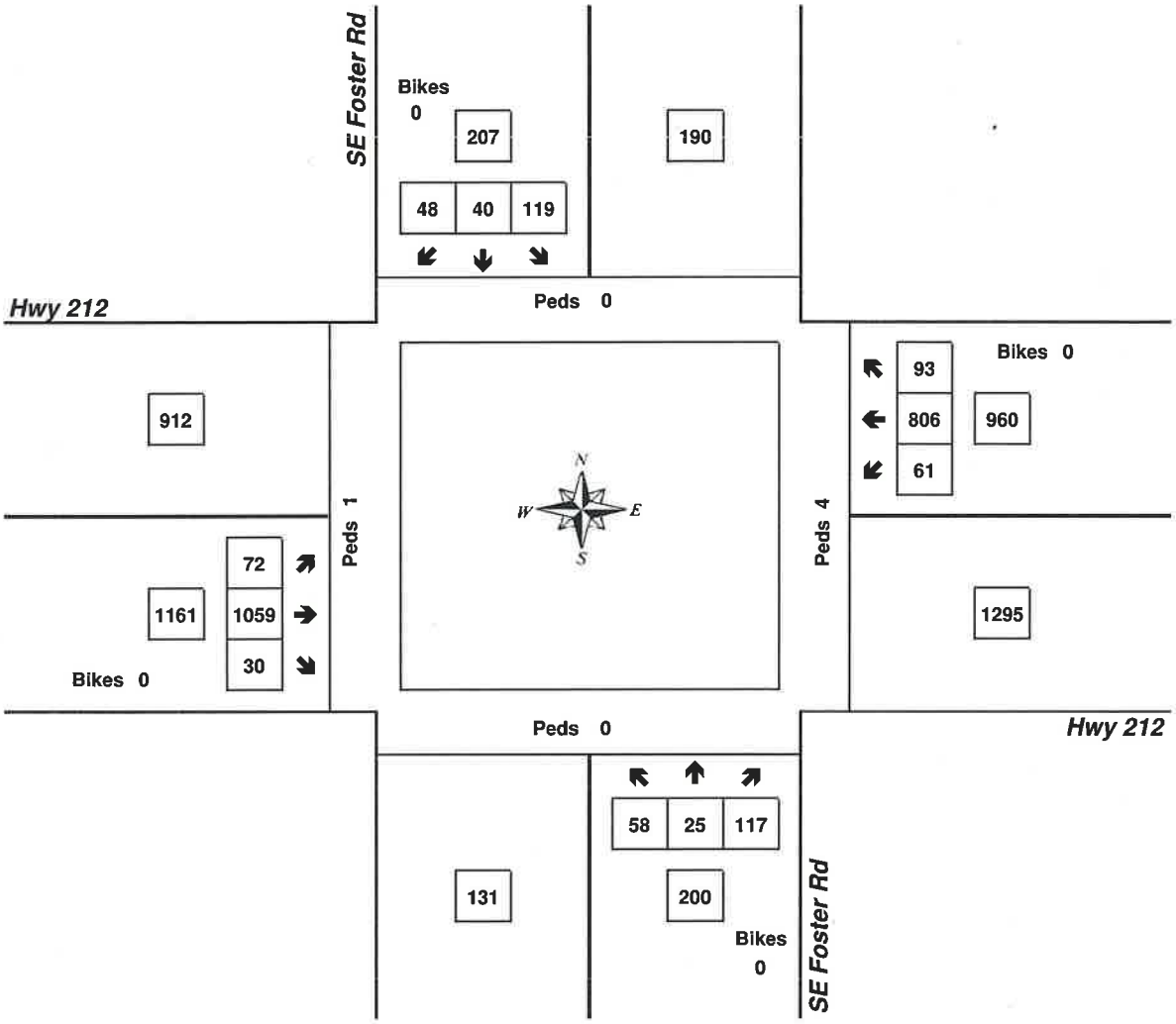
Peak Hour Summary

All Traffic Data
Services Inc.

Clay Carney
(503) 833-2740

SE Foster Rd & Hwy 212

4:40 PM to 5:40 PM
Tuesday, October 29, 2019

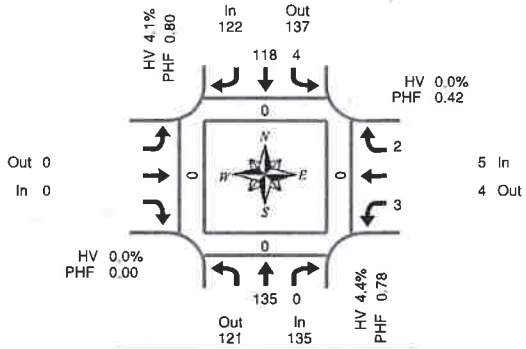


Approach	PHF	HV%	Volume
EB	0.97	1.8%	1,161
WB	0.93	3.1%	960
NB	0.79	0.5%	200
SB	0.89	1.9%	207
Intersection	0.97	2.2%	2,528

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
7:10 AM to 8:10 AM

SE Foster Rd & Safeway Access

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T	Bikes		L	R	Bikes		North	South	East	West					
7:00 AM	13	0	0		0	6	0		0	0	0		19	0	0	0	0				
7:05 AM	8	0	0		0	13	0		0	0	0		21	0	0	0	0				
7:10 AM	12	0	0		0	8	0		0	1	0		21	0	0	0	0				
7:15 AM	11	0	0		0	6	0		1	1	0		19	0	0	0	0				
7:20 AM	9	0	0		0	14	0		0	0	0		23	0	0	0	0				
7:25 AM	12	0	0		2	7	0		0	0	0		21	0	0	0	0				
7:30 AM	15	0	0		0	10	0		0	0	0		25	0	0	0	0				
7:35 AM	16	0	0		0	8	0		0	0	0		24	0	0	0	0				
7:40 AM	6	0	0		0	10	0		1	0	0		17	0	0	0	0				
7:45 AM	8	0	0		1	14	0		0	0	0		23	0	0	0	0				
7:50 AM	13	0	0		1	12	0		0	0	0		26	0	0	0	0				
7:55 AM	13	0	0		0	6	0		1	0	0		20	0	0	0	0				
8:00 AM	6	0	0		0	12	0		0	0	0		18	0	0	0	0				
8:05 AM	14	0	0		0	11	0		0	0	0		25	0	0	0	0				
8:10 AM	14	0	0		0	6	0		0	0	0		20	0	0	0	0				
8:15 AM	9	0	0		0	7	0		1	1	0		18	0	0	0	0				
8:20 AM	6	0	0		0	9	0		1	0	0		16	0	0	0	0				
8:25 AM	6	0	0		0	9	0		0	0	0		15	0	0	0	0				
8:30 AM	7	0	0		0	18	0		0	0	0		25	0	0	0	0				
8:35 AM	6	0	0		0	10	0		0	0	0		16	0	0	0	0				
8:40 AM	11	0	0		1	10	0		0	0	0		22	0	0	0	0				
8:45 AM	14	0	0		0	8	0		0	2	0		24	0	0	0	0				
8:50 AM	11	0	0		0	5	0		1	0	0		17	0	0	0	0				
8:55 AM	9	0	0		0	9	0		0	1	0		19	0	0	0	0				
Total Survey	249	0	0		5	228	0		0	6	6	0	494	0	0	0	0				

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T	Bikes		L	R	Bikes		North	South	East	West					
7:00 AM	33	0	0		0	27	0		0	1	0		61	0	0	0	0				
7:15 AM	32	0	0		2	27	0		1	1	0		63	0	0	0	0				
7:30 AM	37	0	0		0	28	0		1	0	0		66	0	0	0	0				
7:45 AM	34	0	0		2	32	0		1	0	0		69	0	0	0	0				
8:00 AM	34	0	0		0	29	0		0	0	0		63	0	0	0	0				
8:15 AM	21	0	0		0	25	0		2	1	0		49	0	0	0	0				
8:30 AM	24	0	0		1	38	0		0	0	0		63	0	0	0	0				
8:45 AM	34	0	0		0	22	0		1	3	0		60	0	0	0	0				
Total Survey	249	0	0		5	228	0		0	6	6	0	494	0	0	0	0				

Peak Hour Summary
7:10 AM to 8:10 AM

By Approach	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	135	121	256	0	122	137	259	0	0	0	0	0	5	4	9	0	262	0	0	0	0
%HV	4.4%				4.1%				0.0%				0.0%				4.2%				
PHF	0.78				0.80				0.00				0.42				0.94				

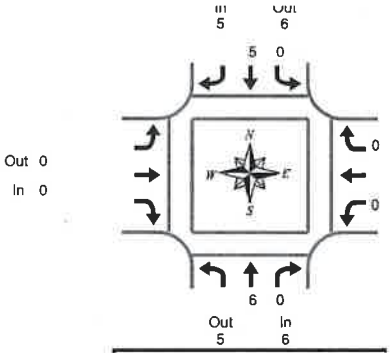
By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	135	0	135		4	118		122				0	3		2	5	262
%HV	NA	4.4%	0.0%	4.4%	0.0%	4.2%	NA	4.1%	NA	NA	NA	0.0%	0.0%	NA	0.0%	0.0%	4.2%
PHF		0.78	0.00	0.78	0.50	0.82		0.80				0.00	0.75		0.25	0.42	0.94

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T	Bikes		L	R	Bikes		North	South	East	West					
7:00 AM	136	0	0		4	114	0		3	2	0		259	0	0	0	0				
7:15 AM	137	0	0		4	116	0		3	1	0		261	0	0	0	0				
7:30 AM	126	0	0		2	114	0		4	1	0		247	0	0	0	0				
7:45 AM	113	0	0		3	124	0		3	1	0		244	0	0	0	0				
8:00 AM	113	0	0		1	114	0		3	4	0		235	0	0	0	0				

Heavy Vehicle Summary

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



SE Foster Rd & Safeway Access

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:10 AM to 8:10 AM

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

Interval Start Time	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	0	0	0	0	0	0			0	0	0	0	0
7:05 AM	0	0	0	0	0	0			0	0	0	0	0
7:10 AM	0	0	0	0	1	1			0	0	0	0	1
7:15 AM	0	0	0	0	0	0			0	0	0	0	0
7:20 AM	1	0	1	0	1	1			0	0	0	0	2
7:25 AM	0	0	0	0	0	0			0	0	0	0	0
7:30 AM	0	0	0	0	0	0			0	0	0	0	0
7:35 AM	0	0	0	0	0	0			0	0	0	0	0
7:40 AM	0	0	0	0	0	0			0	0	0	0	0
7:45 AM	1	0	1	0	1	1			0	0	0	0	2
7:50 AM	0	0	0	0	1	1			0	0	0	0	1
7:55 AM	1	0	1	0	1	1			0	0	0	0	2
8:00 AM	1	0	1	0	0	0			0	0	0	0	1
8:05 AM	2	0	2	0	0	0			0	0	0	0	2
8:10 AM	2	0	2	0	0	0			0	0	0	0	2
8:15 AM	0	0	0	0	1	1			0	0	0	0	1
8:20 AM	0	0	0	0	1	1			0	0	0	0	1
8:25 AM	1	0	1	0	1	1			0	0	0	0	2
8:30 AM	0	0	0	0	1	1			0	0	0	0	1
8:35 AM	1	0	1	0	1	1			0	0	0	0	2
8:40 AM	2	0	2	0	0	0			0	0	0	0	2
8:45 AM	3	0	3	0	0	0			0	0	0	0	3
8:50 AM	1	0	1	0	0	0			0	0	0	0	1
8:55 AM	0	0	0	0	0	0			0	0	1	1	1
Total Survey	16	0	16	0	10	10			0	0	1	1	27

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

Interval Start Time	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	0	0	0	0	1	1			0	0	0	0	1
7:15 AM	1	0	1	0	1	1			0	0	0	0	2
7:30 AM	0	0	0	0	0	0			0	0	0	0	0
7:45 AM	2	0	2	0	3	3			0	0	0	0	5
8:00 AM	5	0	5	0	0	0			0	0	0	0	5
8:15 AM	1	0	1	0	3	3			0	0	0	0	4
8:30 AM	3	0	3	0	2	2			0	0	0	0	5
8:45 AM	4	0	4	0	0	0			0	0	1	1	5
Total Survey	16	0	16	0	10	10			0	0	1	1	27

Heavy Vehicle Peak Hour Summary
7:10 AM to 8:10 AM

By Approach	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	6	5	11	5	6	11	0	0	0	0	0	0	11
PHF	0.38			0.42			0.00			0.00			0.55

By Movement	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	6	0	6	0	5	5			0	0	0	0	11
PHF	0.38	0.00	0.38	0.00	0.42	0.42			0.00	0.00	0.00	0.00	0.55

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

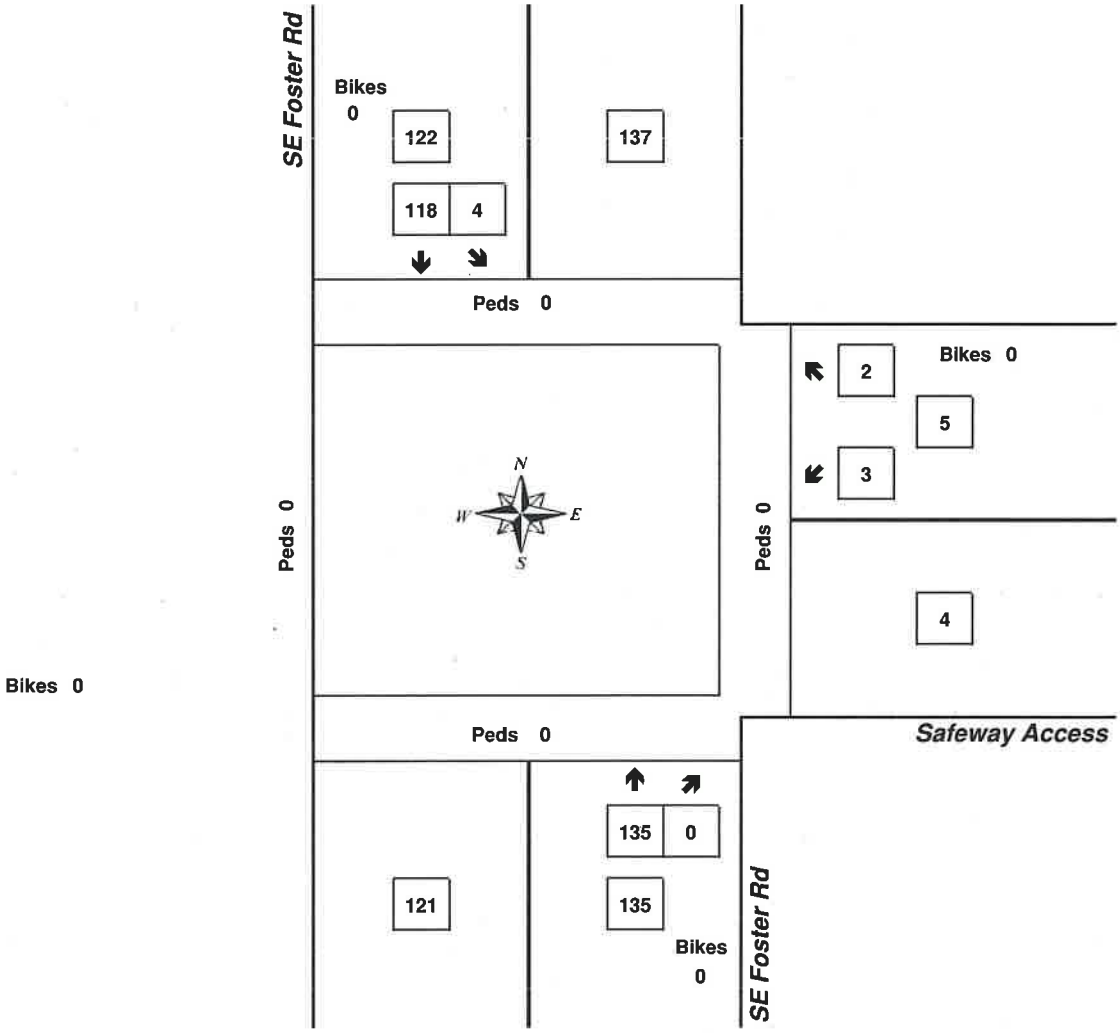
Interval Start Time	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	3	0	3	0	5	5			0	0	0	0	8
7:15 AM	8	0	8	0	4	4			0	0	0	0	12
7:30 AM	8	0	8	0	6	6			0	0	0	0	14
7:45 AM	11	0	11	0	8	8			0	0	0	0	19
8:00 AM	13	0	13	0	5	5			0	0	1	1	19

Peak Hour Summary

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

SE Foster Rd & Safeway Access

7:10 AM to 8:10 AM
Wednesday, October 30, 2019



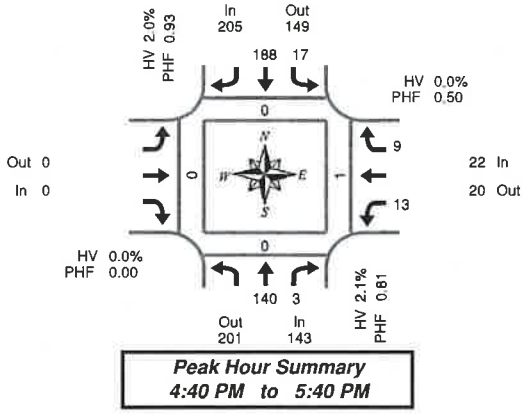
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.42	0.0%	5
NB	0.78	4.4%	135
SB	0.80	4.1%	122
Intersection	0.94	4.2%	262

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
4:40 PM to 5:40 PM

SE Foster Rd & Safeway Access

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T	Bikes		L	T	Bikes		L	R	Bikes			North	South	East	West
4:00 PM	9	0	0		3	8	0				0		6	0	0		26	0	0	0	0
4:05 PM	8	1	0		1	13	0				0		2	1	0		26	0	0	0	0
4:10 PM	8	0	0		1	18	0				0		3	1	0		31	0	0	0	0
4:15 PM	13	0	0		0	13	0				0		1	1	0		28	0	0	0	0
4:20 PM	16	0	0		1	17	0				0		0	1	0		35	0	0	0	0
4:25 PM	8	1	0		1	11	0				0		3	1	0		25	0	0	0	0
4:30 PM	15	0	0		2	15	0				0		3	1	0		36	0	0	0	0
4:35 PM	10	0	0		0	14	1				0		0	1	0		25	0	0	0	0
4:40 PM	5	1	0		3	19	0				0		1	3	0		32	0	0	0	0
4:45 PM	8	0	0		1	16	0				0		3	1	0		29	0	0	0	0
4:50 PM	14	0	0		1	15	0				0		3	0	0		33	0	0	1	0
4:55 PM	10	0	0		1	14	0				0		0	0	0		25	0	0	0	0
5:00 PM	17	0	0		0	17	0				0		0	1	0		35	0	0	0	0
5:05 PM	15	0	0		0	13	0				0		1	0	0		29	0	0	0	0
5:10 PM	12	0	0		1	16	0				0		0	1	0		30	0	0	0	0
5:15 PM	8	1	0		2	15	0				0		0	1	0		27	0	0	0	0
5:20 PM	13	1	0		3	14	0				0		1	0	0		32	0	0	0	0
5:25 PM	18	0	0		0	13	0				0		2	0	0		33	0	0	0	0
5:30 PM	9	0	0		1	17	0				0		2	1	0		30	0	0	0	0
5:35 PM	11	0	0		4	19	0				0		0	1	0		35	0	0	0	0
5:40 PM	10	0	0		1	11	0				0		4	1	0		27	0	0	0	0
5:45 PM	14	0	0		0	14	0				0		0	1	0		29	0	0	0	0
5:50 PM	15	0	0		0	11	0				0		0	0	0		26	0	0	0	0
5:55 PM	11	1	0		1	19	0				0		0	0	0		32	0	0	0	0
Total Survey	277	6	0		28	352	1				0		35	18	0		716	0	0	1	0

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T	Bikes		L	T	Bikes		L	R	Bikes			North	South	East	West
4:00 PM	25	1	0		5	39	0				0		11	2	0		83	0	0	0	0
4:15 PM	37	1	0		2	41	0				0		4	3	0		88	0	0	0	0
4:30 PM	30	1	0		5	48	1				0		4	5	0		93	0	0	0	0
4:45 PM	32	0	0		3	45	0				0		6	1	0		87	0	0	1	0
5:00 PM	44	0	0		1	46	0				0		1	2	0		94	0	0	0	0
5:15 PM	39	2	0		5	42	0				0		3	1	0		92	0	0	0	0
5:30 PM	30	0	0		6	47	0				0		6	3	0		92	0	0	0	0
5:45 PM	40	1	0		1	44	0				0		0	1	0		87	0	0	0	0
Total Survey	277	6	0		28	352	1				0		35	18	0		716	0	0	1	0

Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	143	201	344	0	205	149	354	0	0	0	0	0	22	20	42	0	370	0	0	1	0
%HV		2.1%				2.0%				0.0%				0.0%			1.9%				
PHF		0.81				0.93				0.00				0.50			0.94				

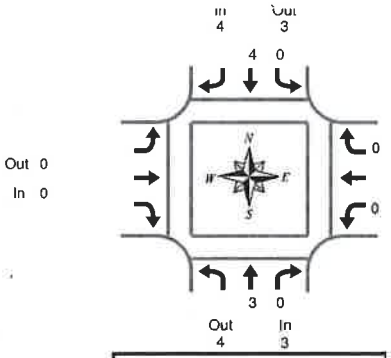
By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	140	3	143		17	188		205				0	13		9	22	370
%HV	2.1%	0.0%	2.1%	NA	0.0%	2.1%	NA	2.0%	NA	NA	NA	0.0%	0.0%	NA	0.0%	0.0%	1.9%
PHF	0.80	0.38	0.81		0.71	0.94		0.93				0.00	0.46		0.56	0.50	0.94

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound Safeway Access				Westbound Safeway Access				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T	Bikes		L	T	Bikes		L	R	Bikes			North	South	East	West
4:00 PM	124	3	0		15	173	1				0		25	11	0		351	0	0	1	0
4:15 PM	143	2	0		11	180	1				0		15	11	0		362	0	0	1	0
4:30 PM	148	3	0		14	181	1				0		14	9	0		366	0	0	1	0
4:45 PM	145	2	0		15	180	0				0		16	7	0		365	0	0	1	0
5:00 PM	153	3	0		13	179	0				0		10	7	0		365	0	0	0	0

Heavy Vehicle Summary

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



SE Foster Rd & Safeway Access

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:40 PM to 5:40 PM

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

Interval Start Time	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	0	0	0	0	0	0			0	0	0	0	0
4:05 PM	1	0	1	0	1	1			0	0	0	0	2
4:10 PM	0	0	0	0	1	1			0	0	0	0	1
4:15 PM	0	0	0	0	0	0			0	0	0	0	0
4:20 PM	0	0	0	0	0	0			0	0	0	0	0
4:25 PM	0	0	0	0	0	0			0	0	0	0	0
4:30 PM	1	0	1	0	0	0			0	0	0	0	1
4:35 PM	0	0	0	0	0	0			0	0	0	0	0
4:40 PM	0	0	0	0	0	0			0	0	0	0	0
4:45 PM	0	0	0	0	1	1			0	0	0	0	1
4:50 PM	0	0	0	0	0	0			0	0	0	0	0
4:55 PM	1	0	1	0	0	0			0	0	0	0	1
5:00 PM	0	0	0	0	2	2			0	0	0	0	2
5:05 PM	1	0	1	0	0	0			0	0	0	0	1
5:10 PM	1	0	1	0	0	0			0	0	0	0	1
5:15 PM	0	0	0	0	1	1			0	0	0	0	1
5:20 PM	0	0	0	0	0	0			0	0	0	0	0
5:25 PM	0	0	0	0	0	0			0	0	0	0	0
5:30 PM	0	0	0	0	0	0			0	0	0	0	0
5:35 PM	0	0	0	0	0	0			0	0	0	0	0
5:40 PM	1	0	1	0	0	0			0	0	0	0	1
5:45 PM	1	0	1	0	0	0			0	0	0	0	1
5:50 PM	0	0	0	0	0	0			0	0	0	0	0
5:55 PM	1	0	1	0	0	0			0	0	0	0	1
Total Survey	8	0	8	0	6	6			0	0	0	0	14

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

Interval Start Time	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	1	0	1	0	2	2			0	0	0	0	3
4:15 PM	0	0	0	0	0	0			0	0	0	0	0
4:30 PM	1	0	1	0	0	0			0	0	0	0	1
4:45 PM	1	0	1	0	1	1			0	0	0	0	2
5:00 PM	2	0	2	0	2	2			0	0	0	0	4
5:15 PM	0	0	0	0	1	1			0	0	0	0	1
5:30 PM	1	0	1	0	0	0			0	0	0	0	1
5:45 PM	2	0	2	0	0	0			0	0	0	0	2
Total Survey	8	0	8	0	6	6			0	0	0	0	14

Heavy Vehicle Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	4	7	4	3	7	0	0	0	0	0	0	7
PHF	0.38			0.50			0.00			0.00			0.44

By Movement	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	3	0	3	0	4	4			0	0	0	0	7
PHF	0.38	0.00	0.38	0.00	0.50	0.50			0.00	0.00	0.00	0.00	0.44

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

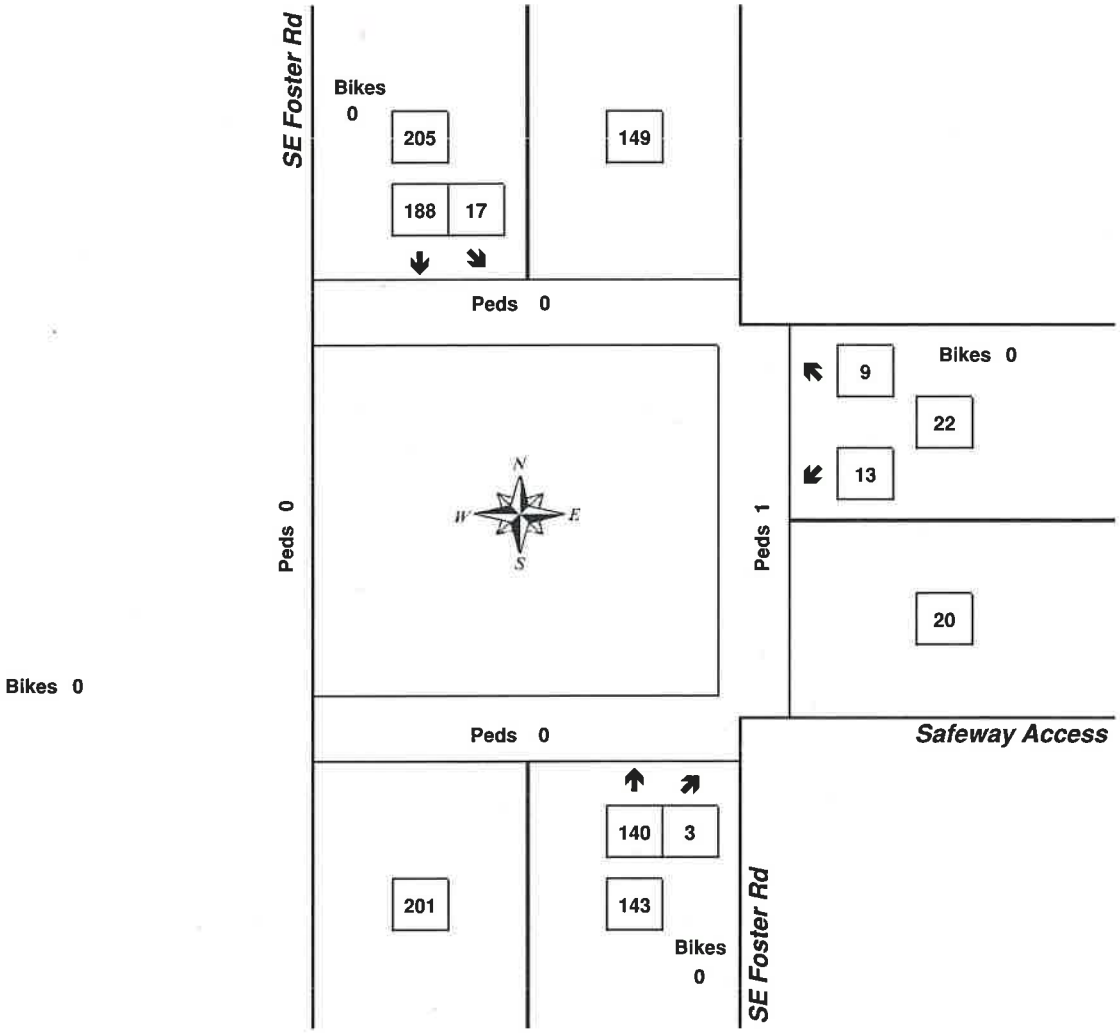
Interval Start Time	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound Safeway Access			Westbound Safeway Access			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	3	0	3	0	3	3			0	0	0	0	6
4:15 PM	4	0	4	0	3	3			0	0	0	0	7
4:30 PM	4	0	4	0	4	4			0	0	0	0	8
4:45 PM	4	0	4	0	4	4			0	0	0	0	8
5:00 PM	5	0	5	0	3	3			0	0	0	0	8

Peak Hour Summary

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

SE Foster Rd & Safeway Access

4:40 PM to 5:40 PM
Tuesday, October 29, 2019

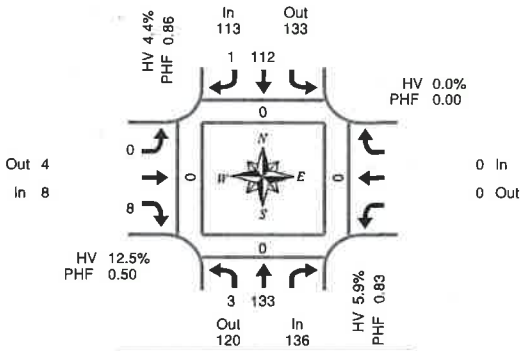


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.50	0.0%	22
NB	0.81	2.1%	143
SB	0.93	2.0%	205
Intersection	0.94	1.9%	370

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
7:05 AM to 8:05 AM

SE Foster Rd & SE Damascus Ln

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
7:00 AM	0	11		0	9	0	0		0		0	0				0	20	0	0	0	0
7:05 AM	1	9		0	10	0	0		0		2	0				0	22	0	0	0	0
7:10 AM	0	12		0	6	0	0		0		1	0				0	19	0	0	0	0
7:15 AM	0	10		0	7	0	0		0		0	0				0	17	0	0	0	0
7:20 AM	0	10		0	14	0	0		0		0	0				0	24	0	0	0	0
7:25 AM	0	11		0	7	0	0		0		1	0				0	19	0	0	0	0
7:30 AM	0	14		0	9	0	0		0		0	0				0	23	0	0	0	0
7:35 AM	0	16		0	8	0	0		0		0	0				0	24	0	0	0	0
7:40 AM	0	6		0	15	0	0		0		1	0				0	22	0	0	0	0
7:45 AM	0	7		0	10	0	0		0		2	0				0	19	0	0	0	0
7:50 AM	1	16		0	7	0	0		0		1	0				0	25	0	0	0	0
7:55 AM	1	8		0	11	0	0		0		0	0				0	20	0	0	0	0
8:00 AM	0	14		0	8	1	0		0		0	0				0	23	0	0	0	0
8:05 AM	0	9		0	10	0	0		0		1	0				0	20	0	0	0	0
8:10 AM	0	13		0	4	0	0		0		0	0				0	17	0	0	0	0
8:15 AM	0	7		0	10	0	0		0		0	0				0	17	0	0	0	0
8:20 AM	0	5		0	7	0	0		0		1	0				0	13	0	0	0	0
8:25 AM	0	9		0	13	0	0		0		1	0				0	23	0	0	0	0
8:30 AM	0	4		0	14	0	0		0		0	0				0	18	0	0	0	0
8:35 AM	0	15		0	10	0	0		0		1	0				0	26	0	0	0	0
8:40 AM	0	12		0	9	0	0		0		0	0				0	21	0	0	0	0
8:45 AM	1	9		0	5	0	0		0		0	0				0	15	0	0	0	0
8:50 AM	0	10		0	10	0	0		0		0	0				0	20	0	0	0	0
8:55 AM	0	9		0	2	0	0		0		0	0				0	11	0	0	0	0
Total Survey	4	246		0	215	1	0		0		12	0				0	478	0	0	0	0

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
7:00 AM	1	32		0	25	0	0		0		3	0				0	61	0	0	0	0
7:15 AM	0	31		0	28	0	0		0		1	0				0	60	0	0	0	0
7:30 AM	0	36		0	32	0	0		0		1	0				0	69	0	0	0	0
7:45 AM	2	31		0	28	0	0		0		3	0				0	64	0	0	0	0
8:00 AM	0	36		0	22	1	0		0		1	0				0	60	0	0	0	0
8:15 AM	0	21		0	30	0	0		0		2	0				0	53	0	0	0	0
8:30 AM	0	31		0	33	0	0		0		1	0				0	65	0	0	0	0
8:45 AM	1	28		0	17	0	0		0		0	0				0	46	0	0	0	0
Total Survey	4	246		0	215	1	0		0		12	0				0	478	0	0	0	0

Peak Hour Summary
7:05 AM to 8:05 AM

By Approach	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	136	120	256	0	113	133	246	0	8	4	12	0	0	0	0	0	257	0	0	0	0
%HV	5.9%				4.4%				12.5%				0.0%				5.4%				
PHF	0.83				0.86				0.50				0.00				0.93				

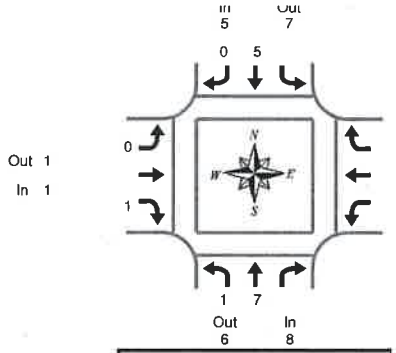
By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd			Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Total
	L	T		Total	T	R	Total	L		R	Total				Total	
Volume	3	133		136	112	1	113	0		8	8				0	257
%HV	33.3%	5.3%	NA	5.9%	NA	4.5%	0.0%	4.4%	0.0%	NA	12.5%	12.5%	NA	NA	NA	0.0%	5.4%
PHF	0.38	0.81		0.83		0.85	0.25	0.86	0.00		0.50	0.50				0.00	0.93

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L		R	Bikes				Bikes		North	South	East	West
7:00 AM	3	130		0	113	0	0		0		8	0				0	254	0	0	0	0
7:15 AM	2	134		0	110	1	0		0		6	0				0	253	0	0	0	0
7:30 AM	2	124		0	112	1	0		0		7	0				0	246	0	0	0	0
7:45 AM	2	119		0	113	1	0		0		7	0				0	242	0	0	0	0
8:00 AM	1	116		0	102	1	0		0		4	0				0	224	0	0	0	0

Heavy Vehicle Summary

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



SE Foster Rd & SE Damascus Ln

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:05 AM to 8:05 AM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
7:00 AM	0	0		0	2	0	2		0		0	0				0	2
7:05 AM	0	0		0	1	0	1		0		0	0				0	1
7:10 AM	0	0		0	0	0	0		0		0	0				0	0
7:15 AM	0	1		1	1	0	1		0		0	0				0	2
7:20 AM	0	0		0	0	0	0		0		0	0				0	0
7:25 AM	0	0		0	0	0	0		0		0	0				0	0
7:30 AM	0	0		0	0	0	0		0		0	0				0	0
7:35 AM	0	0		0	0	0	0		0		0	0				0	0
7:40 AM	0	1		1	2	0	2		0		0	0				0	3
7:45 AM	0	0		0	1	0	1		0		0	0				0	1
7:50 AM	0	2		2	0	0	0		0		1	1				0	3
7:55 AM	1	1		2	0	0	0		0		0	0				0	2
8:00 AM	0	2		2	0	0	0		0		0	0				0	2
8:05 AM	0	1		1	0	0	0		0		0	0				0	1
8:10 AM	0	1		1	0	0	0		0		0	0				0	1
8:15 AM	0	0		0	1	0	1		0		0	0				0	1
8:20 AM	0	0		0	0	0	0		0		1	1				0	1
8:25 AM	0	1		1	0	0	0		0		1	1				0	2
8:30 AM	0	0		0	1	0	1		0		0	0				0	1
8:35 AM	0	3		3	1	0	1		0		0	0				0	4
8:40 AM	0	2		2	0	0	0		0		0	0				0	2
8:45 AM	1	1		2	0	0	0		0		0	0				0	2
8:50 AM	0	0		0	0	0	0		0		0	0				0	0
8:55 AM	0	1		1	0	0	0		0		0	0				0	1
Total Survey	2	17		19	10	0	10		0		3	3				0	32

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
7:00 AM	0	0		0	3	0	3		0		0	0				0	3
7:15 AM	0	1		1	1	0	1		0		0	0				0	2
7:30 AM	0	1		1	2	0	2		0		0	0				0	3
7:45 AM	1	3		4	1	0	1		0		1	1				0	6
8:00 AM	0	4		4	0	0	0		0		0	0				0	4
8:15 AM	0	1		1	1	0	1		0		2	2				0	4
8:30 AM	0	5		5	2	0	2		0		0	0				0	7
8:45 AM	1	2		3	0	0	0		0		0	0				0	3
Total Survey	2	17		19	10	0	10		0		3	3				0	32

Heavy Vehicle Peak Hour Summary
7:05 AM to 8:05 AM

By Approach	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound SE Damascus Ln			Westbound SE Damascus Ln			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	8	6	14	5	7	12	1	1	2	0	0	0	14
PHF	0.33			0.42			0.25			0.00			0.50

By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Total
	L	T		Total	T	R	Total		L		R	Total				Total	
Volume	1	7		8	5	0	5		0		1	1				0	14
PHF	0.25	0.35		0.33	0.42	0.00	0.42		0.00		0.25	0.25				0.00	0.50

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
7:00 AM	1	5		6	7	0	7		0		1	1				0	14
7:15 AM	1	9		10	4	0	4		0		1	1				0	15
7:30 AM	1	9		10	4	0	4		0		3	3				0	17
7:45 AM	1	13		14	4	0	4		0		3	3				0	21
8:00 AM	1	12		13	3	0	3		0		2	2				0	18

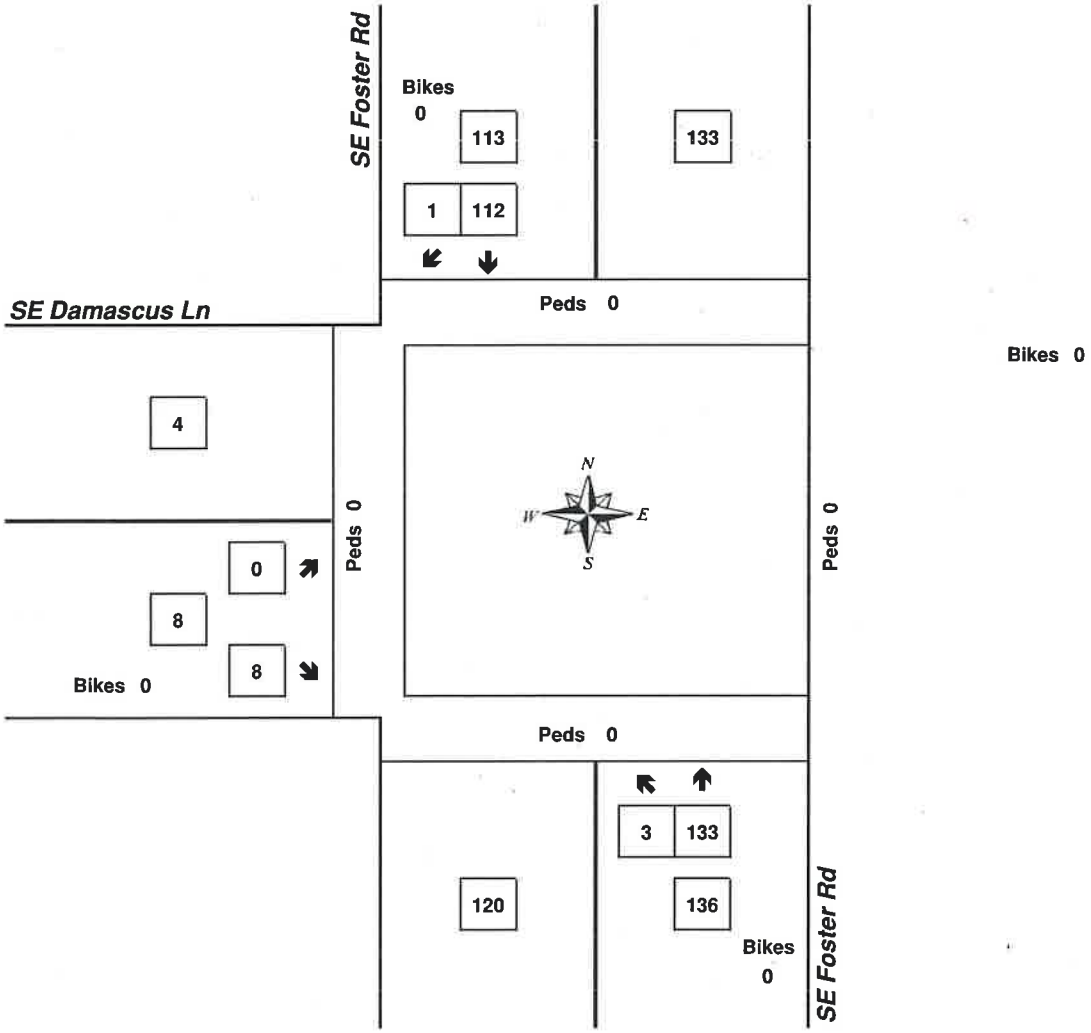
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SE Foster Rd & SE Damascus Ln

7:05 AM to 8:05 AM
Wednesday, October 30, 2019

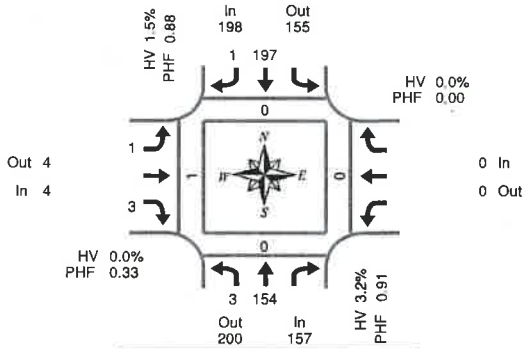


Approach	PHF	HV%	Volume
EB	0.50	12.5%	8
WB	0.00	0.0%	0
NB	0.83	5.9%	136
SB	0.86	4.4%	113
Intersection	0.93	5.4%	257

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

Total Vehicle Summary

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



SE Foster Rd & SE Damascus Ln

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
5:00 PM to 6:00 PM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L	R	Bikes					Bikes		North	South	East	West
4:00 PM	0	8		0	16	0	0		0	0	0					0	24	0	0	0	0
4:05 PM	0	7		0	14	0	0		0	0	0					0	21	0	0	0	0
4:10 PM	0	15		0	17	0	0		0	1	0					0	33	0	0	0	0
4:15 PM	0	17		0	11	0	0		0	3	0					0	31	0	0	0	0
4:20 PM	0	11		0	13	0	0		0	0	0					0	24	0	0	0	0
4:25 PM	0	12		0	14	0	0		0	0	0					0	26	0	0	0	0
4:30 PM	0	13		0	17	0	1		0	0	0					0	30	0	0	0	0
4:35 PM	0	13		0	16	1	0		0	0	0					0	30	0	0	0	0
4:40 PM	0	4		0	18	0	0		0	1	0					0	23	0	0	0	0
4:45 PM	0	10		1	19	0	0		0	0	0					0	29	0	0	0	0
4:50 PM	0	14		0	14	0	0		0	0	0					0	28	0	0	0	0
4:55 PM	0	18		0	17	0	0		0	0	0					0	35	0	0	0	0
5:00 PM	0	14		0	16	0	0		0	0	0					0	30	0	0	0	0
5:05 PM	1	14		0	19	0	0		0	0	0					0	34	0	0	0	0
5:10 PM	0	9		0	11	0	0		0	0	0					0	20	0	0	0	0
5:15 PM	0	12		0	17	0	0		0	0	0					0	29	0	0	0	0
5:20 PM	0	12		0	16	0	0		0	0	0					0	28	0	0	0	0
5:25 PM	2	15		0	12	0	0		0	0	0					0	29	0	0	0	0
5:30 PM	0	10		0	27	0	0		0	0	0					0	37	0	0	0	0
5:35 PM	0	14		0	17	0	0		0	1	0					0	32	0	0	0	0
5:40 PM	0	13		0	9	0	0		0	0	0					0	22	0	0	0	0
5:45 PM	0	16		0	16	0	0		0	1	0					0	33	0	0	0	0
5:50 PM	0	11		0	14	0	0		0	0	0					0	25	0	0	0	0
5:55 PM	0	14		0	23	1	0		1	1	0					0	40	0	0	0	1
Total Survey	3	296		1	383	2	1		1	8	0					0	693	0	0	0	1

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L	R	Bikes					Bikes		North	South	East	West
4:00 PM	0	30		0	47	0	0		0	1	0					0	78	0	0	0	0
4:15 PM	0	40		0	38	0	0		0	3	0					0	81	0	0	0	0
4:30 PM	0	30		0	51	1	1		0	1	0					0	83	0	0	0	0
4:45 PM	0	42		1	50	0	0		0	0	0					0	92	0	0	0	0
5:00 PM	1	37		0	46	0	0		0	0	0					0	84	0	0	0	0
5:15 PM	2	39		0	45	0	0		0	0	0					0	86	0	0	0	0
5:30 PM	0	37		0	53	0	0		0	1	0					0	91	0	0	0	0
5:45 PM	0	41		0	53	1	0		1	2	0					0	98	0	0	0	1
Total Survey	3	296		1	383	2	1		1	8	0					0	693	0	0	0	1

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	157	200	357	0	198	155	353	0	4	4	8	0	0	0	0	0	359	0	0	0	1
%HV	3.2%				1.5%				0.0%				0.0%				2.2%				
PHF	0.91				0.88				0.33				0.00				0.92				

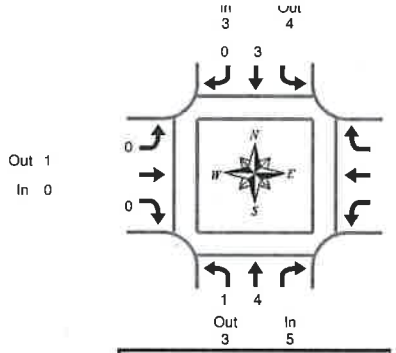
By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Total
	L	T		Total	T	R	Total		L		R	Total				Total	
Volume	3	154		157	197	1	198		1		3	4				0	359
%HV	33.3%	2.6%	NA	3.2%	NA	1.5%	0.0%	1.5%	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	2.2%
PHF	0.38	0.90		0.91		0.88	0.25	0.88	0.25		0.38	0.33				0.00	0.92

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes		L	R	Bikes					Bikes		North	South	East	West
4:00 PM	0	142		1	186	1	1		0	5	0					0	334	0	0	0	0
4:15 PM	1	149		1	185	1	1		0	4	0					0	340	0	0	0	0
4:30 PM	3	148		1	192	1	1		0	1	0					0	345	0	0	0	0
4:45 PM	3	155		1	194	0	0		0	1	0					0	353	0	0	0	0
5:00 PM	3	154		0	197	1	0		1	3	0					0	359	0	0	0	1

Heavy Vehicle Summary

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



SE Foster Rd & SE Damascus Ln

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
5:00 PM to 6:00 PM

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total
	L	T		Total	T	R		Total	L		R	Total				Total	
4:00 PM	0	1		1	0	0		0	0		0	0				0	1
4:05 PM	0	0		0	2	0		2	0		0	0				0	2
4:10 PM	0	0		0	0	0		0	0		0	0				0	0
4:15 PM	0	0		0	0	0		0	0		0	0				0	0
4:20 PM	0	0		0	0	0		0	0		0	0				0	0
4:25 PM	0	1		1	0	0		0	0		0	0				0	1
4:30 PM	0	0		0	0	0		0	0		0	0				0	0
4:35 PM	0	0		0	0	1		1	0		0	0				0	1
4:40 PM	0	0		0	0	0		0	0		1	1				0	1
4:45 PM	0	0		0	0	0		0	0		0	0				0	0
4:50 PM	0	0		0	0	0		0	0		0	0				0	0
4:55 PM	0	1		1	0	0		0	0		0	0				0	1
5:00 PM	0	0		0	1	0		1	0		0	0				0	1
5:05 PM	1	1		2	0	0		0	0		0	0				0	2
5:10 PM	0	0		0	0	0		0	0		0	0				0	0
5:15 PM	0	0		0	2	0		2	0		0	0				0	2
5:20 PM	0	0		0	0	0		0	0		0	0				0	0
5:25 PM	0	0		0	0	0		0	0		0	0				0	0
5:30 PM	0	0		0	0	0		0	0		0	0				0	0
5:35 PM	0	1		1	0	0		0	0		0	0				0	1
5:40 PM	0	1		1	0	0		0	0		0	0				0	1
5:45 PM	0	0		0	0	0		0	0		0	0				0	0
5:50 PM	0	0		0	0	0		0	0		0	0				0	0
5:55 PM	0	1		1	0	0		0	0		0	0				0	1
Total Survey	1	7		8	5	1		6	0		1	1				0	15

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

Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total
	L	T		Total	T	R		Total	L		R	Total				Total	
4:00 PM	0	1		1	2	0		2	0		0	0				0	3
4:15 PM	0	1		1	0	0		0	0		0	0				0	1
4:30 PM	0	0		0	0	1		1	0		1	1				0	2
4:45 PM	0	1		1	0	0		0	0		0	0				0	1
5:00 PM	1	1		2	1	0		1	0		0	0				0	3
5:15 PM	0	0		0	2	0		2	0		0	0				0	2
5:30 PM	0	2		2	0	0		0	0		0	0				0	2
5:45 PM	0	1		1	0	0		0	0		0	0				0	1
Total Survey	1	7		8	5	1		6	0		1	1				0	15

Heavy Vehicle Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound SE Foster Rd			Southbound SE Foster Rd			Eastbound SE Damascus Ln			Westbound SE Damascus Ln			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	5	3	8	3	4	7	0	1	1	0	0	0	8
PHF	0.63			0.38			0.00			0.00			0.50

By Movement	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Total
	L	T		Total	T	R		Total	L		R	Total				Total	
Volume	1	4		5	3	0		3	0		0	0				0	8
PHF	0.25	0.50		0.63	0.38	0.00		0.38	0.00		0.00	0.00				0.00	0.50

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

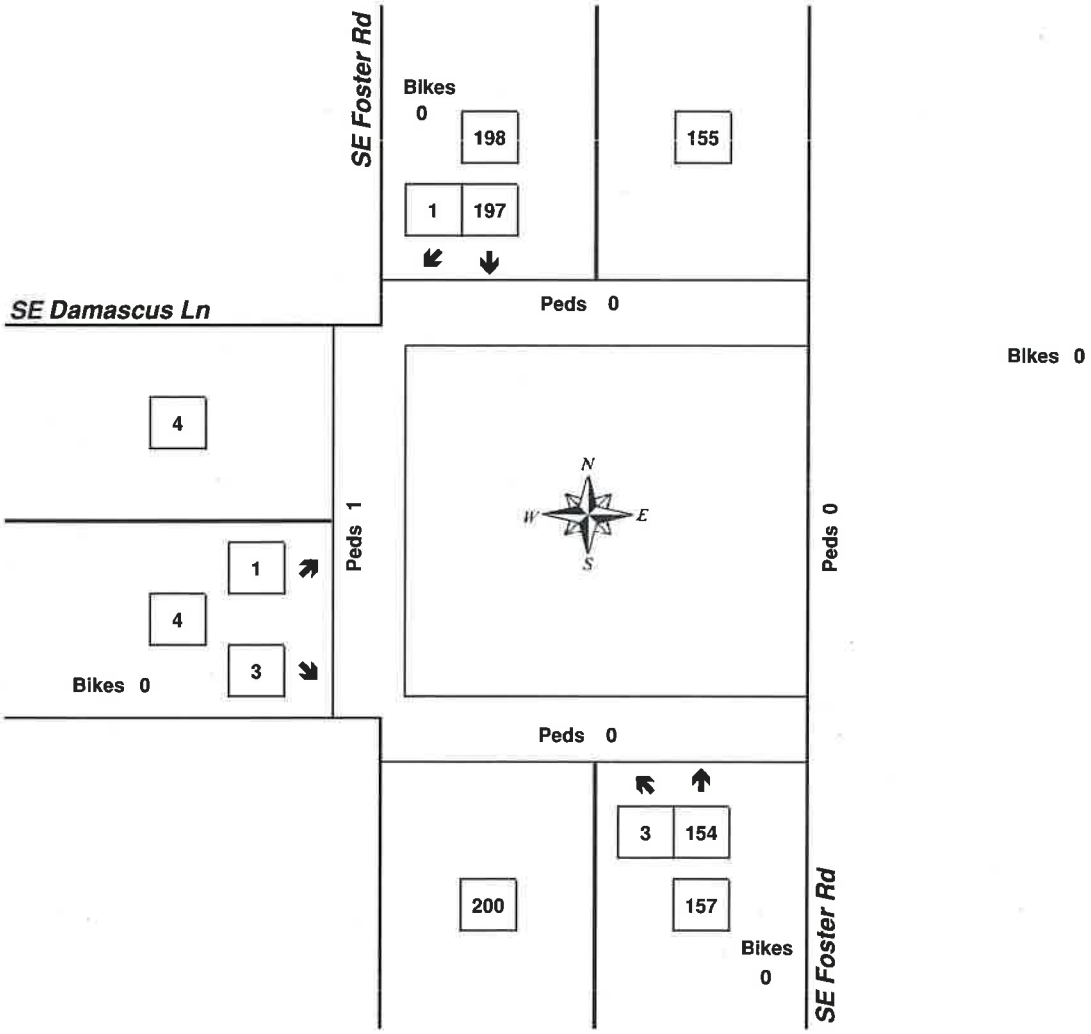
Interval Start Time	Northbound SE Foster Rd				Southbound SE Foster Rd				Eastbound SE Damascus Ln				Westbound SE Damascus Ln				Interval Total
	L	T		Total	T	R		Total	L		R	Total				Total	
4:00 PM	0	3		3	2	1		3	0		1	1				0	7
4:15 PM	1	3		4	1	1		2	0		1	1				0	7
4:30 PM	1	2		3	3	1		4	0		1	1				0	8
4:45 PM	1	4		5	3	0		3	0		0	0				0	8
5:00 PM	1	4		5	3	0		3	0		0	0				0	8

Peak Hour Summary

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

SE Foster Rd & SE Damascus Ln

5:00 PM to 6:00 PM
Tuesday, October 29, 2019

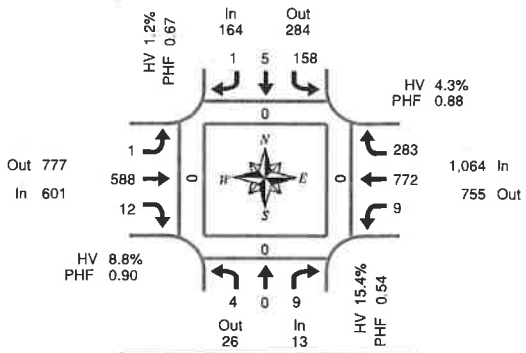


Approach	PHF	HV%	Volume
EB	0.33	0.0%	4
WB	0.00	0.0%	0
NB	0.91	3.2%	157
SB	0.88	1.5%	198
Intersection	0.92	2.2%	359

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
7:35 AM to 8:35 AM

SE Sunnyside Rd & Hwy 212

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	0	0	8	1	0	0	1	32	1	0	0	71	15	0	129	0	0	0	0
7:05 AM	0	0	0	0	8	1	0	0	0	40	1	0	0	65	16	0	131	0	0	0	0
7:10 AM	0	0	1	0	9	0	1	0	0	38	0	0	0	65	22	0	136	0	0	0	0
7:15 AM	0	0	0	0	12	0	0	0	2	29	0	0	0	67	22	0	132	0	0	0	0
7:20 AM	0	0	2	0	10	0	0	0	0	29	0	0	3	65	20	0	129	0	0	0	0
7:25 AM	1	0	0	0	4	0	0	0	1	42	1	0	0	68	34	0	151	0	0	0	0
7:30 AM	1	1	1	0	7	0	0	0	0	42	2	0	0	60	24	0	138	0	0	0	0
7:35 AM	1	0	1	0	16	0	0	0	1	47	0	0	0	75	23	0	164	0	0	0	0
7:40 AM	0	0	0	0	13	0	0	0	0	43	4	0	0	83	27	0	170	0	0	0	0
7:45 AM	0	0	1	0	7	0	0	0	0	53	0	0	1	69	23	0	154	0	0	0	0
7:50 AM	1	0	0	0	16	0	0	0	0	45	2	0	1	53	26	0	144	0	0	0	0
7:55 AM	1	0	1	0	12	1	0	0	0	66	1	0	1	59	17	0	159	0	0	0	0
8:00 AM	0	0	1	0	23	1	0	0	0	45	1	0	0	61	30	0	162	0	0	0	0
8:05 AM	0	0	3	0	22	1	1	0	0	30	0	0	1	56	23	0	137	0	0	0	0
8:10 AM	0	0	0	0	6	0	0	0	0	46	0	0	1	67	27	0	147	0	0	0	0
8:15 AM	0	0	1	0	13	0	0	0	0	58	1	0	1	61	32	0	167	0	0	0	0
8:20 AM	1	0	0	0	10	1	0	0	0	33	1	0	1	70	15	0	132	0	0	0	0
8:25 AM	0	0	0	0	4	1	0	0	0	64	2	0	2	66	21	0	160	0	0	0	0
8:30 AM	0	0	1	0	16	0	0	0	0	58	0	0	0	52	19	0	146	0	0	0	0
8:35 AM	0	0	2	0	11	1	0	0	1	62	1	0	0	55	20	1	153	0	0	0	0
8:40 AM	0	0	0	0	19	0	1	0	1	49	3	0	0	58	23	0	145	0	0	0	0
8:45 AM	1	0	2	0	19	1	0	0	0	39	1	0	2	63	26	0	154	0	0	0	0
8:50 AM	0	1	1	0	4	1	0	0	0	50	0	0	0	51	16	0	124	0	0	0	0
8:55 AM	0	0	1	0	10	2	0	0	0	48	3	0	1	39	21	1	125	0	0	0	0
Total Survey	7	2	19	0	270	12	3	0	7	1,088	25	0	15	1,499	542	2	3,489	0	0	0	0

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	1	0	25	2	1	0	1	110	2	0	0	201	53	0	396	0	0	0	0
7:15 AM	1	0	2	0	26	0	0	0	3	100	1	0	3	200	76	0	412	0	0	0	0
7:30 AM	2	1	2	0	36	0	0	0	1	132	6	0	0	218	74	0	472	0	0	0	0
7:45 AM	2	0	2	0	35	1	0	0	0	164	3	0	3	181	66	0	457	0	0	0	0
8:00 AM	0	0	4	0	51	2	1	0	0	121	1	0	2	184	80	0	446	0	0	0	0
8:15 AM	1	0	1	0	27	2	0	0	0	155	4	0	4	197	68	0	459	0	0	0	0
8:30 AM	0	0	3	0	37	1	1	0	2	169	4	0	0	165	62	1	444	0	0	0	0
8:45 AM	1	1	4	0	33	4	0	0	0	137	4	0	3	153	63	1	403	0	0	0	0
Total Survey	7	2	19	0	270	12	3	0	7	1,088	25	0	15	1,499	542	2	3,489	0	0	0	0

Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	13	26	39	0	164	284	448	0	601	777	1,378	0	1,064	755	1,819	0	1,842	0	0	0	0
%HV	15.4%				1.2%				8.8%				4.3%				5.6%				
PHF	0.54				0.67				0.90				0.88				0.94				

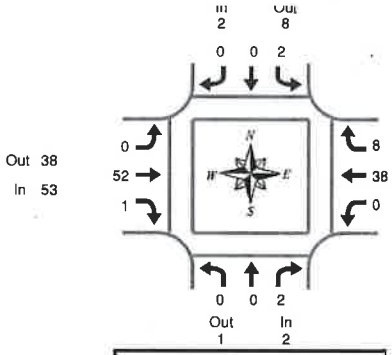
By Movement	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	4	0	9	13	156	5	1	164	1	588	12	601	9	772	283	1,064	1,842
%HV	0.0%	0.0%	22.2%	15.4%	1.3%	0.0%	0.0%	1.2%	0.0%	8.8%	8.3%	8.8%	0.0%	4.9%	2.8%	4.3%	5.6%
PHF	0.50	0.00	0.45	0.54	0.69	0.42	0.25	0.67	0.25	0.90	0.50	0.90	0.56	0.85	0.86	0.88	0.94

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				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	5	1	7	0	122	3	1	0	5	506	12	0	6	800	269	0	1,737	0	0	0	0
7:15 AM	5	1	10	0	148	3	1	0	4	517	11	0	8	783	296	0	1,787	0	0	0	0
7:30 AM	5	1	9	0	149	5	1	0	1	572	14	0	9	780	286	0	1,834	0	0	0	0
7:45 AM	3	0	10	0	150	6	2	0	2	609	12	0	9	727	276	1	1,806	0	0	0	0
8:00 AM	2	1	12	0	148	9	2	0	2	582	13	0	9	699	273	2	1,752	0	0	0	0

Heavy Vehicle Summary

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



Peak Hour Summary
7:35 AM to 8:35 AM

SE Sunnyside Rd & Hwy 212

Wednesday, October 30, 2019
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				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	1	0	1	0	1	0	1	2
7:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	3	4
7:10 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4	6
7:20 AM	0	0	0	0	1	0	0	1	0	4	0	4	0	1	0	1	6
7:25 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	3	6	7
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	2	5	7
7:35 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	2	1	3	7
7:40 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
7:45 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	2	1	3	7
7:50 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	7	0	7	11
7:55 AM	0	0	1	1	1	0	0	1	0	12	0	12	0	3	1	4	18
8:00 AM	0	0	0	0	0	0	0	0	0	1	1	2	0	1	0	1	3
8:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	2	3
8:10 AM	0	0	0	0	1	0	0	1	0	4	0	4	0	3	0	3	8
8:15 AM	0	0	1	1	0	0	0	0	0	11	0	11	0	4	1	5	17
8:20 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6
8:25 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	5	2	7	9
8:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	5	1	6	9
8:35 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
8:40 AM	0	0	0	0	0	0	0	0	1	7	0	8	0	4	0	4	12
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	5	1	6	8
8:50 AM	0	0	1	1	0	0	0	0	0	4	0	4	0	2	0	2	7
8:55 AM	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7
Total Survey	0	0	3	3	3	0	0	3	1	85	1	87	0	69	15	84	177

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				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	3	0	3	0	5	1	6	9
7:15 AM	0	0	0	0	1	0	0	1	0	7	0	7	0	8	3	11	19
7:30 AM	0	0	0	0	0	0	0	0	0	9	0	9	0	7	3	10	19
7:45 AM	0	0	1	1	1	0	0	1	0	20	0	20	0	12	2	14	36
8:00 AM	0	0	0	0	1	0	0	1	0	6	1	7	0	5	1	6	14
8:15 AM	0	0	1	1	0	0	0	0	0	16	0	16	0	12	3	15	32
8:30 AM	0	0	0	0	0	0	0	0	1	13	0	14	0	11	1	12	26
8:45 AM	0	0	1	1	0	0	0	0	0	11	0	11	0	9	1	10	22
Total Survey	0	0	3	3	3	0	0	3	1	85	1	87	0	69	15	84	177

Heavy Vehicle Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound SE Sunnyside Rd			Southbound SE Sunnyside Rd			Eastbound Hwy 212			Westbound Hwy 212			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	1	3	2	8	10	53	38	91	46	56	102	103
PHF	0.50			0.50			0.66			0.72			0.72

By Movement	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	2	2	2	0	0	2	0	52	1	53	0	38	8	46	103
PHF	0.00	0.00	0.50	0.50	0.50	0.00	0.00	0.50	0.00	0.65	0.25	0.66	0.00	0.73	0.67	0.72	0.72

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

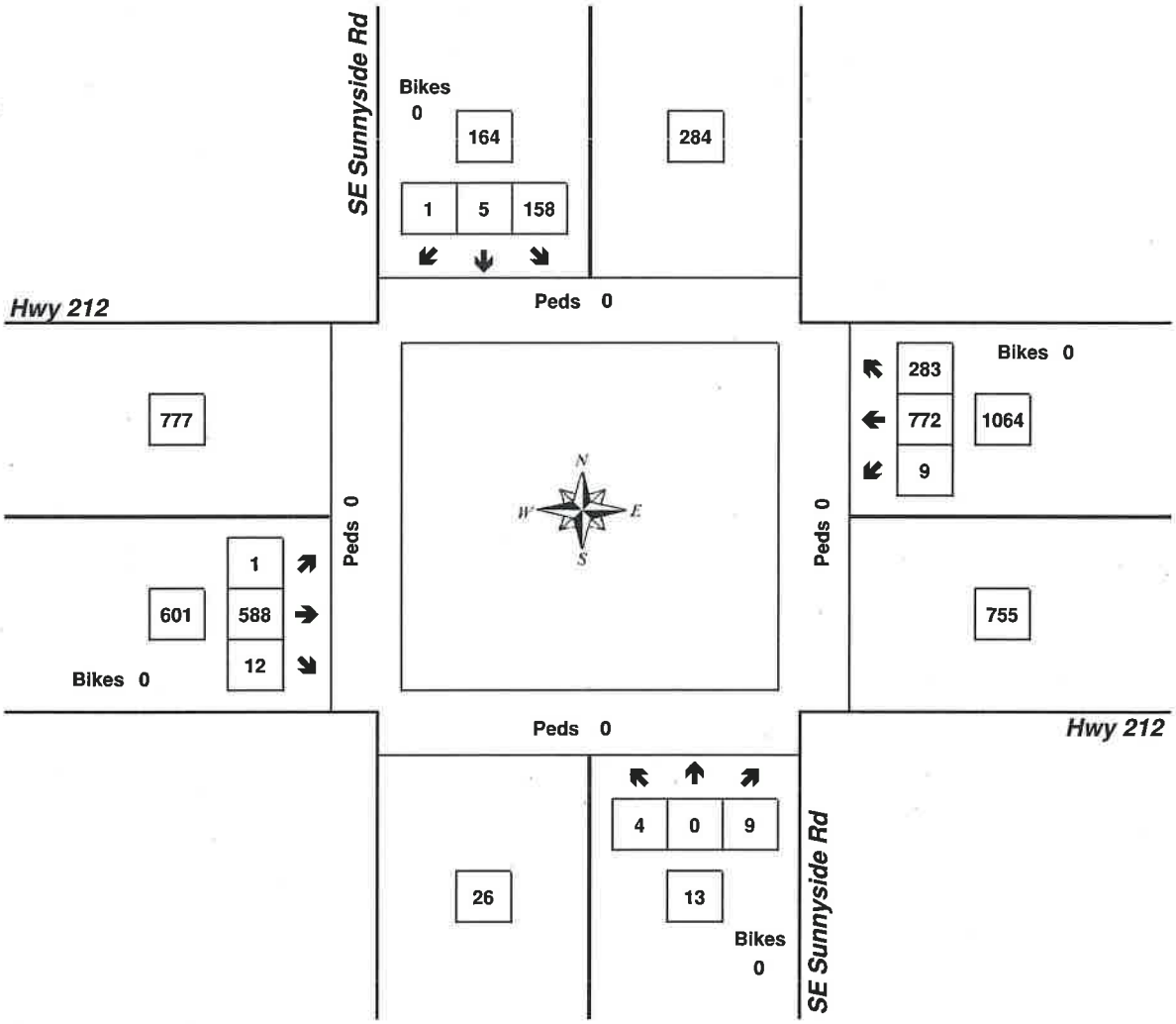
Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	1	1	2	0	0	2	0	39	0	39	0	32	9	41	83
7:15 AM	0	0	1	1	3	0	0	3	0	42	1	43	0	32	9	41	88
7:30 AM	0	0	2	2	2	0	0	2	0	51	1	52	0	36	9	45	101
7:45 AM	0	0	2	2	2	0	0	2	1	55	1	57	0	40	7	47	108
8:00 AM	0	0	2	2	1	0	0	1	1	46	1	48	0	37	6	43	94

Peak Hour Summary

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

SE Sunnyside Rd & Hwy 212

7:35 AM to 8:35 AM
Wednesday, October 30, 2019

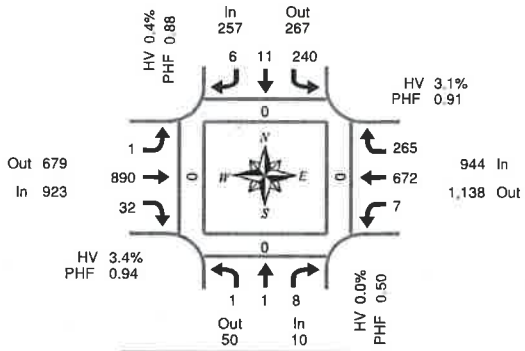


Approach	PHF	HV%	Volume
EB	0.90	8.8%	601
WB	0.88	4.3%	1,064
NB	0.54	15.4%	13
SB	0.67	1.2%	164
Intersection	0.94	5.6%	1,842

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
4:00 PM to 5:00 PM

SE Sunnyside Rd & Hwy 212

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				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	0	1	0	19	0	1	0	0	80	5	0	2	55	29	0	192	0	0	0	0
4:05 PM	0	0	2	0	18	0	1	0	0	76	2	0	0	58	23	0	180	0	0	0	0
4:10 PM	0	0	2	0	15	0	1	0	0	71	1	0	1	59	27	0	177	0	0	0	0
4:15 PM	0	0	0	0	19	3	1	0	0	92	3	0	1	68	21	0	208	0	0	0	0
4:20 PM	1	0	0	0	23	2	1	0	0	66	2	0	0	60	16	0	171	0	0	0	0
4:25 PM	0	1	0	0	24	0	0	0	0	69	5	0	0	43	23	0	165	0	0	0	0
4:30 PM	0	0	0	0	19	0	0	0	0	64	2	0	1	57	21	0	164	0	0	0	0
4:35 PM	0	0	1	0	20	0	0	0	0	84	5	0	1	53	21	0	185	0	0	0	0
4:40 PM	0	0	0	0	19	4	0	0	0	58	3	0	1	63	22	0	170	0	0	0	0
4:45 PM	0	0	0	0	28	1	0	0	0	72	0	0	0	39	20	0	160	0	0	0	0
4:50 PM	0	0	1	0	17	0	0	0	1	82	3	0	0	74	22	0	200	0	0	0	0
4:55 PM	0	0	1	0	19	1	1	0	0	76	1	0	0	43	20	0	162	0	0	0	0
5:00 PM	0	0	2	0	19	0	1	0	0	86	0	0	0	58	18	0	184	0	0	0	0
5:05 PM	0	0	0	0	11	1	2	0	0	85	7	0	2	51	15	0	174	0	0	0	0
5:10 PM	0	0	0	0	20	0	0	0	0	72	4	0	0	53	22	0	171	0	0	0	0
5:15 PM	0	0	1	0	22	1	0	0	1	64	2	0	1	65	23	0	180	0	0	0	0
5:20 PM	0	0	0	0	20	1	0	0	0	87	1	0	1	56	18	0	184	0	0	0	0
5:25 PM	0	0	0	0	17	0	0	0	0	71	4	0	3	50	22	0	167	0	0	0	0
5:30 PM	0	0	1	0	20	2	1	0	0	80	2	0	1	51	22	0	180	0	0	0	0
5:35 PM	0	0	0	0	20	0	0	0	0	68	4	0	0	47	22	0	161	0	0	0	0
5:40 PM	0	0	0	0	25	2	0	0	0	75	3	0	0	35	22	0	162	0	0	0	0
5:45 PM	0	0	0	0	18	0	0	0	0	67	4	0	0	44	26	0	159	0	0	0	0
5:50 PM	0	0	3	0	21	0	0	0	0	82	2	0	0	42	29	0	179	0	0	0	0
5:55 PM	0	0	2	0	21	1	0	0	0	62	3	0	1	37	13	0	140	0	0	0	0
Total Survey	1	1	17	0	474	19	10	0	2	1,789	68	0	16	1,261	517	0	4,175	0	0	0	0

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				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	0	5	0	52	0	3	0	0	227	8	0	3	172	79	0	549	0	0	0	0
4:15 PM	1	1	0	0	66	5	2	0	0	227	10	0	1	171	60	0	544	0	0	0	0
4:30 PM	0	0	1	0	58	4	0	0	0	206	10	0	3	173	64	0	519	0	0	0	0
4:45 PM	0	0	2	0	64	2	1	0	1	230	4	0	0	156	62	0	522	0	0	0	0
5:00 PM	0	0	2	0	50	1	3	0	0	243	11	0	2	162	55	0	529	0	0	0	0
5:15 PM	0	0	1	0	59	2	0	0	1	222	7	0	5	171	63	0	531	0	0	0	0
5:30 PM	0	0	1	0	65	4	1	0	0	223	9	0	1	133	66	0	503	0	0	0	0
5:45 PM	0	0	5	0	60	1	0	0	0	211	9	0	1	123	68	0	478	0	0	0	0
Total Survey	1	1	17	0	474	19	10	0	2	1,789	68	0	16	1,261	517	0	4,175	0	0	0	0

Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	10	50	60	0	257	267	524	0	923	679	1,602	0	944	1,138	2,082	0	2,134	0	0	0	0
%HV	0.0%				0.4%				3.4%				3.1%				2.9%				
PHF	0.50				0.88				0.94				0.91				0.94				

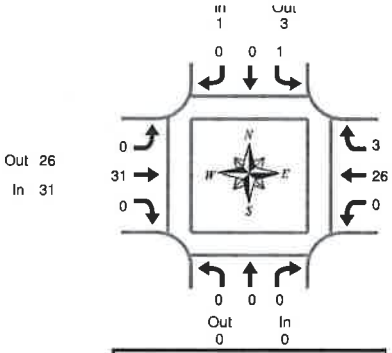
By Movement	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	1	8	10	240	11	6	257	1	890	32	923	7	672	265	944	2,134
%HV	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	3.5%	0.0%	3.4%	0.0%	3.9%	1.1%	3.1%	2.9%
PHF	0.25	0.25	0.40	0.50	0.90	0.55	0.50	0.88	0.25	0.93	0.67	0.94	0.58	0.90	0.84	0.91	0.94

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				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	1	1	8	0	240	11	6	0	1	890	32	0	7	672	265	0	2,134	0	0	0	0
4:15 PM	1	1	5	0	238	12	6	0	1	906	35	0	6	662	241	0	2,114	0	0	0	0
4:30 PM	0	0	6	0	231	9	4	0	2	901	32	0	10	662	244	0	2,101	0	0	0	0
4:45 PM	0	0	6	0	238	9	5	0	2	918	31	0	8	622	246	0	2,085	0	0	0	0
5:00 PM	0	0	9	0	234	8	4	0	1	899	36	0	9	589	252	0	2,041	0	0	0	0

Heavy Vehicle Summary

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



SE Sunnyside Rd & Hwy 212

Tuesday, October 29, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	0	1	0	2	0	2	0	2	0	2	5
4:05 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	2	1	3	5
4:10 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	4	2	6	10
4:15 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7
4:20 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
4:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
4:30 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
4:40 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	4	0	4	5
4:50 PM	0	0	0	0	0	0	0	0	0	7	0	7	0	3	0	3	10
4:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
5:05 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	5	0	5	7
5:10 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	3	0	3	7
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
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	1	0	1	2
5:40 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
5:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:55 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total Survey	0	0	0	0	2	0	0	2	0	43	1	44	0	47	4	51	97

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

Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	0	1	0	8	0	8	0	8	3	11	20
4:15 PM	0	0	0	0	0	0	0	0	0	8	0	8	0	6	0	6	14
4:30 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	4	0	4	10
4:45 PM	0	0	0	0	0	0	0	0	0	9	0	9	0	8	0	8	17
5:00 PM	0	0	0	0	1	0	0	1	0	4	1	5	0	13	0	13	19
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	4	0	4	5
5:30 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	4	0	4	8
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	1	1	4
Total Survey	0	0	0	0	2	0	0	2	0	43	1	44	0	47	4	51	97

Heavy Vehicle Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound SE Sunnyside Rd			Southbound SE Sunnyside Rd			Eastbound Hwy 212			Westbound Hwy 212			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	3	4	31	26	57	29	32	61	61
PHF	0.00			0.25			0.70			0.60			0.69

By Movement	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	1	0	0	1	0	31	0	31	0	26	3	29	61
PHF	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00	0.70	0.00	0.70	0.00	0.65	0.25	0.60	0.69

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

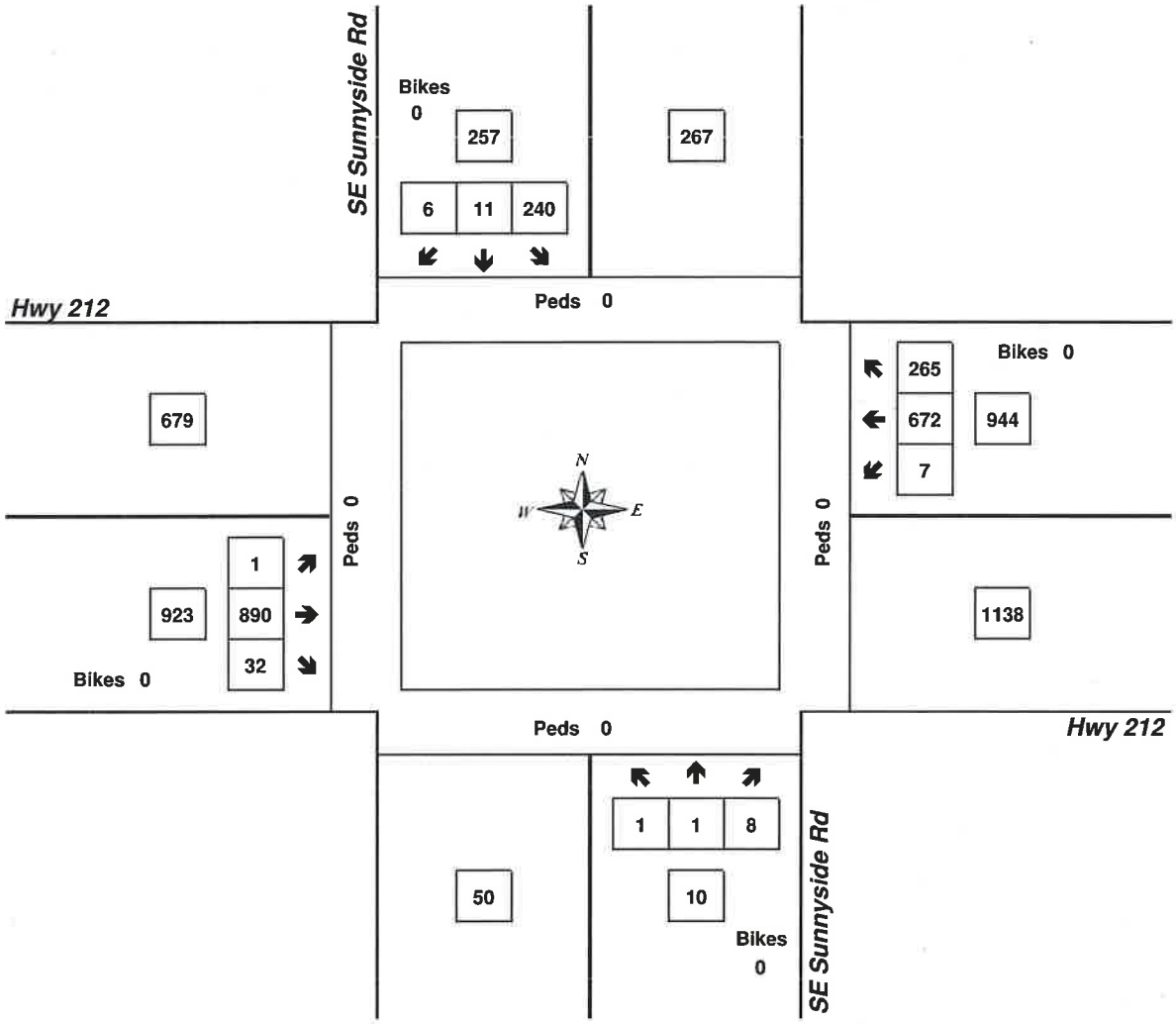
Interval Start Time	Northbound SE Sunnyside Rd				Southbound SE Sunnyside Rd				Eastbound Hwy 212				Westbound Hwy 212				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	0	1	0	31	0	31	0	26	3	29	61
4:15 PM	0	0	0	0	1	0	0	1	0	27	1	28	0	31	0	31	60
4:30 PM	0	0	0	0	1	0	0	1	0	20	1	21	0	29	0	29	51
4:45 PM	0	0	0	0	1	0	0	1	0	18	1	19	0	29	0	29	49
5:00 PM	0	0	0	0	1	0	0	1	0	12	1	13	0	21	1	22	36

Peak Hour Summary

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

SE Sunnyside Rd & Hwy 212

4:00 PM to 5:00 PM
Tuesday, October 29, 2019



Approach	PHF	HV%	Volume
EB	0.94	3.4%	923
WB	0.91	3.1%	944
NB	0.50	0.0%	10
SB	0.88	0.4%	257
Intersection	0.94	2.9%	2,134

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

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF DAMASCUS, CLACKAMAS COUNTY

FOSTER RD at DAMASCUS LN, City of Damascus, Clackamas County, 01/01/2013 to 12/31/2017

1 - 1 of 1 Crash records shown

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L	M J U G	S W I N	C O H R	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01052	N	N	N	N	N	03/28/2013	16	DAMASCUS LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
CITY						TH	0	FOSTER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW-SE									000	00
N						3P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y		000	000	00
N						45 25 11 85654	-122 27 27 435996																OR<25				
															02	NONE 0	TURN-L										
																PRVTE	W -NW									015	00
																PSNGR CAR		01	DRVR	NONE	86	M	OR-Y		028	000	02
																							OR<25				

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 2.61 to 2.61 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

1 - 5 of 12 Crash records shown

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L	M J I G	S N H	W C O 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
05242	N	N	N	N		12/08/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE						TU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	E		TRF SIGNAL	N	WET	REAR		PRVTE	E -W									000		00
N						7A	PORTLAND UA	2.61	FOSTER RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y		026	000		29
N						45 25 3.37	-122 27 24.04		017400100S00															OR<25					
																02	NONE 0	STOP										
																	PRVTE	E -W								011		00
																	PSNGR CAR		01	DRVR	NONE	58	F	OR-Y		000	000		00
																								OR<25				
01821	N	N	N	N		04/20/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE						WE	DAMASCUS	MN 0	CLACKAMAS-BORING HY	E		TRF SIGNAL	N	WET	REAR		N/A	E -W									000		00
N						6P	PORTLAND UA	2.61	FOSTER RD	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N						45 25 3.37	-122 27 24.04		017400100S00															UNK					
																02	NONE 9	STOP										
																	N/A	E -W								011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK				
04181	N	N	N	N		08/24/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE						WE	DAMASCUS	MN 0	CLACKAMAS-BORING HY	E		TRF SIGNAL	N	DRY	REAR		N/A	E -W									000		00
N						10A	PORTLAND UA	2.61	FOSTER RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N						45 25 3.37	-122 27 24.04		017400100S00															UNK					
																02	NONE 9	STOP										
																	N/A	E -W								011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK				
00790	N	N	N	N		02/27/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 9	STRGHT											29
NONE						MO		MN 0		E		TRF SIGNAL	N	WET	REAR		N/A	E -W									000		00
N						11A	PORTLAND UA	2.61		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N						45 25 3.37	-122 27 24.04		017400100S00															UNK					
																02	NONE 9	STOP										
																	N/A	E -W								011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK				
00925	N	N	N	N		03/08/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE						WE		MN 0		E		TRF SIGNAL	N	WET	REAR		N/A	E -W									000		00
N						6P	PORTLAND UA	2.61		06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N						45 25 3.37	-122 27 24.04		017400100S00															UNK					
																02	NONE 9	STOP										
																	N/A	E -W								011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK				
01618	N	N	N	N	N	05/10/2013	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						FR	DAMASCUS	MN 0	CLACKAMAS-BORING HY	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
N						4P	PORTLAND UA	2.61	FOSTER RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	50	F	OR-Y		043,026	000		07
N						45 25 3.373968	-122 27 24.03864		017400100S00															OR<25					

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 2.61 to 2.61 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

6 - 3 of 12 Crash records shown

SER# / INVEST / RD DPT / UNLOC?	S P E D	D M R A L C	J U G S	S I N V	W C H K	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA / LAT	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 PRVTE PSNGR CAR	STOP W -E	01	DRVR	NONE	43	M	OR-Y OR<25		000	011 000		00 00
0464 NONE N N	N	N N N				11/02/2017 TH UNK 45 25 3.37	CLACKAMAS PORTLAND UA -122 27 24.04	1 14 MN 0 2.61 017400100S00		INTER W 06	3-LEG 0	N TRF SIGNAL	N N N	UNK WET DAY	S-1STCP REAR PDO	01	NONE 9 N/A PSNGR CAR	STRGHT W -E	01	DRVR	NONE	00	Unk	UNK UNK		000			29 00 00
																02	NONE 9 N/A UNKNOWN	STOP W -E	01	DRVR	NONE	00	Unk	UNK UNK		000	011 000		00 00
04559 COUNTY N N	N	N N N N N				11/23/2013 SA 8P 45 25 3.373968	CLACKAMAS DAMASCUS PORTLAND UA -122 27 24.03864	1 14 MN 0 2.61 017400100S00	CLACKAMAS-BORING HY FOSTER RD	INTER CN 01	3-LEG 0	N TRF SIGNAL	N N N	CLR DRY DARK	ANGL-OTH TURN PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT E -W	01	DRVR	NONE	55	F	OR-Y OR>25		000	000		04 00 00
																02	NONE 0 PRVTE PSNGR CAR	TURN-L NW-E	01	DRVR	NONE	62	M	OR-Y OR<25		020	000 000		00 04
01860 NONE N N	N	N N N N				05/14/2014 WE 9A 45 25 3.37	CLACKAMAS DAMASCUS PORTLAND UA -122 27 24.04	1 14 MN 0 2.61 017400100S00	CLACKAMAS-BORING HY FOSTER RD	INTER CN 01	3-LEG 0	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH ANGL INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT N -S	01	DRVR	INJC	50	F	OR-Y OR<25		000	000 000		04 00 00
																02	NONE 0 PRVTE PSNGR CAR	STRGHT E -W	01	DRVR	NONE	29	M	OR-Y OR<25		020	000 000		00 04
01591 COUN N N	N	N N N N N				04/27/2015 MO 11A 45 25 3.37	CLACKAMAS DAMASCUS PORTLAND UA -122 27 24.04	1 14 MN 0 2.61 017400100S00	CLACKAMAS-BORING HY FOSTER RD	INTER CN 02	3-LEG 0	N TRF SIGNAL	N N Y	CLR DRY DAY	OTH OBJ FIX INJ	01	NONE 0 PRVTE TRUCK	STRGHT E -W	01	DRVR	NONE	57	M	OR-Y OR<25		082	000 000	064,080 064	10 00 10
																02	NONE 0 PRVTE PSNGR CAR	STOP E -W	01	DRVR	NONE	34	M	OR-Y OR<25		000	012 000	080	00 00
																02	NONE 0 PRVTE PSNGR CAR	STOP E -W	02	PSNG	INJB	05	M			000	012 000	080	00 00
																03	NONE 0 PRVTE PSNGR CAR	TURN-R W -S	01	DRVR	NONE	36	F	OR-Y OR<25		000	019 000	080	00 00

10 - 12 of 12 Crash records shown

SER# / INVEST / RD DPT / UNLOCT	S P E D	D R A L	M J U G	S I N S	W C H V	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CCMN# / 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 NBR	PED LOC	ERROR	ACT EVENT	CAUSE
																04	NONE 0 PRVTE PSNGR CAR	PRED-P S -N									032	00
00523	N	N	N	N		02/15/2013	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NO R						FR	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W -E									000	00
N						6P	PORTLAND UA	2.61	FOSTER RD	03	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	23	F	OR-Y		000	000	00
N						45 25 3.373968	-122 27 24.03864		01740010OS00															OR<25				
																02	NONE 0 PRVTE PSNGR CAR	TURN-L E -S	01	DRVR	NONE	65	M	OR-Y OR<25		028,004	019 000	00 02
00685	N	N	N	N		02/24/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NO RPT						TU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W -E									000	00
N						8A	PORTLAND UA	2.61	FOSTER RD	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N						45 25 3.37	-122 27 24.04		01740010OS00															UNK				
																02	NONE 0 PRVTE PSNGR CAR	TURN-L E -S	01	DRVR	INJC	80	M	OR-Y OR<25		028,004	019 000	00 02

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 2 49 to 2.51 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

1 - 5 of 20 Crash records shown

SER# / INVEST / RD DPT / UNLOC	S P E D	D M R A U C S V	J	S	W	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 REG	PED LOC	ERROR	ACT EVENT	CAUSE
00656	N	N N N				02/10/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1STOP	01	NONE 0	STRGHT										05,50
NO RPT						WE	DAMASCUS	MN 0	CLACKAMAS-BORING HY	E		L-TURN REF	N	DRY	SS-M		PRVTE	E -W									000	00
N						4P	PORTLAND UA	2.50	SE SUNNYSIDE RD	05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		080	000	05
N						45 25 3.19	-122 27 30.95		017400100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	W -E									011	00
																	PSNGR CAR		01	DRVR	INJC	26	F	OR-Y		000	000	50
																								OR<25				
02506	N	N N N				06/23/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STOP										26,29
NO RPT						TU	DAMASCUS	MN 0	SE ANDERSON RD	E		STOP SIGN	N	DRY	REAR		PRVTE	E -W									011	00
N						6P	PORTLAND UA	2.50	CLACKAMAS-BORING HY	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	28	F	OTH-Y		000	000	26
N						45 25 3.19	-122 27 30.95		017400100S00															OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	E -W									000	00
																	PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		026	000	29
																								OR<25				
01663	N	N N N				04/12/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE						TU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	E		TRF SIGNAL	N	WET	REAR		PRVTE	E -W									000	00
N						10P	PORTLAND UA	2.50	SE SUNNYSIDE RD	06	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y		026	000	29
N						45 25 3.19	-122 27 30.95		017400100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	E -W									011	00
																	PSNGR CAR		01	DRVR	INJC	45	M	OR-Y		000	000	00
																								OR<25				
02972	N	N N N N N	N			07/15/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	NON-COLL	01	NONE 0	STRGHT										07
COUNTY						SA		MN 0		E		NONE	N	DRY	OTH		PRVTE	E -W									007	00
N						8P	PORTLAND UA	2.50		06	1		N	DAY	INJ		MTRCYCLE		01	DRVR	INJC	33	M	OR-Y		043	000	07
N						45 25 3.19	-122 27 30.95		017400100S00															OR<25				
0408		N N N				10/25/2013	CLACKAMAS	1 14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										07
NONE						FR	DAMASCUS	MN 0	CLACKAMAS-BORING HY	W		TRF SIGNAL	N	UNK	REAR		PRVTE	W -E									000	00
N						6P	PORTLAND UA	2.50	SE SUNNYSIDE RD	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		026	000	07
N						45 25 3.1902239	-122 27 30.947616		017400100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	W -E									012	00
																	PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		000	000	00
																								OR<25				
04330	N	N N N N N	N			11/08/2013	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT										02
COUNTY						FR	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	WET	TURN		PRVTE	E -W									000	00
N						6A	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		000	000	00
N						45 25 3.1902239	-122 27 30.947616		017400100S00															OR<25				

SER# / INVEST / RD DPT / UNLOC	S P E D	D R A L	M J U G	S I N	W C H	DATE / DAY / TIME	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	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 PRVTE PSNGR CAR	TURN-L N -E	01	DRVR	INJC	62	F	OR-Y OR<25		028	015 000		00 02
0030~ COUI	N	N	N	N	N	01/23/2014 TH	CLACKAMAS DAMASCUS	1 14 MN 0	CLACKAMAS-BORING HY	INTER CN	CROSS	N STOP SIGN	N N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT E -W									000		02 00
N						9P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		000	000		00
N						45 25 3.1902239	-122 27 30.9476519		017400100S00															OR<25					
																01	NONE 0 PRVTE PSNGR CAR	STRGHT E -W	02	PSNG	INJC	17	M			000	000 000		00 00
																01	NONE 0 PRVTE PSNGR CAR	STRGHT E -W	03	PSNG	INJB	15	F			000	000 000		00 00
																02	NONE 0 PRVTE PSNGR CAR	TURN-L N -E	01	DRVR	INJC	67	F	OR-Y OR<25		028	015 000		00 02
00307 COUNTY	N	N	N	N		01/24/2014 FR	CLACKAMAS DAMASCUS	1 14 MN 0	CLACKAMAS-BORING HY	INTER CN	CROSS	N UNKNOWN	N N	UNK DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT E -W									000		013	02 00
N						6A	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	0		N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		000	000		00
N						45 25 3.1902239	-122 27 30.9476519		017400100S00															OR<25					
																02	NONE 0 PRVTE PSNGR CAR	STRGHT S -N	01	DRVR	NONE	41	M	OR-Y OR<25		028	015 000	013	00 02
																03	NONE 0 PRVTE PSNGR CAR	STOP N -S	01	DRVR	NONE	31	M	OR-Y OR<25		000	022 000		00 00
01411 NONE	N	N	N	N		04/12/2014 SA	CLACKAMAS DAMASCUS	1 14 MN 0	CLACKAMAS-BORING HY	INTER CN	CROSS	N STOP SIGN	N N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT N -S										015		02 00
N						5P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	58	M	OR-Y		028	000		02
N						45 25 3.1902239	-122 27 30.9476519		017400100S00															OR<25					
																02	NONE 0 PRVTE PSNGR CAR	STRGHT E -W	01	DRVR	NONE	51	M	OR-Y OR<25		000	000 000		00 00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
Highway 174 ALL ROAD TYPES, MP 2.49 to 2.51 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

10 - 14 of 20 Crash records shown

SER# INVEST RD DPT UNLOC?	S D M P R J S W E A U I C O E L G N H R D C S V L 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
02010	N N N N	05/27/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									02
NO RPT		TU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	ANGL	PRVTE	E -W								000	00
N		2P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	59	M	OR-Y		000	000	00
N		45 25 3.19	-122 27 30.95		017400100S00													OR<25				
												02 NONE 0	STRGHT									
												PRVTE	N -S								015	00
												PSNGR CAR		01 DRVR	NONE	74	F	OTH-Y		028	000	02
																		OR<25				
02733	N N N N N N	07/16/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									02
NONE		WE	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	TURN	PRVTE	E -W								000	00
N		4P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	39	F	OR-Y		000	000	00
N		45 25 3.19	-122 27 30.95		017400100S00													OR<25				
												02 NONE 0	TURN-R									
												PRVTE	N -W								015	00
												PSNGR CAR		01 DRVR	INJC	19	M	OR-Y		028	000	02
																		OR<25				
00850	N N N N N N	03/08/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	TURN-R									02
COUNTY		SU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	TURN	PRVTE	N -W								015	00
N		9P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DARK	PDO	PSNGR CAR		01 DRVR	NONE	20	M	OR-Y		028	000	02
N		45 25 3.19	-122 27 30.95		017400100S00													OR<25				
												02 NONE 0	STRGHT									
												PRVTE	E -W								000	00
												PSNGR CAR		01 DRVR	NONE	41	M	OR-Y		000	000	00
																		OR<25				
02509	N N N N	06/03/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									02
NO RPT		FR	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	TURN	PRVTE	E -W								000	00
N		6P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	49	M	OR-Y		000	000	00
N		45 25 3.19	-122 27 30.95		017400100S00													OR<25				
												02 NONE 0	TURN-L									
												PRVTE	N -E								015	00
												PSNGR CAR		01 DRVR	NONE	36	F	OR-Y		028	000	02
																		OR<25				
01890	N N N N	04/26/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									02
NONE		TU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	TURN	PRVTE	E -W								000	00
N		4P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	1		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	46	M	OR-Y		000	000	00
N		45 25 3.19	-122 27 30.95		017400100S00													OR<25				
												02 NONE 0	TURN-L									
												PRVTE	N -E								015	00
												PSNGR CAR		01 DRVR	NONE	54	M	OR-Y		028	000	02
																		OR<25				

SER# / INVEST / RD DPT / UNLOC?	S P E D C	D R A L S	M J U G V	S I N L	W C O H 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
02984	N	N	N	N	N	07/03/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										02
COUNTY						SU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	TURN		N/A	E -W									000	00
N						1P	PORTLAND UA	2.50	SE SUNNYSIDE RD	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N						45 25 3.19	-122 27 30.95		017400100S00															UNK				
																02	NONE 9	TURN-L									015	00
																	N/A	N -E										
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
00824	N	N	N	N		03/02/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-R										02
NONE						TH		MN 0		CN		STOP SIGN	N	DRY	TURN		N/A	N -W									000	00
N						4P	PORTLAND UA	2.50		01	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N						45 25 3.19	-122 27 30.95		017400100S00															UNK				
																02	NONE 9	STRGHT									000	00
																	N/A	E -W										
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
00155	N	N	N	N		01/12/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NONE						SU	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E -W									000	00
N						8A	PORTLAND UA	2.50	SE SUNNYSIDE RD	02	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	75	F	OR-Y		000	000	00
N						45 25 3.1902239	-122 27 30.9476519		017400100S00															OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	S -N									015	00
																	PSNGR CAR		01	DRVR	NONE	34	M	OR-Y		028	000	02
																								OR<25				
04178	N	N	N	N		10/20/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02,08
NO RPT						MO	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		UNKNOWN	N	DRY	TURN		PRVTE	W -E									000	00
N						3P	PORTLAND UA	2.50	SE SUNNYSIDE RD	03	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y		000	000	00
N						45 25 3.19	-122 27 30.95		017400100S00															OR>25				
																02	NONE 0	TURN-L										
																	PRVTE	E -S									000	00
																	PSNGR CAR		01	DRVR	INJB	22	M	OR-Y		028,004	000	02,08
																								OR<25				
00359	N	N	N	N		01/29/2015	CLACKAMAS	1 14		INTER		N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
CITY						TH	DAMASCUS	MN 0	CLACKAMAS-BORING HY	CN		STOP SIGN	N	DRY	ANGL		PRVTE	N -S									015	00
N						4P	PORTLAND UA	2.50	SE SUNNYSIDE RD	03	1		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	78	M	OTH-Y		028	000	02
N						45 25 3.19	-122 27 30.95		017400100S00															N-RES				
																01	NONE 0	STRGHT										
																	PRVTE	N -S									015	00
																	PSNGR CAR		02	PSNG	INJB	81	F			000	000	00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
Highway 174 ALL ROAD TYPES, MP 2.49 to 2.51 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

19 - 20 of 20 Crash records shown

SER# INVEST RD DPT UNLOCT	S D M P R J S W E A U I C O E L G N H R D C S V L 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	SPCL USE TRLR QTY OWNER V# TYPE	MOVE FROM TO	PRTC P# TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
												02 NONE 0	STRGHT									
												PRVTE	W -E								000	00
												SCHL BUS		01 DRVR	NONE	69	M	OR-Y		000	000	00
																		OR<25				
01831	N N N N	05/11/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	UNK	ANGL-OTH	01 NONE 9	STRGHT									02
NONE		TH		MN 0		CN		STOP SIGN	N	WET	TURN	N/A	W -E								000	00
N		12P	PORTLAND UA	2.50		04	1		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK		000	000	00
N		45 25 3.19	-122 27 30.95		017400100S00													UNK				
												02 NONE 9	TURN-L									
												N/A	S -W								015	00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK		000	000	00
																		UNK				

1e

LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

1e

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	3	133	112	1
Future Vol, veh/h	0	8	3	133	112	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	13	13	6	6	4	4
Mvmt Flow	0	9	3	143	120	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	270	121	121	0	-	0
Stage 1	121	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.53	6.33	4.16	-	-	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.417	2.254	-	-	-
Pot Cap-1 Maneuver	696	901	1442	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	852	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	695	901	1442	-	-	-
Mov Cap-2 Maneuver	695	-	-	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	852	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	901	-	-
HCM Lane V/C Ratio	0.002	-	0.01	-	-
HCM Control Delay (s)	7.5	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↑	
Traffic Vol, veh/h	0	0	0	3	0	2	0	135	0	4	118	0
Future Vol, veh/h	0	0	0	3	0	2	0	135	0	4	118	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	4	4	4
Mvmt Flow	0	0	0	3	0	2	0	144	0	4	126	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	279	278	126	278	278	144	126	0	0	144	0	0
Stage 1	134	134	-	144	144	-	-	-	-	-	-	-
Stage 2	145	144	-	134	134	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	677	633	930	678	633	909	1448	-	-	1426	-	-
Stage 1	874	789	-	864	782	-	-	-	-	-	-	-
Stage 2	863	782	-	874	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	674	631	930	677	631	909	1448	-	-	1426	-	-
Mov Cap-2 Maneuver	674	631	-	677	631	-	-	-	-	-	-	-
Stage 1	874	787	-	864	782	-	-	-	-	-	-	-
Stage 2	861	782	-	872	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.8	0	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1448	-	-	-	754	1426	-	-
HCM Lane V/C Ratio	-	-	-	-	0.007	0.003	-	-
HCM Control Delay (s)	0	-	-	0	9.8	7.5	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	726	14	41	1036	88	26	4	25	83	5	51
Future Volume (vph)	29	726	14	41	1036	88	26	4	25	83	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.87		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	1754		1719	1810	1538	1805	1653		1736	1577	
Flt Permitted	0.07	1.00		0.23	1.00	1.00	0.72	1.00		0.74	1.00	
Satd. Flow (perm)	132	1754		416	1810	1538	1366	1653		1348	1577	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	30	748	14	42	1068	91	27	4	26	86	5	53
RTOR Reduction (vph)	0	1	0	0	0	36	0	21	0	0	42	0
Lane Group Flow (vph)	30	761	0	42	1068	55	27	9	0	86	16	0
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	0%	0%	0%	4%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	56.3	53.4		56.3	53.4	53.4	18.1	18.1		18.1	18.1	
Effective Green, g (s)	56.3	53.4		56.3	53.4	53.4	18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.64	0.61		0.64	0.61	0.61	0.21	0.21		0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	135	1065		309	1099	934	281	340		277	324	
v/s Ratio Prot	c0.01	0.43		0.00	c0.59			0.01			0.01	
v/s Ratio Perm	0.13			0.08		0.04	0.02			c0.06		
v/c Ratio	0.22	0.71		0.14	0.97	0.06	0.10	0.03		0.31	0.05	
Uniform Delay, d1	18.1	12.0		8.5	16.5	7.0	28.3	27.9		29.6	28.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	2.3		0.2	20.5	0.0	0.7	0.1		2.9	0.3	
Delay (s)	19.0	14.3		8.7	37.1	7.0	29.0	28.0		32.5	28.3	
Level of Service	B	B		A	D	A	C	C		C	C	
Approach Delay (s)		14.4			33.8			28.5			30.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	47.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑	↱		↕			↕	
Traffic Vol, veh/h	1	622	12	9	816	283	4	0	9	158	5	1
Future Vol, veh/h	1	622	12	9	816	283	4	0	9	158	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	4	4	4	15	15	15	1	1	1
Mvmt Flow	1	662	13	10	868	301	4	0	10	168	5	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	868	0	0	675	0	0	1562	1559	669	1564	1565	868
Stage 1	-	-	-	-	-	-	671	671	-	888	888	-
Stage 2	-	-	-	-	-	-	891	888	-	676	677	-
Critical Hdwy	4.19	-	-	4.14	-	-	7.25	6.65	6.35	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.65	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.65	-	6.11	5.51	-
Follow-up Hdwy	2.281	-	-	2.236	-	-	3.635	4.135	3.435	3.509	4.009	3.309
Pot Cap-1 Maneuver	747	-	-	907	-	-	85	105	436	~ 91	112	353
Stage 1	-	-	-	-	-	-	425	436	-	340	363	-
Stage 2	-	-	-	-	-	-	320	345	-	445	454	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	747	-	-	907	-	-	81	104	436	~ 88	111	353
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	104	-	~ 88	111	-
Stage 1	-	-	-	-	-	-	424	435	-	339	359	-
Stage 2	-	-	-	-	-	-	311	341	-	434	453	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	25.9	$ 548.5
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	747	-	-	907	-	-	89
HCM Lane V/C Ratio	0.074	0.001	-	-	0.011	-	-	1.96
HCM Control Delay (s)	25.9	9.8	0	-	9	-	-	$ 548.5
HCM Lane LOS	D	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	15

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	3	154	197	1
Future Vol, veh/h	1	3	3	154	197	1
Conflicting Peds, #/hr	0	0	1	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	1	3	3	167	214	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	389	216	216	0	-	0
Stage 1	216	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	619	829	1348	-	-	-
Stage 1	825	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	617	828	1347	-	-	-
Mov Cap-2 Maneuver	617	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	861	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1347	-	763	-	-
HCM Lane V/C Ratio	0.002	-	0.006	-	-
HCM Control Delay (s)	7.7	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	0	0	0	13	0	9	0	140	3	17	188	0
Future Vol, veh/h	0	0	0	13	0	9	0	140	3	17	188	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	0	14	0	10	0	149	3	18	200	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	392	389	200	388	388	152	200	0	0	153	0	0
Stage 1	236	236	-	152	152	-	-	-	-	-	-	-
Stage 2	156	153	-	236	236	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	571	549	846	574	550	900	1372	-	-	1428	-	-
Stage 1	772	713	-	855	775	-	-	-	-	-	-	-
Stage 2	851	775	-	772	713	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	560	541	846	568	542	899	1372	-	-	1427	-	-
Mov Cap-2 Maneuver	560	541	-	568	542	-	-	-	-	-	-	-
Stage 1	772	704	-	854	774	-	-	-	-	-	-	-
Stage 2	842	774	-	762	704	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1372	-	-	-	669	1427	-	-
HCM Lane V/C Ratio	-	-	-	-	0.035	0.013	-	-
HCM Control Delay (s)	0	-	-	0	10.6	7.6	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1119	30	61	852	93	58	25	117	119	40	48
Future Volume (vph)	72	1119	30	61	852	93	58	25	117	119	40	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1855		1752	1845	1568	1785	1607		1755	1698	
Flt Permitted	0.18	1.00		0.06	1.00	1.00	0.70	1.00		0.57	1.00	
Satd. Flow (perm)	326	1855		118	1845	1568	1312	1607		1055	1698	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	74	1154	31	63	878	96	60	26	121	123	41	49
RTOR Reduction (vph)	0	1	0	0	0	35	0	98	0	0	40	0
Lane Group Flow (vph)	74	1184	0	63	878	61	60	49	0	123	50	0
Confl. Peds. (#/hr)							1		4	4		1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	66.6	62.6		66.6	62.6	62.6	18.9	18.9		18.9	18.9	
Effective Green, g (s)	66.6	62.6		66.6	62.6	62.6	18.9	18.9		18.9	18.9	
Actuated g/C Ratio	0.67	0.63		0.67	0.63	0.63	0.19	0.19		0.19	0.19	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	277	1172		145	1166	991	250	306		201	324	
v/s Ratio Prot	0.01	c0.64		c0.02	0.48			0.03			0.03	
v/s Ratio Perm	0.17			0.27		0.04	0.05			c0.12		
v/c Ratio	0.27	1.01		0.43	0.75	0.06	0.24	0.16		0.61	0.16	
Uniform Delay, d1	10.7	18.2		23.5	12.8	7.0	34.0	33.4		36.7	33.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	28.8		2.1	2.8	0.0	2.3	1.1		13.1	1.0	
Delay (s)	11.3	47.0		25.5	15.6	7.0	36.2	34.5		49.8	34.4	
Level of Service	B	D		C	B	A	D	C		D	C	
Approach Delay (s)		44.9			15.4			35.0			43.3	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	193.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑	↱		↕			↕	
Traffic Vol, veh/h	1	941	32	7	710	265	1	1	8	240	11	6
Future Vol, veh/h	1	941	32	7	710	265	1	1	8	240	11	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	0	0	0	0	0	0
Mvmt Flow	1	1001	34	7	755	282	1	1	9	255	12	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	755	0	0	1035	0	0	1798	1789	1018	1794	1806	755
Stage 1	-	-	-	-	-	-	1020	1020	-	769	769	-
Stage 2	-	-	-	-	-	-	778	769	-	1025	1037	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	851	-	-	668	-	-	63	82	291	~ 63	80	412
Stage 1	-	-	-	-	-	-	288	317	-	397	413	-
Stage 2	-	-	-	-	-	-	392	413	-	286	311	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	851	-	-	668	-	-	54	81	291	~ 60	79	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	81	-	~ 60	79	-
Stage 1	-	-	-	-	-	-	287	316	-	396	409	-
Stage 2	-	-	-	-	-	-	371	409	-	276	310	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	27.4	$ 1669.2
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	851	-	-	668	-	-	62
HCM Lane V/C Ratio	0.062	0.001	-	-	0.011	-	-	4.41
HCM Control Delay (s)	27.4	9.2	0	-	10.4	-	-	$ 1669.2
HCM Lane LOS	D	A	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	29.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	3	137	115	1
Future Vol, veh/h	0	8	3	137	115	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	13	13	6	6	4	4
Mvmt Flow	0	9	3	147	124	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	278	125	125	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	153	-	-	-	-	-
Critical Hdwy	6.53	6.33	4.16	-	-	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.417	2.254	-	-	-
Pot Cap-1 Maneuver	689	897	1437	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	688	897	1437	-	-	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1437	-	897	-	-
HCM Lane V/C Ratio	0.002	-	0.01	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	0	0	0	3	0	2	0	139	0	4	121	0
Future Vol, veh/h	0	0	0	3	0	2	0	139	0	4	121	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	4	4	4
Mvmt Flow	0	0	0	3	0	2	0	148	0	4	129	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	286	285	129	285	285	148	129	0	0	148	0	0
Stage 1	137	137	-	148	148	-	-	-	-	-	-	-
Stage 2	149	148	-	137	137	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	670	628	926	671	628	904	1444	-	-	1421	-	-
Stage 1	871	787	-	859	779	-	-	-	-	-	-	-
Stage 2	858	779	-	871	787	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	667	626	926	670	626	904	1444	-	-	1421	-	-
Mov Cap-2 Maneuver	667	626	-	670	626	-	-	-	-	-	-	-
Stage 1	871	785	-	859	779	-	-	-	-	-	-	-
Stage 2	856	779	-	869	785	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.9	0	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	-	747	1421	-	-
HCM Lane V/C Ratio	-	-	-	-	0.007	0.003	-	-
HCM Control Delay (s)	0	-	-	0	9.9	7.5	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	746	14	41	1065	90	26	4	25	85	5	52
Future Volume (vph)	30	746	14	41	1065	90	26	4	25	85	5	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.87		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	1755		1719	1810	1538	1805	1653		1736	1576	
Flt Permitted	0.07	1.00		0.22	1.00	1.00	0.72	1.00		0.74	1.00	
Satd. Flow (perm)	131	1755		394	1810	1538	1365	1653		1348	1576	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	769	14	42	1098	93	27	4	26	88	5	54
RTOR Reduction (vph)	0	1	0	0	0	36	0	21	0	0	43	0
Lane Group Flow (vph)	31	782	0	42	1098	57	27	9	0	88	16	0
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	0%	0%	0%	4%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	56.6	53.7		56.6	53.7	53.7	18.1	18.1		18.1	18.1	
Effective Green, g (s)	56.6	53.7		56.6	53.7	53.7	18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.64	0.61		0.64	0.61	0.61	0.21	0.21		0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	134	1068		296	1102	936	280	339		276	323	
v/s Ratio Prot	c0.01	0.45		0.00	c0.61			0.01			0.01	
v/s Ratio Perm	0.14			0.09		0.04	0.02			c0.07		
v/c Ratio	0.23	0.73		0.14	1.00	0.06	0.10	0.03		0.32	0.05	
Uniform Delay, d1	19.9	12.2		8.7	17.2	7.0	28.4	28.0		29.8	28.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	2.6		0.2	26.0	0.0	0.7	0.2		3.0	0.3	
Delay (s)	20.8	14.8		9.0	43.2	7.0	29.1	28.2		32.8	28.4	
Level of Service	C	B		A	D	A	C	C		C	C	
Approach Delay (s)		15.0			39.3			28.6			31.1	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	54.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↑	↗		↕			↕	
Traffic Vol, veh/h	1	640	12	9	839	291	4	0	9	162	5	1
Future Vol, veh/h	1	640	12	9	839	291	4	0	9	162	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	4	4	4	15	15	15	1	1	1
Mvmt Flow	1	681	13	10	893	310	4	0	10	172	5	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	893	0	0	694	0	0	1606	1603	688	1608	1609	893
Stage 1	-	-	-	-	-	-	690	690	-	913	913	-
Stage 2	-	-	-	-	-	-	916	913	-	695	696	-
Critical Hdwy	4.19	-	-	4.14	-	-	7.25	6.65	6.35	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.65	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.65	-	6.11	5.51	-
Follow-up Hdwy	2.281	-	-	2.236	-	-	3.635	4.135	3.435	3.509	4.009	3.309
Pot Cap-1 Maneuver	731	-	-	892	-	-	79	99	425	~ 85	105	342
Stage 1	-	-	-	-	-	-	415	427	-	329	354	-
Stage 2	-	-	-	-	-	-	309	335	-	434	445	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	731	-	-	892	-	-	75	98	425	~ 82	104	342
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	98	-	~ 82	104	-
Stage 1	-	-	-	-	-	-	414	426	-	328	350	-
Stage 2	-	-	-	-	-	-	300	331	-	423	444	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	27.5	$ 638.6
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	174	731	-	-	892	-	-	83
HCM Lane V/C Ratio	0.079	0.001	-	-	0.011	-	-	2.153
HCM Control Delay (s)	27.5	9.9	0	-	9.1	-	-	$ 638.6
HCM Lane LOS	D	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	16.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	3	158	203	1
Future Vol, veh/h	1	3	3	158	203	1
Conflicting Peds, #/hr	0	0	1	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	1	3	3	172	221	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	401	223	223	0	-	0
Stage 1	223	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	609	822	1340	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	607	821	1339	-	-	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	857	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1339	-	754	-	-
HCM Lane V/C Ratio	0.002	-	0.006	-	-
HCM Control Delay (s)	7.7	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↑	
Traffic Vol, veh/h	0	0	0	13	0	9	0	144	3	17	193	0
Future Vol, veh/h	0	0	0	13	0	9	0	144	3	17	193	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	0	14	0	10	0	153	3	18	205	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	401	398	205	397	397	156	205	0	0	157	0	0
Stage 1	241	241	-	156	156	-	-	-	-	-	-	-
Stage 2	160	157	-	241	241	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	563	543	841	567	544	895	1366	-	-	1423	-	-
Stage 1	767	710	-	851	772	-	-	-	-	-	-	-
Stage 2	847	772	-	767	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	552	535	841	561	536	894	1366	-	-	1422	-	-
Mov Cap-2 Maneuver	552	535	-	561	536	-	-	-	-	-	-	-
Stage 1	767	701	-	850	771	-	-	-	-	-	-	-
Stage 2	838	771	-	757	701	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	-	662	1422	-	-
HCM Lane V/C Ratio	-	-	-	-	0.035	0.013	-	-
HCM Control Delay (s)	0	-	-	0	10.6	7.6	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	1151	30	61	876	96	58	25	117	122	40	49
Future Volume (vph)	74	1151	30	61	876	96	58	25	117	122	40	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1856		1752	1845	1568	1785	1607		1755	1695	
Flt Permitted	0.17	1.00		0.06	1.00	1.00	0.70	1.00		0.57	1.00	
Satd. Flow (perm)	309	1856		117	1845	1568	1310	1607		1045	1695	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	76	1187	31	63	903	99	60	26	121	126	41	51
RTOR Reduction (vph)	0	1	0	0	0	36	0	99	0	0	42	0
Lane Group Flow (vph)	76	1217	0	63	903	63	60	48	0	126	50	0
Confl. Peds. (#/hr)							1		4	4		1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	67.3	63.3		67.3	63.3	63.3	18.2	18.2		18.2	18.2	
Effective Green, g (s)	67.3	63.3		67.3	63.3	63.3	18.2	18.2		18.2	18.2	
Actuated g/C Ratio	0.68	0.64		0.68	0.64	0.64	0.18	0.18		0.18	0.18	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	269	1186		145	1179	1002	240	295		192	311	
v/s Ratio Prot	0.01	c0.66		c0.02	0.49			0.03			0.03	
v/s Ratio Perm	0.18			0.28		0.04	0.05			c0.12		
v/c Ratio	0.28	1.03		0.43	0.77	0.06	0.25	0.16		0.66	0.16	
Uniform Delay, d1	11.0	17.9		23.7	12.6	6.7	34.6	34.0		37.5	34.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	33.0		2.1	3.0	0.0	2.5	1.2		16.2	1.1	
Delay (s)	11.6	50.8		25.7	15.6	6.7	37.0	35.2		53.7	35.1	
Level of Service	B	D		C	B	A	D	D		D	D	
Approach Delay (s)		48.5			15.4			35.7			45.8	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	221

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↰	↑	↱		↔			↔	
Traffic Vol, veh/h	1	968	32	7	730	273	1	1	8	247	11	6
Future Vol, veh/h	1	968	32	7	730	273	1	1	8	247	11	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	0	0	0	0	0	0
Mvmt Flow	1	1030	34	7	777	290	1	1	9	263	12	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	777	0	0	1064	0	0	1849	1840	1047	1845	1857	777
Stage 1	-	-	-	-	-	-	1049	1049	-	791	791	-
Stage 2	-	-	-	-	-	-	800	791	-	1054	1066	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	835	-	-	651	-	-	58	76	280	~ 58	74	400
Stage 1	-	-	-	-	-	-	277	307	-	386	404	-
Stage 2	-	-	-	-	-	-	382	404	-	276	301	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	835	-	-	651	-	-	50	75	280	~ 55	73	400
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	75	-	~ 55	73	-
Stage 1	-	-	-	-	-	-	276	306	-	385	400	-
Stage 2	-	-	-	-	-	-	361	400	-	266	300	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	28.8	$ 1911.4
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	162	835	-	-	651	-	-	57
HCM Lane V/C Ratio	0.066	0.001	-	-	0.011	-	-	4.927
HCM Control Delay (s)	28.8	9.3	0	-	10.6	-	-	$ 1911.4
HCM Lane LOS	D	A	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	31.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	4	137	116	2
Future Vol, veh/h	0	8	4	137	116	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	13	13	6	6	4	4
Mvmt Flow	0	9	4	147	125	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	281	126	127	0	-	0
Stage 1	126	-	-	-	-	-
Stage 2	155	-	-	-	-	-
Critical Hdwy	6.53	6.33	4.16	-	-	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.417	2.254	-	-	-
Pot Cap-1 Maneuver	686	896	1435	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	684	896	1435	-	-	-
Mov Cap-2 Maneuver	684	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	847	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1435	-	896	-	-
HCM Lane V/C Ratio	0.003	-	0.01	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	0	0	7	3	0	2	7	140	0	4	122	0
Future Vol, veh/h	0	0	7	3	0	2	7	140	0	4	122	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	4	4	4
Mvmt Flow	0	0	7	3	0	2	7	149	0	4	130	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	302	301	130	305	301	149	130	0	0	149	0	0
Stage 1	138	138	-	163	163	-	-	-	-	-	-	-
Stage 2	164	163	-	142	138	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	654	615	925	651	615	903	1443	-	-	1420	-	-
Stage 1	870	786	-	844	767	-	-	-	-	-	-	-
Stage 2	843	767	-	866	786	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	649	610	925	642	610	903	1443	-	-	1420	-	-
Mov Cap-2 Maneuver	649	610	-	642	610	-	-	-	-	-	-	-
Stage 1	866	784	-	840	763	-	-	-	-	-	-	-
Stage 2	837	763	-	857	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	10	0.4	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1443	-	-	925	726	1420	-	-
HCM Lane V/C Ratio	0.005	-	-	0.008	0.007	0.003	-	-
HCM Control Delay (s)	7.5	0	-	8.9	10	7.5	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	746	14	41	1066	91	26	4	25	87	5	65
Future Volume (vph)	37	746	14	41	1066	91	26	4	25	87	5	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.87		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1671	1755		1719	1810	1538	1805	1653		1736	1572	
Flt Permitted	0.07	1.00		0.22	1.00	1.00	0.71	1.00		0.74	1.00	
Satd. Flow (perm)	131	1755		394	1810	1538	1349	1653		1348	1572	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	38	769	14	42	1099	94	27	4	26	90	5	67
RTOR Reduction (vph)	0	1	0	0	0	36	0	21	0	0	53	0
Lane Group Flow (vph)	38	782	0	42	1099	58	27	9	0	90	19	0
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	0%	0%	0%	4%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	56.6	53.7		56.6	53.7	53.7	18.1	18.1		18.1	18.1	
Effective Green, g (s)	56.6	53.7		56.6	53.7	53.7	18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.64	0.61		0.64	0.61	0.61	0.21	0.21		0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	134	1068		296	1102	936	276	339		276	322	
v/s Ratio Prot	c0.01	0.45		0.00	c0.61			0.01			0.01	
v/s Ratio Perm	0.17			0.09		0.04	0.02			c0.07		
v/c Ratio	0.28	0.73		0.14	1.00	0.06	0.10	0.03		0.33	0.06	
Uniform Delay, d1	20.0	12.2		8.7	17.2	7.0	28.4	28.0		29.9	28.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	2.6		0.2	26.3	0.0	0.7	0.2		3.1	0.3	
Delay (s)	21.2	14.8		9.0	43.4	7.0	29.1	28.2		33.0	28.5	
Level of Service	C	B		A	D	A	C	C		C	C	
Approach Delay (s)		15.1			39.5			28.6			31.0	
Approach LOS		B			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	88.2	Sum of lost time (s)		13.5	
Intersection Capacity Utilization	75.1%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SEL	SER
Lane Configurations										
Traffic Vol, veh/h	13	642	12	9	846	298	0	9	167	5
Future Vol, veh/h	13	642	12	9	846	298	0	9	167	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	None	-	-
Storage Length	-	-	-	0	-	0	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	4	4	4	15	15	1	1
Mvmt Flow	14	683	13	10	900	317	0	10	178	5

Major/Minor	Major1			Major2			Minor1		Minor2	
Conflicting Flow All	900	0	0	696	0	0	1641	690	1643	900
Stage 1	-	-	-	-	-	-	718	-	920	-
Stage 2	-	-	-	-	-	-	923	-	723	-
Critical Hdwy	4.19	-	-	4.14	-	-	7.25	6.35	7.11	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	-	6.11	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	-	6.11	-
Follow-up Hdwy	2.281	-	-	2.236	-	-	3.635	3.435	3.509	3.309
Pot Cap-1 Maneuver	726	-	-	891	-	-	74	424	~ 80	339
Stage 1	-	-	-	-	-	-	400	-	326	-
Stage 2	-	-	-	-	-	-	307	-	419	-
Platoon blocked, %		-	-		-	-				
Mov Cap-1 Maneuver	726	-	-	891	-	-	68	424	~ 76	339
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	-	~ 76	-
Stage 1	-	-	-	-	-	-	387	-	316	-
Stage 2	-	-	-	-	-	-	298	-	396	-

Approach	EB	WB	NB	SE
HCM Control Delay, s	0.2	0.1	29.3	40.1
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	162	726	-	-	891	-	-	109
HCM Lane V/C Ratio	0.085	0.019	-	-	0.011	-	-	0.059
HCM Control Delay (s)	29.3	10.1	0	-	9.1	-	-	40.1
HCM Lane LOS	D	B	A	-	A	-	-	E
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	132	132	0
Future Vol, veh/h	0	7	0	132	132	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	0	143	143	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	143	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	905	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	905	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	905	-
HCM Lane V/C Ratio	-	0.008	-
HCM Control Delay (s)	-	9	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑	↱			↱
Traffic Vol, veh/h	0	173	292	19	0	14
Future Vol, veh/h	0	173	292	19	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	188	317	21	0	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	328
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	713
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	713
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	-	-	-	713
HCM Lane V/C Ratio	-	-	-	0.021
HCM Control Delay (s)	-	-	-	10.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	4	137	116	2
Future Vol, veh/h	0	8	4	137	116	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	13	13	6	6	4	4
Mvmt Flow	0	9	4	147	125	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	281	126	127	0	-	0
Stage 1	126	-	-	-	-	-
Stage 2	155	-	-	-	-	-
Critical Hdwy	6.53	6.33	4.16	-	-	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.417	2.254	-	-	-
Pot Cap-1 Maneuver	686	896	1435	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	684	896	1435	-	-	-
Mov Cap-2 Maneuver	684	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	847	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1435	-	896	-	-
HCM Lane V/C Ratio	0.003	-	0.01	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↕	
Traffic Vol, veh/h	0	0	7	3	0	2	7	140	0	4	122	0
Future Vol, veh/h	0	0	7	3	0	2	7	140	0	4	122	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	4	4	4
Mvmt Flow	0	0	7	3	0	2	7	149	0	4	130	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	302	301	130	305	301	149	130	0	0	149	0	0
Stage 1	138	138	-	163	163	-	-	-	-	-	-	-
Stage 2	164	163	-	142	138	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	654	615	925	651	615	903	1443	-	-	1420	-	-
Stage 1	870	786	-	844	767	-	-	-	-	-	-	-
Stage 2	843	767	-	866	786	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	649	610	925	642	610	903	1443	-	-	1420	-	-
Mov Cap-2 Maneuver	649	610	-	642	610	-	-	-	-	-	-	-
Stage 1	866	784	-	840	763	-	-	-	-	-	-	-
Stage 2	837	763	-	857	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	10	0.4	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1443	-	-	925	726	1420	-	-
HCM Lane V/C Ratio	0.005	-	-	0.008	0.007	0.003	-	-
HCM Control Delay (s)	7.5	0	-	8.9	10	7.5	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	746	14	41	1066	91	26	4	25	87	5	65
Future Volume (veh/h)	37	746	14	41	1066	91	26	4	25	87	5	65
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	1781	1781	1781	1826	1826	1826	1900	1900	1900	1841	1841	1841
Adj Flow Rate, veh/h	38	769	14	42	1099	94	27	4	26	90	5	67
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	5	5	5	0	0	0	4	4	4
Cap, veh/h	147	1056	19	344	1110	940	306	45	291	339	22	300
Arrive On Green	0.03	0.61	0.61	0.04	0.61	0.61	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1697	1744	32	1739	1826	1547	1349	219	1424	1358	109	1467
Grp Volume(v), veh/h	38	0	783	42	1099	94	27	0	30	90	0	72
Grp Sat Flow(s),veh/h/ln	1697	0	1776	1739	1826	1547	1349	0	1644	1358	0	1577
Q Serve(g_s), s	0.7	0.0	27.4	0.8	52.2	2.2	1.5	0.0	1.3	5.1	0.0	3.4
Cycle Q Clear(g_c), s	0.7	0.0	27.4	0.8	52.2	2.2	4.8	0.0	1.3	6.4	0.0	3.4
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.87	1.00		0.93
Lane Grp Cap(c), veh/h	147	0	1076	344	1110	940	306	0	336	339	0	322
V/C Ratio(X)	0.26	0.00	0.73	0.12	0.99	0.10	0.09	0.00	0.09	0.27	0.00	0.22
Avail Cap(c_a), veh/h	185	0	1077	381	1110	940	306	0	336	339	0	322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	12.2	10.3	17.0	7.2	31.2	0.0	28.4	31.0	0.0	29.2
Incr Delay (d2), s/veh	0.9	0.0	2.5	0.2	24.6	0.0	0.6	0.0	0.5	1.9	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	9.9	0.3	25.5	0.7	0.5	0.0	0.5	1.7	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	14.8	10.5	41.6	7.3	31.8	0.0	28.9	32.9	0.0	30.8
LnGrp LOS	C	A	B	B	D	A	C	A	C	C	A	C
Approach Vol, veh/h		821			1235			57			162	
Approach Delay, s/veh		15.1			37.9			30.3			31.9	
Approach LOS		B			D			C			C	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	22.5	7.7	57.8	22.5	7.5	58.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	5.1	53.4	18.0	5.0	53.5
Max Q Clear Time (g_c+I1), s	6.8	2.8	29.4	8.4	2.7	54.2
Green Ext Time (p_c), s	0.1	0.0	6.0	0.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SEL	SER
Lane Configurations		↔		↰	↑	↱	↰↱			↱
Traffic Vol, veh/h	13	642	12	9	846	298	0	9	167	5
Future Vol, veh/h	13	642	12	9	846	298	0	9	167	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	None	-	-
Storage Length	-	-	-	0	-	0	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	4	4	4	15	15	1	1
Mvmt Flow	14	683	13	10	900	317	0	10	178	5

Major/Minor	Major1			Major2			Minor1		Minor2	
Conflicting Flow All	900	0	0	696	0	0	1641	690	1643	900
Stage 1	-	-	-	-	-	-	718	-	920	-
Stage 2	-	-	-	-	-	-	923	-	723	-
Critical Hdwy	4.19	-	-	4.14	-	-	7.25	6.35	7.11	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	-	6.11	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	-	6.11	-
Follow-up Hdwy	2.281	-	-	2.236	-	-	3.635	3.435	3.509	3.309
Pot Cap-1 Maneuver	726	-	-	891	-	-	74	424	~ 80	339
Stage 1	-	-	-	-	-	-	400	-	326	-
Stage 2	-	-	-	-	-	-	307	-	419	-
Platoon blocked, %		-	-		-	-				
Mov Cap-1 Maneuver	726	-	-	891	-	-	68	424	~ 76	339
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	-	~ 76	-
Stage 1	-	-	-	-	-	-	387	-	316	-
Stage 2	-	-	-	-	-	-	298	-	396	-

Approach	EB	WB	NB	SE
HCM Control Delay, s	0.2	0.1	29.3	40.1
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	162	726	-	-	891	-	-	109
HCM Lane V/C Ratio	0.085	0.019	-	-	0.011	-	-	0.059
HCM Control Delay (s)	29.3	10.1	0	-	9.1	-	-	40.1
HCM Lane LOS	D	B	A	-	A	-	-	E
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	132	132	0
Future Vol, veh/h	0	7	0	132	132	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	0	143	143	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	143	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	905	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	905	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	905	-
HCM Lane V/C Ratio	-	0.008	-
HCM Control Delay (s)	-	9	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑	↱			↱
Traffic Vol, veh/h	0	173	292	19	0	14
Future Vol, veh/h	0	173	292	19	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	188	317	21	0	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	328
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	713
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	713
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	-	-	-	713
HCM Lane V/C Ratio	-	-	-	0.021
HCM Control Delay (s)	-	-	-	10.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	4	158	203	2
Future Vol, veh/h	1	3	4	158	203	2
Conflicting Peds, #/hr	0	0	1	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	1	3	4	172	221	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	403	223	224	0	-	0
Stage 1	223	-	-	-	-	-
Stage 2	180	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	607	822	1339	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	604	821	1338	-	-	-
Mov Cap-2 Maneuver	604	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	855	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1338	-	753	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	7.7	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	0	0	6	13	0	9	8	145	3	17	193	0
Future Vol, veh/h	0	0	6	13	0	9	8	145	3	17	193	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	6	14	0	10	9	154	3	18	205	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	420	417	205	419	416	157	205	0	0	158	0	0
Stage 1	241	241	-	175	175	-	-	-	-	-	-	-
Stage 2	179	176	-	244	241	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	547	530	841	548	530	894	1366	-	-	1422	-	-
Stage 1	767	710	-	832	758	-	-	-	-	-	-	-
Stage 2	827	757	-	764	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	533	519	841	535	519	893	1366	-	-	1421	-	-
Mov Cap-2 Maneuver	533	519	-	535	519	-	-	-	-	-	-	-
Stage 1	762	701	-	825	752	-	-	-	-	-	-	-
Stage 2	812	751	-	749	701	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10.8	0.4	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	841	640	1421	-	-
HCM Lane V/C Ratio	0.006	-	-	0.008	0.037	0.013	-	-
HCM Control Delay (s)	7.7	0	-	9.3	10.8	7.6	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	1151	30	61	877	97	58	25	117	123	40	60
Future Volume (vph)	82	1151	30	61	877	97	58	25	117	123	40	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1856		1752	1845	1568	1785	1607		1755	1681	
Flt Permitted	0.16	1.00		0.06	1.00	1.00	0.68	1.00		0.57	1.00	
Satd. Flow (perm)	307	1856		117	1845	1568	1269	1607		1046	1681	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	85	1187	31	63	904	100	60	26	121	127	41	62
RTOR Reduction (vph)	0	1	0	0	0	36	0	99	0	0	51	0
Lane Group Flow (vph)	85	1217	0	63	904	64	60	48	0	127	52	0
Confl. Peds. (#/hr)							1		4	4		1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	67.2	63.2		67.2	63.2	63.2	18.3	18.3		18.3	18.3	
Effective Green, g (s)	67.2	63.2		67.2	63.2	63.2	18.3	18.3		18.3	18.3	
Actuated g/C Ratio	0.68	0.64		0.68	0.64	0.64	0.18	0.18		0.18	0.18	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	267	1184		145	1177	1000	234	297		193	310	
v/s Ratio Prot	0.01	c0.66		c0.02	0.49			0.03			0.03	
v/s Ratio Perm	0.20			0.28		0.04	0.05			c0.12		
v/c Ratio	0.32	1.03		0.43	0.77	0.06	0.26	0.16		0.66	0.17	
Uniform Delay, d1	11.2	17.9		23.6	12.7	6.7	34.5	33.9		37.4	34.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	33.5		2.1	3.1	0.0	2.6	1.2		16.2	1.2	
Delay (s)	11.9	51.4		25.7	15.8	6.8	37.2	35.1		53.7	35.1	
Level of Service	B	D		C	B	A	D	D		D	D	
Approach Delay (s)		48.8			15.5			35.7			45.4	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SEL	SER
Lane Configurations		↕		↰	↑	↱	↰↑			↱
Traffic Vol, veh/h	11	970	32	7	736	279	1	8	253	11
Future Vol, veh/h	11	970	32	7	736	279	1	8	253	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	None	-	-
Storage Length	-	-	-	0	-	0	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	0	0	0	0
Mvmt Flow	12	1032	34	7	783	297	1	9	269	12

Major/Minor	Major1			Major2			Minor1		Minor2	
Conflicting Flow All	783	0	0	1066	0	0	1879	1049	1875	783
Stage 1	-	-	-	-	-	-	1073	-	797	-
Stage 2	-	-	-	-	-	-	806	-	1078	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.1	6.2	7.1	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	-	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	-	6.1	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.5	3.3	3.5	3.3
Pot Cap-1 Maneuver	831	-	-	650	-	-	55	279	~ 55	397
Stage 1	-	-	-	-	-	-	269	-	383	-
Stage 2	-	-	-	-	-	-	379	-	~ 267	-
Platoon blocked, %		-	-		-	-				
Mov Cap-1 Maneuver	831	-	-	650	-	-	45	279	~ 51	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	45	-	~ 51	-
Stage 1	-	-	-	-	-	-	259	-	369	-
Stage 2	-	-	-	-	-	-	358	-	~ 249	-

Approach	EB	WB	NB	SE
HCM Control Delay, s	0.1	0.1	30.3	51
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	153	831	-	-	650	-	-	96
HCM Lane V/C Ratio	0.07	0.014	-	-	0.011	-	-	0.188
HCM Control Delay (s)	30.3	9.4	0	-	10.6	-	-	51
HCM Lane LOS	D	A	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	0	204	212	0
Future Vol, veh/h	0	6	0	204	212	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	0	222	230	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	230	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	809	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	809	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	809	-
HCM Lane V/C Ratio	-	0.008	-
HCM Control Delay (s)	-	9.5	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↱
Traffic Vol, veh/h	0	270	280	11	0	12
Future Vol, veh/h	0	270	280	11	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	293	304	12	0	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	310
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	730
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	730
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	730
HCM Lane V/C Ratio	-	-	-	0.018
HCM Control Delay (s)	-	-	-	10
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	3	4	158	203	2
Future Vol, veh/h	1	3	4	158	203	2
Conflicting Peds, #/hr	0	0	1	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	1	3	4	172	221	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	403	223	224	0	-	0
Stage 1	223	-	-	-	-	-
Stage 2	180	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	607	822	1339	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	604	821	1338	-	-	-
Mov Cap-2 Maneuver	604	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	855	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1338	-	753	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	7.7	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↰	↱	
Traffic Vol, veh/h	0	0	6	13	0	9	8	145	3	17	193	0
Future Vol, veh/h	0	0	6	13	0	9	8	145	3	17	193	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	6	14	0	10	9	154	3	18	205	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	420	417	205	419	416	157	205	0	0	158	0	0
Stage 1	241	241	-	175	175	-	-	-	-	-	-	-
Stage 2	179	176	-	244	241	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	547	530	841	548	530	894	1366	-	-	1422	-	-
Stage 1	767	710	-	832	758	-	-	-	-	-	-	-
Stage 2	827	757	-	764	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	533	519	841	535	519	893	1366	-	-	1421	-	-
Mov Cap-2 Maneuver	533	519	-	535	519	-	-	-	-	-	-	-
Stage 1	762	701	-	825	752	-	-	-	-	-	-	-
Stage 2	812	751	-	749	701	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10.8	0.4	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	841	640	1421	-	-
HCM Lane V/C Ratio	0.006	-	-	0.008	0.037	0.013	-	-
HCM Control Delay (s)	7.7	0	-	9.3	10.8	7.6	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	1151	30	61	877	97	58	25	117	123	40	60
Future Volume (veh/h)	82	1151	30	61	877	97	58	25	117	123	40	60
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	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	1870	1870	1870	1856	1856	1856	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	85	1187	31	63	904	100	60	26	121	127	41	62
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	3	3	3	1	1	1	2	2	2
Cap, veh/h	314	1156	30	146	1175	996	243	53	247	201	124	187
Arrive On Green	0.05	0.64	0.64	0.04	0.63	0.63	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1781	1814	47	1767	1856	1572	1295	288	1339	1232	669	1012
Grp Volume(v), veh/h	85	0	1218	63	904	100	60	0	147	127	0	103
Grp Sat Flow(s),veh/h/ln	1781	0	1862	1767	1856	1572	1295	0	1627	1232	0	1680
Q Serve(g_s), s	1.6	0.0	63.1	1.2	34.5	2.5	4.2	0.0	8.0	10.2	0.0	5.3
Cycle Q Clear(g_c), s	1.6	0.0	63.1	1.2	34.5	2.5	9.4	0.0	8.0	18.2	0.0	5.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.82	1.00		0.60
Lane Grp Cap(c), veh/h	314	0	1186	146	1175	996	243	0	301	201	0	311
V/C Ratio(X)	0.27	0.00	1.03	0.43	0.77	0.10	0.25	0.00	0.49	0.63	0.00	0.33
Avail Cap(c_a), veh/h	324	0	1186	164	1182	1002	243	0	301	201	0	311
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	18.0	25.3	13.0	7.1	39.1	0.0	36.2	44.3	0.0	35.0
Incr Delay (d2), s/veh	0.5	0.0	33.1	2.0	3.1	0.0	2.4	0.0	5.6	14.2	0.0	2.8
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	0.7	0.0	33.4	1.0	13.4	0.8	1.4	0.0	3.5	3.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	0.0	51.1	27.3	16.1	7.2	41.6	0.0	41.8	58.6	0.0	37.9
LnGrp LOS	B	A	F	C	B	A	D	A	D	E	A	D
Approach Vol, veh/h		1303			1067			207			230	
Approach Delay, s/veh		48.6			15.9			41.7			49.3	
Approach LOS		D			B			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		22.8	8.6	67.6		22.8	9.0	67.2				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.3	5.1	63.1		18.3	5.1	63.1				
Max Q Clear Time (g_c+I1), s		11.4	3.2	65.1		20.2	3.6	36.5				
Green Ext Time (p_c), s		0.5	0.0	0.0		0.0	0.0	8.1				

Intersection Summary												
HCM 6th Ctrl Delay			35.7									
HCM 6th LOS			D									

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SEL	SER
Lane Configurations										
Traffic Vol, veh/h	11	970	32	7	736	279	1	8	253	11
Future Vol, veh/h	11	970	32	7	736	279	1	8	253	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	None	-	-
Storage Length	-	-	-	0	-	0	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	0	0	0	0
Mvmt Flow	12	1032	34	7	783	297	1	9	269	12

Major/Minor	Major1			Major2			Minor1		Minor2	
Conflicting Flow All	783	0	0	1066	0	0	1879	1049	1875	783
Stage 1	-	-	-	-	-	-	1073	-	797	-
Stage 2	-	-	-	-	-	-	806	-	1078	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.1	6.2	7.1	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	-	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	-	6.1	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.5	3.3	3.5	3.3
Pot Cap-1 Maneuver	831	-	-	650	-	-	55	279	~ 55	397
Stage 1	-	-	-	-	-	-	269	-	383	-
Stage 2	-	-	-	-	-	-	379	-	~ 267	-
Platoon blocked, %		-	-		-	-				
Mov Cap-1 Maneuver	831	-	-	650	-	-	45	279	~ 51	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	45	-	~ 51	-
Stage 1	-	-	-	-	-	-	259	-	369	-
Stage 2	-	-	-	-	-	-	358	-	~ 249	-

Approach	EB	WB	NB	SE
HCM Control Delay, s	0.1	0.1	30.3	51
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	153	831	-	-	650	-	-	96
HCM Lane V/C Ratio	0.07	0.014	-	-	0.011	-	-	0.188
HCM Control Delay (s)	30.3	9.4	0	-	10.6	-	-	51
HCM Lane LOS	D	A	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↱		↑	↑	
Traffic Vol, veh/h	0	6	0	204	212	0
Future Vol, veh/h	0	6	0	204	212	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	0	222	230	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	230	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	809	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	809	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	809	-
HCM Lane V/C Ratio	-	0.008	-
HCM Control Delay (s)	-	9.5	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↱			↱
Traffic Vol, veh/h	0	270	280	11	0	12
Future Vol, veh/h	0	270	280	11	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	293	304	12	0	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	310
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	730
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	730
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	730
HCM Lane V/C Ratio	-	-	-	0.018
HCM Control Delay (s)	-	-	-	10
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection: 1: SE Foster Road & SE Damascus Lane

Movement	EB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	24
Link Distance (ft)	162
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: SE Foster Road & Site Access/Safeway Driveway

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	28	30	29
Average Queue (ft)	2	6	1
95th Queue (ft)	14	26	10
Link Distance (ft)	21	63	442
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: SE Foster Road & Highway 212

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	100	342	389	389	370	50	52	111	51
Average Queue (ft)	31	151	153	298	77	15	19	34	26
95th Queue (ft)	76	286	431	450	287	40	48	74	48
Link Distance (ft)	412	412	355	355	355	134	134	442	442
Upstream Blk Time (%)			4	21	2				
Queuing Penalty (veh)			0	0	0				
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: SE Anderson Road/SE Sunnyside Road & Highway 212

Movement	EB	WB	NB	SB
Directions Served	LTR	L	LTR	LTR
Maximum Queue (ft)	322	31	78	1323
Average Queue (ft)	25	5	16	676
95th Queue (ft)	137	22	48	1456
Link Distance (ft)	380	412	122	1308
Upstream Blk Time (%)				19
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: SE Foster Road & SE Damascus Lane

Movement	EB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	22
Link Distance (ft)	162
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: SE Foster Road & Site Access/Safeway Driveway

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	28	30	31
Average Queue (ft)	5	20	2
95th Queue (ft)	22	43	14
Link Distance (ft)	21	63	307
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: SE Foster Road & Highway 212

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	46	416	323	370	60	94	118	153	97
Average Queue (ft)	22	255	44	196	18	32	74	81	42
95th Queue (ft)	44	411	137	364	45	69	117	141	76
Link Distance (ft)	412	412	355	355	355	134	134	442	442
Upstream Blk Time (%)		0		4			0		
Queuing Penalty (veh)		2		0			0		
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: SE Anderson Road/SE Sunnyside Road & Highway 212

Movement	EB	WB	NB	SB
Directions Served	LTR	L	LTR	LTR
Maximum Queue (ft)	183	31	30	1384
Average Queue (ft)	28	5	6	1363
95th Queue (ft)	108	23	25	1476
Link Distance (ft)	380	412	122	1369
Upstream Blk Time (%)				89
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

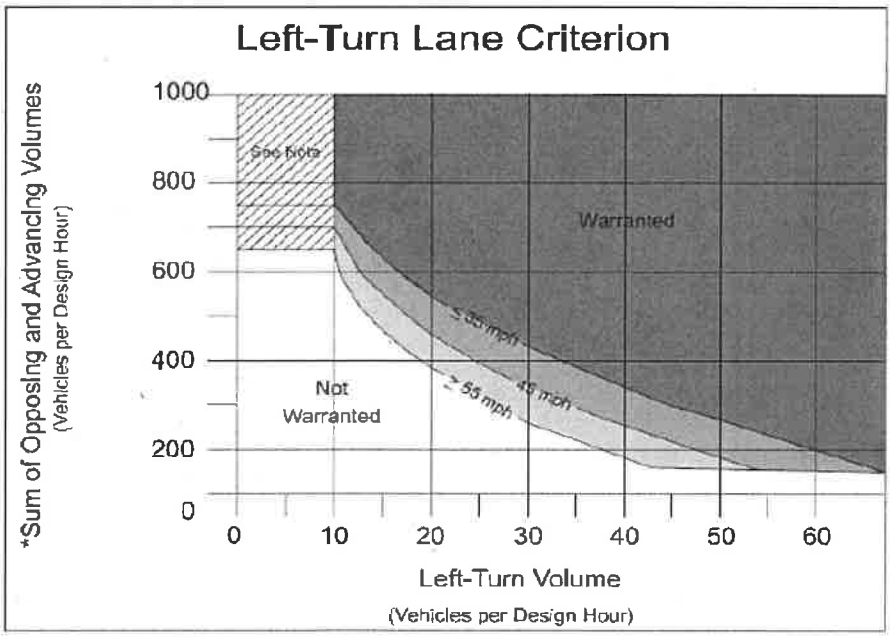
Network Summary

Network wide Queuing Penalty: 2

Project: Parr Lumber Damascus
Intersection: Highway 212 at SE Sunnyside Road
Date: 1/14/2020
Scenario: 2021 Existing Conditions
Eastbound Left

Speed? 45 mph

AM Peak Hour		**PM Peak Hour**	
Left-Turn Volume	1	Left-Turn Volume	1
Approaching DHV	635	Approaching DHV	974
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	1099	Opposing DHV	975
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
O+A DHV	**1734**	**O+A DHV**	**1949**
Lane Needed?	**Yes**	Lane Needed?	**Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

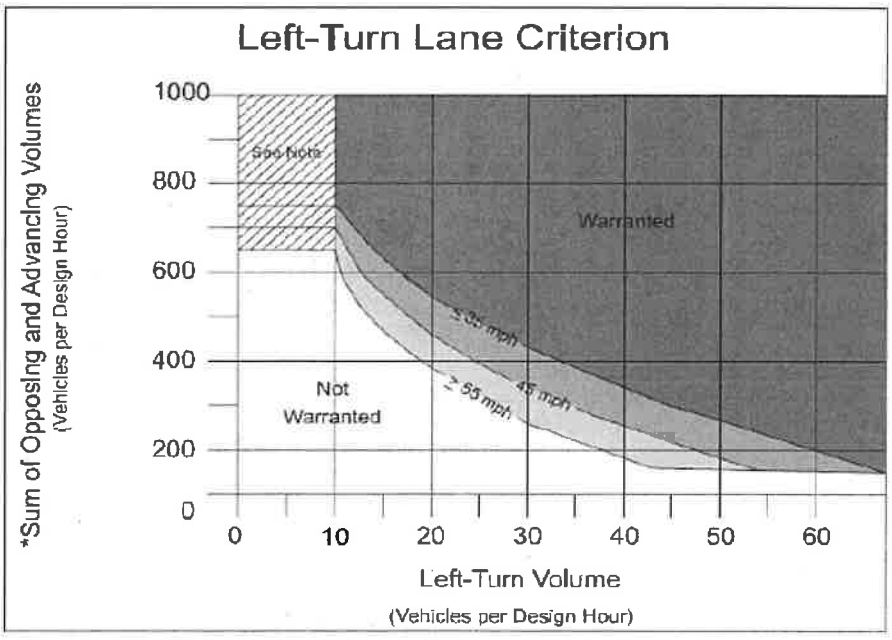
*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Project: Parr Lumber Damascus
Intersection: Highway 212 at SE Sunnyside Road
Date: 1/14/2020
Scenario: 2021 Background Conditions
Eastbound Left

Speed? 45 mph

AM Peak Hour		**PM Peak Hour**	
Left-Turn Volume	1	Left-Turn Volume	1
Approaching DHV	653	Approaching DHV	1001
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	1130	Opposing DHV	1003
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
O+A DHV	**1783**	**O+A DHV**	**2004**
Lane Needed?	**Yes**	Lane Needed?	**Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

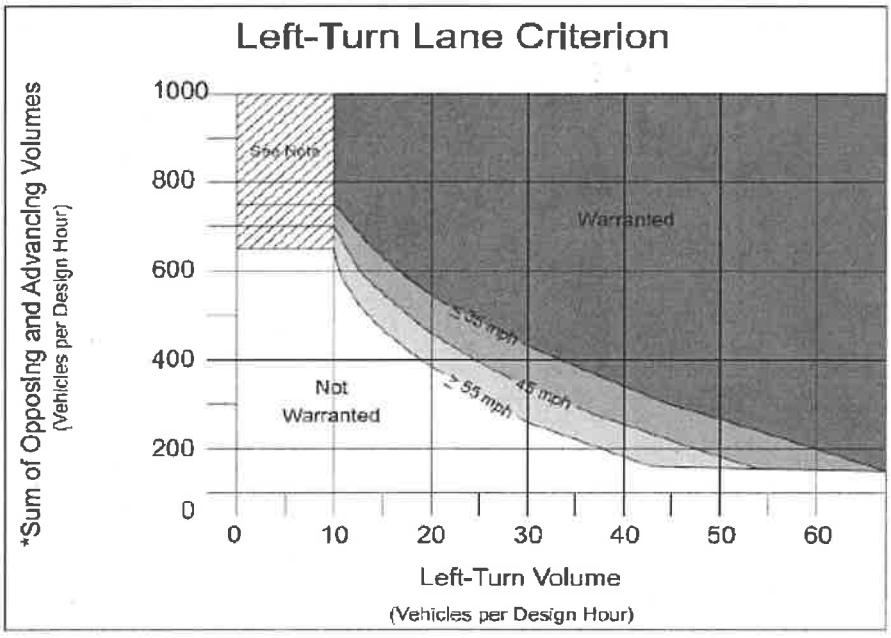
*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Project: Parr Lumber Damascus
Intersection: Highway 212 at SE Sunnyside Road
Date: 1/14/2020
Scenario: 2021 Buildout Conditions
Eastbound Left

Speed? 45 mph

AM Peak Hour		**PM Peak Hour**	
Left-Turn Volume	13	Left-Turn Volume	11
Approaching DHV	667	Approaching DHV	1013
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	1153	Opposing DHV	1022
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
O+A DHV	**1820**	**O+A DHV**	**2035**
Lane Needed?	**Yes**	Lane Needed?	**Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

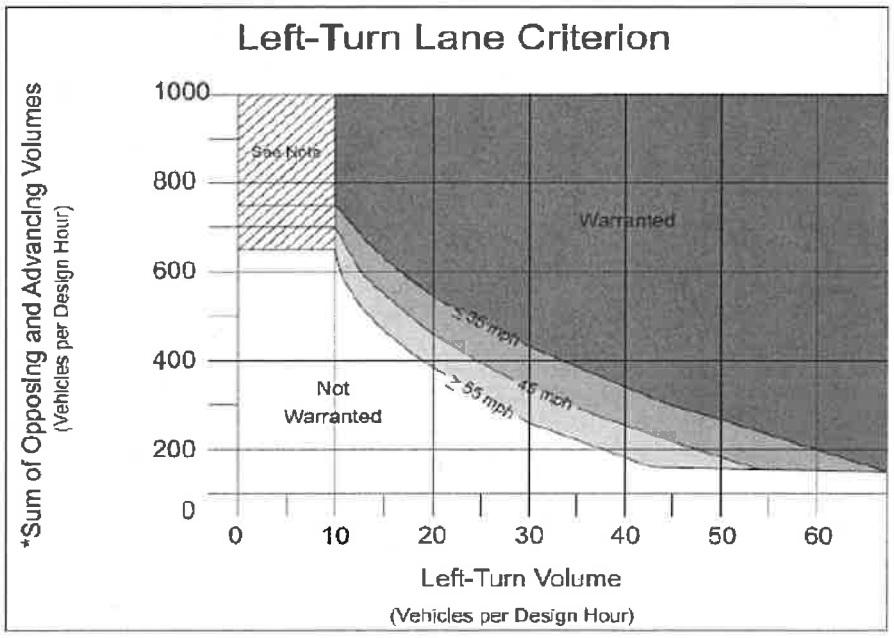
*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Project: Parr Lumber Damascus
Intersection: SE Foster Road at SE Damascus Lane
Date: 1/14/2020
Scenario: 2021 Buildout Conditions
Northbound Left

Speed? 45 mph

AM Peak Hour		**PM Peak Hour**	
Left-Turn Volume	4	Left-Turn Volume	4
Approaching DHV	141	Approaching DHV	162
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	118	Opposing DHV	205
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
O+A DHV	**259**	**O+A DHV**	**367**
Lane Needed?	**No**	Lane Needed?	**No**



Source: Oregon DOT Analysis Procedures Manual 2008

*(Advancing Vol/ # of Advancing Through Lanes)+
(Opposing Vol/ # of Opposing Through Lanes)

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

RhinoOne
GEOTECHNICAL

Geotechnical Investigation Report

Tax Lot 2S3E05D-1900, 2000, 2001, 2005 and 2213
SE Foster Road and SE Sunnyside Road
Damascus, Oregon

Prepared for:
Parr Lumber
Attn: Mr. Brad Farmer
5630 NW Five Oaks Drive
PO Box 849
Hillsboro, Oregon 97123

March 29, 2019
Project No. PAR-2019-004

RhinoOne Geotechnical | 4610 NE 77th Avenue #126 | Vancouver, WA 98662 | phone 360.258.1738

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SUPPORTING DATA

Appendix A – Figures

Appendix B – Summary Logs

1.0 INTRODUCTION

This report presents Rhino One Geotechnical's (ROG) geotechnical engineering study for the proposed Parr Lumber Facility located near SE Foster Road and SE Sunnyside Road in Damascus, Oregon (Figure 1 – Site Location Map). The site consists of Tax Lots 2S3E05D-1900, 2000, 2001, 2005 and 2213. Two vacant warehouse type structures are present on the western portion of the site. These structures will be demolished and removed from the site. A raised asphalt parking lot is present in front of one of the building whereas the rest of this area is covered with gravel. The southeast portion of the site is covered with grass. The northern third of the property is covered with gravels and is currently used as overflow parking for the adjacent facilities. We understand you will develop this property as a retail lumber yard facility. The project is in preliminary state of planning. We understand the new building will be on the west side of the site immediately north of SE Sunnyside Road / Highway 212. The remainder of the site will be either paved or covered with gravel areas.

This report provides a summary of our field exploration, laboratory testing, geotechnical engineering analysis, geotechnical design criteria, seismic design criteria and construction recommendations, for the proposed project.

2.0 SITE CONDITIONS

Site Geology

Site geology at the project site was evaluated based on a review of geologic mapping, site reconnaissance, and subsurface explorations. Appendix A, Figure 2 (Site Exploration Plan) shows the approximate locations of exploration for this project.

The site is located near the southern margin of the Portland Basin. The Basin extends from the Tualatin Mountains to the west and the foothills of the Cascade Mountains to the east. The basin is part of the larger Puget Sound-Willamette Valley physiographic province, a tectonically active lowland situated between the Coast Range to the west and the Cascade Mountains to the east[1].

Published mapping indicates the majority of the project is underlain by Pleistocene aged basalt flows belonging to the Boring Lava group[2]. Basement bedrock of the Columbia River Basalt Group underlies the Boring Lavas in the vicinity of the project. The CRBG consists of thick flows of basalt which have been folded and faulted from the compressional tectonics of the region. Springwater Formation deposits are mapped near the northeast corner of the project. The Springwater Formation consists of fluvial conglomerate, volcaniclastic sandstone, siltstone and debris flows derived from the Cascade Range during the Pleistocene.

The project is centrally located within the Damascus-Tickle Creek Fault Zone. The broad fault zone consists of numerous northeast- and northwest-trending faults that have folded and offset the Pleistocene-aged rocks.

Field Explorations

The subsurface exploration program for this project consisted of drilling seven (7) borings using a truck-mounted drill rig operated by Western States Soil Conservation Inc., of Hubbard, Oregon on March 04, 2019. The borings were drilled at the approximate location as shown on the Site Exploration Plan (Figure 2).

[1] Orr, E.L. and Orr, W.N. (1999). *Geology of Oregon*. Kendall/Hunt Publishing, Iowa. Page 254.
[2] Madin, I.P. (1994) Geology of the Damascus Quadrangle, Clackamas and Multnomah Counties, Oregon. Department of Geology and Mineral Industries. Geologic Map Series GMS-60.

The borings were advanced using hollow-stem auger drilling techniques. The borings were drilled to depths between 11.5 and 31.5 feet below the ground surface (BGS). Standard Penetration Test (SPT) soil samples were obtained at regular 2.5-foot intervals using a 140-pound Automatic Hammer to a depth of 10 feet, and at 5-foot intervals thereafter. Uncorrected blow counts from the SPT sampling are reported on the boring logs. Corrected blow counts [$(N_1)_{60}$] were used for our analysis unless otherwise noted.

The subsurface materials encountered were logged and field classified in general accordance with the Manual-Visual Classification Method (ASTM D 2488). Drill samples were collected at desired depths and packaged in moisture-tight bags. The soil samples were examined in the laboratory in order to supplement field classifications. Interpreted borings logs are presented in Appendix B.

Laboratory Testing

Laboratory tests were conducted on selected soil samples in accordance with standard ASTM methods. The tests conducted include:

- Natural moisture content of selected samples obtained from the borings in general accordance with guidelines presented in ASTM D2216.
- Grain Size Analysis on selected samples obtained from the borings and test pits in general accordance with guidelines presented in ASTM D C136/C117.
- Atterberg Limits on selected samples obtained from the borings in general accordance with guidelines presented in ASTM D4318.

The results of these tests are presented on the boring logs and attached at the end of this report.

Infiltration Testing

We had planned infiltration tests at B-1 and B-5. These tests were not completed due to the presence of silty clay with more than 80 percent fines. Based on our previous research and high fine contents, stormwater infiltration is not feasible at this site.

Subsurface Conditions

Seven borings were drilled throughout the site. The approximate boring locations are shown on Figure 2 of Appendix A. Boring logs are attached in Appendix B. The borings were drilled to depths varying from 11.5 to up to 25.5 feet BGS.

The site includes a grass field, a gravel parking area on the north side, and several buildings with associated gravel/asphalt parking areas on the west side of the site. Borings B-1 through B-4, and B-7 were drilled within gravel areas (6 to 14-inches). Boring B-5 was drilled within the grass field (8-inches of topsoil). Boring B-6 was completed within the paved parking area (1-inch asphaltic concrete cement over 2-inches gravel fill). Very soft to very stiff, low to medium plasticity, silty clay with minor amounts of sand was observed beneath the surficial gravel/topsoil in all seven borings. The silty clay soils were observed to the termination depths of Borings B-1 through B-4 and B-7 (11.5 to 21.5 feet BGS). The silty clay soil was observed in Boring B-6 to a depth of 20 feet BGS. Decomposed rock consisting of medium stiff, sandy silt was encountered in Boring B-6 from 20 feet BGS to the termination depth of 21.5 feet BGS. The silty clay observed in Boring B-5 extended to 15 feet BGS, the last 5 feet including some gravel and pieces of plastic. The upper 15 feet are interpreted to be fill material due to the presence of plastic material. The fill in Boring B-5 is underlain by decomposed to very intensely weathered rock. The weathered rock transitions from

medium stiff silt with sand at 15 feet, to medium dense silty sand at 19 feet, to very dense sandy gravel with silt at 21 feet BGS. Boring B-5 was terminated in the weathered rock at 25.5 feet BGS. The moisture contents of the silty clay soils are generally on the order of 23% to 59%. The moisture contents of the decomposed/weathered rock soils are generally on the order of 12% to 64%.

Groundwater

Groundwater was encountered in the decomposed/weathered rock soils in Borings B-5 and B-6 during our investigation. Perched groundwater was observed between 15 and 19 feet BGS in Boring B-5. Groundwater was observed in the final sample in Boring B-6 from 20 to 21.5 feet BGS. The groundwater observed in our exploratory borings is interpreted as perched layers of groundwater. A review of the Portland Groundwater Map suggests regional groundwater in the vicinity of the site is approximately 70 feet BGS.

3.0 GEOTECHNICAL DESIGN RECOMMENDATIONS

Discussion

The project consists of constructing a new building, parking lots and driveways for a wood processing and retail facility. The development plans are preliminary and the location and size of the improvements are not known at this time. Site improvements including drainage and new pavements may also be completed as part of this project. Approximate column and perimeter footings loads on the future building are assumed to be on the order of 100 kips and 3 kips per linear foot, respectively. Cuts and fills on this site will be minor and less than 5 feet. Below grade structures are not proposed at this time.

We encountered fills on the order of fifteen feet in boring B-5 which is near the southern part of the site. Based on our discussions with you, the retail building will most likely be placed on this side of the site. We recommend the upper 3 feet of material in this area be over-excavated and recompacted or replaced with new engineered fill before the placement of building foundation and slabs.

We have provided geotechnical recommendations in the following section of this report which should be incorporated into the design and construction of the proposed new development.

Spread Footing Design Recommendations

The native soils or the fill prepared in accordance with our recommendations are suitable for support of spread footings. Continuous wall and isolated spread footings should be at least 18- and 24-inches wide, respectively. The bottom of exterior footings should be at least 18-inches below the lowest adjacent exterior grade. The bottom of interior footings should be established at least 18-inches below the base of the floor slab.

Footings bearing on firm native soils should be sized for an allowable bearing capacity of 2,500 pounds per square foot (psf). This is a net bearing pressure. The weight of the footing and overlying backfill can be disregarded in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term-live loads and this bearing pressure may be doubled for short-term loads such as those resulting from wind or seismic forces.

Based on our analysis, total post-construction settlements were calculated to be less than 1-inch, with post-construction differential settlement of less than 0.5-inch over a 50-foot span for maximum column and perimeter footing loads of less than 100 kips and 3 kips per linear foot.

Lateral loads on footings can be resisted by passive earth pressure on the sides of the structures and by friction at the base of the footings. An allowable passive earth pressure of 200 pounds per cubic foot (pcf) may be used for footings confined by native soils. Adjacent floor slabs, pavements, or the upper 24-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. For footings in contact with native material, use a coefficient of friction equal to 0.35 when calculating resistance to sliding. Both of these numbers include a factor of safety of 1.5.

The footings should be founded below an imaginary line projecting at a 1-horizontal to 1-vertical (1H:1V) slope from the base of any adjacent, parallel utility trenches. The footings must be embedded so there is a minimum of 10-feet of horizontal distance between the base of the footings and any adjacent slope. In wet-weather a 2- to 4-inch layer of granular material may be required at the footing base to provide a firm surface for the construction of the new footings.

A geotechnical engineer or their representative from ROG should confirm suitable bearing conditions and evaluate footing subgrades. Observations should also confirm loose or soft material, organics, unsuitable fill, and old topsoil zones were removed. Localized deepening of excavations may be required to penetrate deleterious or unsuitable fill materials prior to placing granular rock pad.

Floor Slab Design Recommendations

For on-grade slabs on native soils, we recommend a 6-inch-thick layer of imported granular material be placed and compacted over the prepared subgrade. Imported granular material should be crushed rock or crushed gravel and fairly well-graded between coarse and fine, contain no deleterious materials, have a maximum particle size of 1-inch, and have less than 5-percent by weight passing the U.S. Standard Number 200 Sieve. This material should meet recommendations for "Floor Slab Base Rock" provided in Section 4. A subgrade modulus of 100 pounds per cubic inch (pci) may be used to design the floor slab.

The design team should evaluate whether a vapor barrier is needed. A vapor barrier will reduce the potential for moisture transmission through and efflorescence growth on the floor slabs. Additionally, flooring manufacturers often require vapor barriers to protect flooring and flooring adhesives and will warrant their product only if a vapor barrier is installed according to their recommendations. Actual selection and design of an appropriate vapor barrier should be based on discussions among members of the design team.

Seismic Design Criteria

The seismic design criteria for this project are based on the ASCE 7-10 (OSSC 2014). A soil profile type "D" can be used for the seismic design of the building based on our exploration. The seismic design criteria, in accordance with the ASCE 7-10 (OSSC 2014) are summarized in the table below. The code specified IBC Spectra can be used for the design of this building.

Table 1 ASCE 7-10 (OSSC 2014) Seismic Design Parameters

	Short Period	1 Second
Maximum Credible Earthquake Spectral Acceleration	S_s = 0.881 g	S_1 = 0.376 g
Site Class	D	
Site Coefficient	F_a = 1.147	F_v = 1.648
Adjusted Spectral Acceleration	S_{MS} = 1.011 g	S_{M1} = 0.62 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.673 g	S_{D1} = 0.413 g

Additional Parameters for Liquefaction Analysis per ASCE 7-10, Section 11.8.3	
Mapped MCE_G Peak Ground Acceleration	PGA = 0.378 g
Site Coefficient	F_{PGA} = 1.122
MCE_G Peak Ground Acceleration Adjusted for Site Class	PGA_M = 0.424 g

Perched groundwater was encountered at depths of 15 to 19 feet BGS during our field exploration. The soils in the upper 25 feet are very soft to very stiff, low to medium plasticity silty clay with minor amounts of sand. These soils have low plasticity and high fine contents. These soils are not generally susceptible to liquefaction although they may lose some strength during design seismic events. We consider liquefaction a relatively low hazard at the project site. In addition other potential geologic and seismic hazards such as earthquake induced slope instability, differential settlement, surface displacement due to faulting or lateral spreading, and tsunami or seiche inundation are relatively minor at this site.

Retaining Wall Design Recommendations

The retaining wall design recommendations are based on the following assumptions: (1) the walls consist of conventional, cantilevered retaining walls; (2) the walls are less than 10 feet in height; (3) the backfill is drained; and (4) the backfill has a slope flatter than 4H:1V. Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project varies from these assumptions.

Unrestrained site walls which retain native soils should be designed to resist active fluid unit weight of 35 pounds per cubic foot (pcf) where supporting slopes are flatter than 4H:1V. The active fluid unit weight shall be increased to 55 pcf for restrained walls. For embedded building walls, a superimposed seismic lateral force calculation is based on a dynamic force of $12H^2$ pounds per lineal foot of wall, where H is the height of the wall in feet, and applied at 0.6H from the base of the wall.

If other surcharges (e.g., slopes steeper than 4H:1V, foundations, vehicles, etc.) are located within a horizontal distance from the back of a wall equal to twice the height of the wall, then additional pressures will need to be accounted for in the wall design. Contact our office for the appropriate wall surcharges based upon the actual magnitude and configuration of the applied loads. The wall footings should be designed in accordance with the guidelines provided in the "Spread Footing Design Recommendation" section of this report.

The design parameters provided assume back-of-wall drains will be installed in order to prevent buildup of hydrostatic pressures behind all walls. A minimum 12-inch wide zone of drain rock, extending from the base of the wall to within 6 inches of finished grade, should be placed against the back of all retaining walls. Perforated collector pipes should be embedded at the base of the drain rock. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The backfill material placed behind the walls and extending a horizontal distance equal to at least the height of the retaining wall should consist of granular retaining wall backfill material meeting specifications provided in Oregon's Department of Transportation Standard Specifications for Construction 2018 (ODOT-SS) Section 510.12. We recommend the select granular wall backfill be separated from general fill, native soil and/or topsoil using a geotextile fabric which meets the requirements provided in ODOT-SS 2320.20 for drainage geotextiles. The wall backfill should be compacted to a minimum of 92 percent of the maximum dry density, as determined by ASTM D 1557. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (e.g., jumping jack or vibratory plate compactors).

Settlements of up to 1% of the wall height commonly occur immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend construction of flat work adjacent to retaining walls be postponed at least four (4) weeks after backfilling of the wall, unless survey data indicates settlement is complete prior to that time.

Pavement Design Recommendations

Our pavement recommendations are based on the following assumptions:

- A resilient modulus of 4,500 psi for the native site soils.
- A resilient modulus of 20,000 psi estimated for the base rock.
- Initial and terminal serviceability index of 4.2 and 2.5, respectively.
- Reliability and standard deviation of 85% and 0.45, respectively.
- Structural coefficient of 0.42 and 0.10 for the asphalt and base rock, respectively.
- We assumed several Equivalent Single Axle Loads (ESALs) for pavement design. The actual ESALs should be selected based on traffic levels anticipated as the project moves forward.

If any of these assumptions are incorrect, contact our office with the appropriate information so we may revise the pavement designs. Pavement designs were based on the 1993 AASHTO pavement design equations. The development of pavement designs for the project pavements are in general accordance with the design guidelines and procedures of the American Association of State Highway and Transportation Officials (AASHTO) and the Oregon Department of Transportation (ODOT) Pavement Design Manual. Summary of our pavement design recommendations are in the table below.

Table 2 Minimum Pavement Sections

Traffic Loading (ESALs)	Asphalt Cement Concrete (inch)	Aggregate Base Rock (inch)
10,000 (Parking Lots)	3	10
250,000 (Driveways/Fork Lift Areas)	4.5	18
Use a geotextile separation membrane between base rock and subgrade		

The thicknesses shown in Table 2 are intended to be minimum acceptable values.

The asphalt cement (AC) binder should be PG 64-22 Performance Grade Asphalt Cement according to ODOT-SS 00744.11 – Asphalt Cement and Additives. The AC should consist of dense graded Level 3, ½-inch hot mix asphalt. The minimum lift thicknesses should be 2.0 inches. The AC should conform to ODOT-SS 00744.13 and be compacted to 91% of Rice Density of the mix, as determined in accordance with ASTM D 2041.

The pavement subgrade should be prepared in accordance with the "Site Preparation" and "Structural Fill" sections of this report.

Construction traffic should be limited to non-building, unpaved portions of the project site or haul roads. Construction traffic should be prohibited on new pavements. If construction traffic is allowable on newly constructed road sections, an allowance for this additional traffic is necessary in the design pavement section.

If moist soil conditions make it difficult to properly moisture condition and compact the roadway subgrade, the use of cement amendment should be considered as alternative to moisture conditioning and compaction. The use of cement amendment will allow for construction of the pavement sections without disturbing the sensitive soil subgrade. If this method is chosen, contact ROG for additional recommendations and alternative pavement sections.

4.0 CONSTRUCTION RECOMMENDATIONS

The construction should be carried out as indicated in accordance with the Oregon Department of Transportation Standard Specifications for Construction, 2018 version (ODOT-SS). We assume these specifications will serve, in part, as the project specifications for items contained within and for those not included in this report.

Site Preparation

The existing near-surface fill / root zone should be stripped and removed from the project site in all proposed new building, fill, and pavement areas and for a 5-foot margin around such areas. We anticipate an average stripping depth of 6 inches with some localized deeper areas. The actual stripping depth should be based on field observations at the time of construction. The fills are up to several feet thick. Stripped material should be transported off site for disposal or stockpiled for use in landscaped areas. Please note that in the southern portion of the site, undocumented fill was encountered to a depth of 16 feet. We recommend that the top 3 feet of this fill be over-excavated and recompacted or replaced by new engineered fill before the placement of new buildings. For pavement areas the depth can be reduced to 2 feet.

Trees and shrubs should be removed from all new pavement and improvement areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet BGS. Depending on the methods used to remove the root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. We recommend soil disturbed during grubbing operations be removed to expose firm undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

Demolition should include removal of existing improvements throughout the project site. Underground utility lines, vaults, basement walls, or tanks should also be removed or grouted full if left in place. The voids resulting from removal of footings, buried tanks, etcetera, or loose soil in utility lines should be backfilled with compacted structural fill. The base of these excavations should be excavated to firm subgrade before filling with sides sloped at a minimum of 1H: 1V to allow for uniform compaction.

Materials generated during demolition of existing improvements should be transported off site or stockpiled in areas designated by the owner. Asphalt, concrete, gravel fill, and base rock materials may be crushed and recycled for use as general fill. Such recycled materials should meet the criteria described in the "Structural Fill" section of this report.

Following stripping and prior to placing fill, pavement, or building improvements, the exposed subgrade should be evaluated by proof rolling. The subgrade should be proof rolled with a fully loaded dump truck or similar heavy rubber-tire construction equipment to identify soft, loose, or unsuitable areas. A member of our geotechnical staff should observe the proof rolling. Soft or loose zones identified during the field evaluation should be compacted to an unyielding condition or be excavated and replaced with structural fill, as discussed in the "Structural Fill" section of this report.

Wet-Weather/Wet-Soil Conditions

Trafficability on the near-surface soils may be difficult during or after extended wet periods or when the moisture content of the surface soil is more than a few percentage points above optimum. Soils which have been disturbed during site-preparation activities, or soft or loose zones identified during probing or proof-rolling, should be removed and replaced with compacted structural fill.

Track-mounted excavating equipment may be required during wet weather. The thickness of the granular material for haul roads and staging areas will depend on the amount and type of construction traffic. A 12- to 18-inch-thick mat of imported granular material is sufficient for light staging areas. The granular mat for haul roads and areas with repeated heavy-construction traffic typically needs to be increased to between 18- to 24-inches. The actual thickness of haul roads and staging areas should be based on the contractor's approach to site development and the amount and type of construction traffic. The imported granular material should be placed in one lift over the prepared, undisturbed subgrade and compacted using a smooth-drum, non-vibratory roller. Additionally, a geotextile fabric should be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic. The imported granular material should be 4- to 6-inch minus pit run rock with less than 10% passing a Standard #200 sieve.

Structural Fills

Fills should be placed over subgrade which has been prepared in conformance with the previous section of this report. Material used as structural fill should be free of organic matter or other unsuitable materials and should meet specifications provided in Oregon Department of Transportation Standard Specifications for Construction, 2018 (ODOT-SS), depending upon the application. Discussion of these materials is in the following sections.

Native Soils

The native soils on this site are low plastic and have high moisture contents. These soils are not suitable for fill unless treated with lime or cement.

Imported Granular Fills

Imported granular material should be pit or quarry run rock, crushed rock, or crushed gravel and sand and should meet the specifications provided in ODOT-SS 00330.14 – Selected Granular Backfill, and ODOT-SS 00330.15 – Selected Stone Backfill. The imported granular material should be fairly well graded between coarse and fine material and have less than 5% by weight passing the U.S. Standard Number 200 Sieve.

Imported granular material should be placed in lifts with a maximum non-compacted thickness of 8 to 12 inches and be compacted to at least 92% of the maximum dry density, as determined by ASTM D 1557. During the wet season or when wet subgrade conditions exist, the initial lift should be approximately 18 inches in non-compacted thickness and should be compacted with a smooth-drum roller without using vibratory action.

Where imported granular material is placed over wet or soft soil subgrades, we recommend a geotextile be placed as a barrier between the subgrade and imported granular material. The geotextile should meet ODOT-SS 2320.20 for soil separation and/or stabilization. The geotextile should be installed in conformance with ODOT-SS 00350.40 – Geosynthetic Construction.

Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 2 feet above utility lines (i.e., the pipe zone) should consist of well-graded, granular material with a maximum particle size of 1.5 inches, have less than 10% by weight passing the U.S. Standard Number 200 Sieve, and meet ODOT-SS 405.12 - Pipe Zone Bedding. The pipe zone backfill should be compacted to at least 90% of the maximum dry density, as determined by ASTM D 1557 or as required by the pipe manufacturer or local building department.

Within roadway alignments or beneath building pads, the remainder of the trench backfill should consist of well-graded, granular material with a maximum particle size of 2.5 inches, have less than 10% by weight passing the U.S. Standard Number 200 Sieve, and meet ODOT-SS 405.14 - Trench Backfill, Class B. This material should be compacted to at least 92% of the maximum dry density as determined by ASTM D 1557, or as required by the pipe manufacturer or local building department. The upper 2-feet of the trench backfill should be compacted to at least 95% of the maximum dry density as determined by ASTM D 1557.

Outside of structural improvement areas (e.g., roadway alignments or building pads), trench backfill placed above the pipe zone may consist of general fill materials that are free of organics and materials over 6 inches in size, and meet ODOT-SS 405.14 - Trench Backfill, Class A, C, or D. This general trench backfill should be compacted to at least 90% of the maximum dry density, as determined by ASTM D 1557 or as required by the pipe manufacturer or local building department.

Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of 0.5H, where H is the height of the retaining wall, should consist of select granular material meeting ODOT-SS 510.12 – Granular Wall Backfill. We recommend the select granular wall backfill be separated from general fill, native soil and/or topsoil using a geotextile fabric which meets the requirements provided in ODOT-SS 2320.20 for drainage geotextiles. The geotextile should be installed in conformance with ODOT-SS 00350.40 – Geosynthetic Construction.

Trench Drain and Retaining Wall Drain Backfill

Backfill for subsurface trench drains and for a minimum 1-foot-wide zone against the back of retaining walls should consist of drain rock meeting the specifications provided in ODOT-SS 00430.11 – Granular Drain Backfill Material. A pre-fabricated drain board can be substituted for the drain rock. The drain rock should be wrapped in a geotextile fabric meeting the specifications provided in ODOT-SS 2320.20 for soil separation and/or stabilization. The geotextile should be installed in conformance with ODOT-SS 00350.40 – Geosynthetic Construction.

Floor Slab Base Rock

Base aggregate for floor slabs should be clean, crushed rock or crushed gravel. The base aggregate should contain no deleterious materials, meet specifications provided in ODOT-SS 02630.10 – Dense Graded Aggregate 1"-0", and have less than 5% by weight passing the U.S. Standard Number 200 Sieve. The imported granular material should be placed in one lift and compacted to at least 95% of the maximum dry density, as determined by ASTM D 1557.

Pavement Base Aggregate

Imported base aggregate for roads and parking lots should be clean, crushed rock or crushed gravel. The base aggregate should meet the gradation defined in ODOT-SS 02630.10 – Dense Graded Aggregate 1"-0," with the exception that the aggregate should have less than 5% passing a

U.S. Standard Number 200 Sieve. The base aggregate should be compacted to at least 95% of the maximum dry density, as determined by ASTM D 1557.

Recycled Concrete, Asphalt and Base Rock

Asphalt pavement, concrete, and base rock from the existing site improvements can be used in general structural fills, provided no particles greater than 6 inches are present. It also must be thoroughly mixed with soil, sand or gravel such that there are no voids between the fragments. In addition this material should be non-hazardous.

Drainage Considerations

Surface and Subsurface Drainage Requirements

The Contractor shall be made responsible for temporary drainage of surface water and groundwater as necessary to prevent standing water and/or erosion at the working surface. We recommend removing only the foliage necessary for construction to help minimize erosion.

The ground surface around the structures should be sloped to create a minimum gradient of 2% away from the building foundations for a distance of at least 5 feet. Surface water should be directed away from all buildings into drainage swales or into a storm drainage system. "Trapped" planting areas should not be created next to any building without providing means for drainage. The roof downspouts should discharge onto splash blocks or paving which direct water away from the buildings, or into smooth-walled underground drain lines that carry the water to appropriate discharge locations at least 10 feet away from any buildings.

Foundation Drains

We recommend foundation drains around the perimeter foundations of all structures. The foundation drains should be at least 12 inches below the base of the slab. The foundation drain should consist of perforated collector pipes embedded in a minimum 2-foot-wide zone of angular drain rock. The drain rock should meet specifications provided in the "Structural Fill" section of this report. The drain rock should be wrapped in a geotextile fabric. The collector pipes should discharge at an appropriate location away from the base of the footings. Unless measures are taken to prevent backflow into the foundation's drainage system, the discharge pipe should not be tied directly into storm water drain system.

Excavation and Temporary Shoring

Subsurface conditions at the project site show predominately silts and clays to the depths explored. Excavations in these soils may be readily accomplished with conventional earthwork equipment.

Trench cuts should stand vertical to a depth of approximately 4 feet – provided no groundwater seepage is present in the trench walls. Open excavation may be used to excavate trenches with depths between 4 and 8 feet with the walls of the excavation cut at a slope of 1H:1V – provided groundwater seepage is not present and with the understanding that some sloughing may occur. The trenches should be flattened to 1.5H: 1V if excessive sloughing occurs or seepage is present.

Groundwater was encountered at a depth of 4 feet or less during our exploration and should be expected during construction. If groundwater is observed during construction, use of a trench shield (or other approved temporary shoring) is recommended for cuts extending below groundwater seepage or if vertical walls are desired for cuts deeper than 4 feet. If shoring or dewatering is used, we recommend the type and design of the shoring and dewatering systems be the responsibility of the contractor who is in the best position to choose systems which fit the overall plan of operation.

These excavations should be made in accordance with applicable Occupational Safety and Health Administration and State regulations.

5.0 CONSTRUCTION OBSERVATIONS

Satisfactory earthwork performance depends on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining if the work is completed in accordance with the construction drawings and specifications. We recommend a geotechnical engineer from ROG be retained to observe geotechnical related construction efforts.

Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations discussed above. Recognition of changed conditions requires experience. Therefore, qualified personnel should visit the site with sufficient frequency in order to detect whether subsurface conditions have changed significantly from those anticipated.

6.0 LIMITATIONS

This report has been prepared for the exclusive use of the addressee and engineers, and for aiding in the design and construction of the proposed project. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations.

The opinions, comments, and conclusions presented in this report were based upon information derived from our literature review, field investigation, and laboratory testing. Conditions between or beyond our exploratory borings may vary from those encountered. Unanticipated soil conditions and seasonal soil moisture variations are commonly encountered and cannot be fully determined by merely taking soil samples or soil borings. Such variations may result in changes to our recommendations and may require additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

If there is a substantial lapse of time between the submission of this report and the start of work at the site, if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, it is recommended this report be reviewed to determine the applicability of the conclusions and recommendations.

7.0 RESTRICTIONS

This report is for the exclusive use of the client for design of the development, as described in our proposal for this particular project, and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the client and ROG.

Sincerely,
RhinoOne Geotechnical

Christina Hemberry, PE
Staff Geotechnical Engineer

Rajiv Ali, PE GE
Principal Geotechnical Engineer

APPENDIX A

Site Location Map
Site Exploration Plan

RhinoOne GEOTECHNICAL
4610 NE 77th Avenue, Suite 126
Vancouver, Washington 98662
360-258-1738

PARR LUMBER - DAMASCUS SITE

DAMASCUS, OREGON 97089

FIGURE 1 - SITE LOCATION MAP

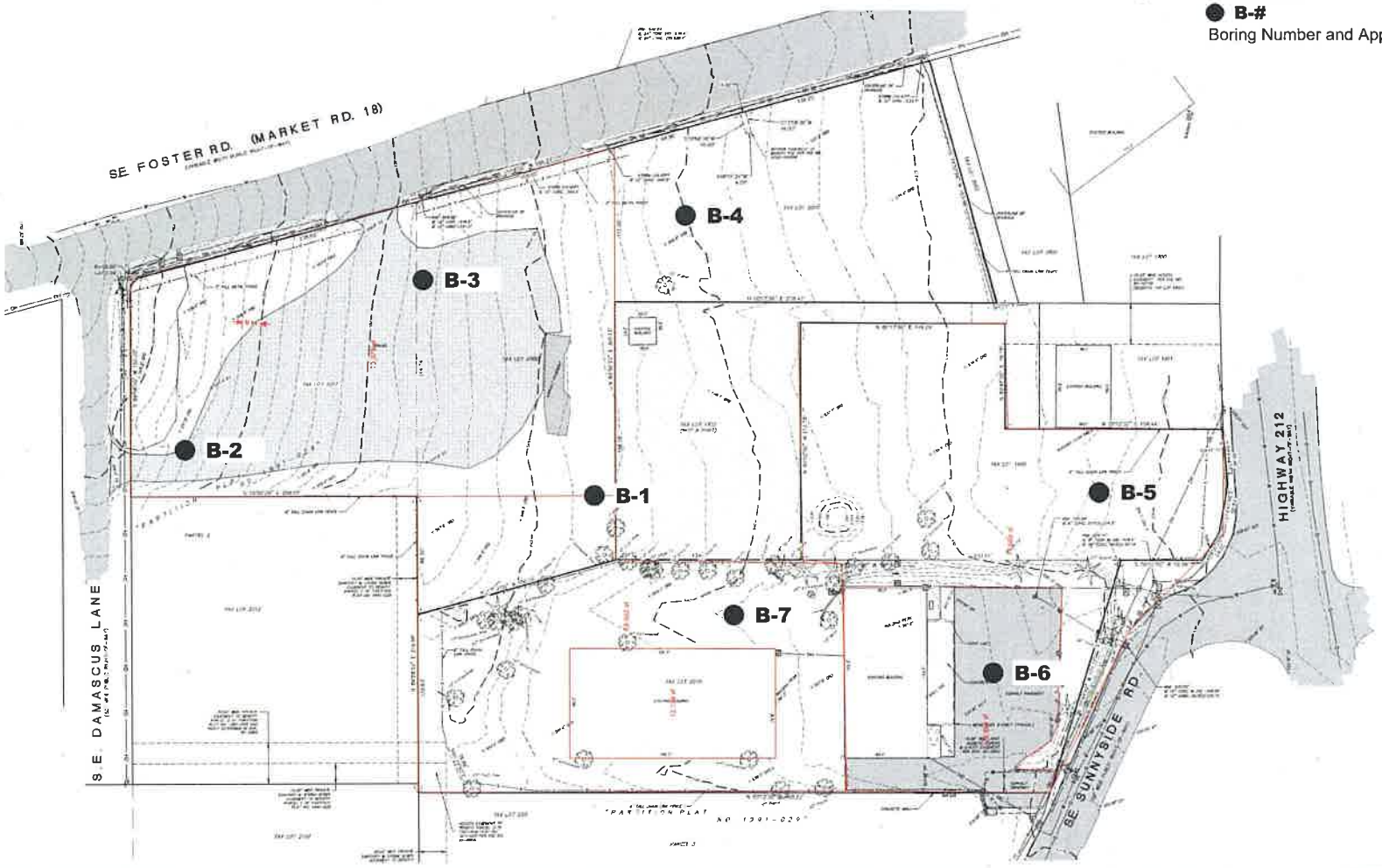
PROJECT
PAR-2019-004

DATE
APRIL 2019

LEGEND

● B-#

Boring Number and Approximate Location



RhinoOne GEOTECHNICAL
4610 NE 77th Avenue, Suite 126
Vancouver, Washington 98662
360-258-1738

PARR LUMBER - DAMASCUS SITE

DAMASCUS, OREGON 97089

FIGURE 2 - SITE EXPLORATION PLAN

PROJECT

PAR-2019-004

DATE

APRIL 2019

APPENDIX B

Summary Boring Logs
Laboratory Testing

RhinoOne GEOTECHNICAL

BORING NUMBER B-1

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 543.5 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
AT TIME OF DRILLING ---
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		12-inches GRAVEL (Baserock)					
		LEAN CLAY with trace sand (CL), grey-brown, moist to wet, very soft, low to medium plasticity	SPT 1	67	0-0-1 (1)		
5		becomes stiff to very stiff, medium plasticity	SPT 2	100	4-6-9 (15)		
			SPT 3	100	3-6-9 (15)		
10		becomes red-brown and grey, moist, very stiff	SPT 4	100	4-7-11 (18)		
15		FAT CLAY (CH), dark brown, moist, very stiff, high plasticity	SPT 5	100	7-14-15 (29)		
20		becomes stiff	SPT 6	100	3-4-7 (11)		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 21.5 feet.

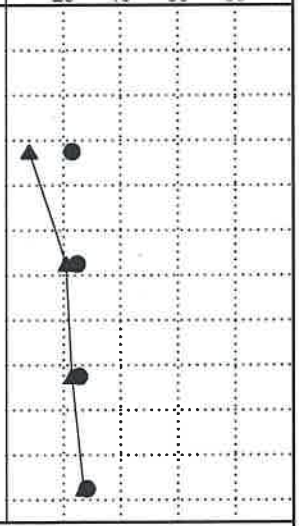
RhinoOne GEOTECHNICAL

BORING NUMBER B-2

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 557 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
AT TIME OF DRILLING ---
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		12-inches GRAVEL (Baserock)					
		LEAN CLAY (CL), brown, moist, soft, medium plasticity					
		becomes stiff	SPT 1	44	1-2-6 (8)		
5		becomes red-brown, very stiff, medium plasticity	SPT 2	100	5-8-13 (21)		
		becomes medium plasticity	SPT 3	100	8-10-13 (23)		
10			SPT 4	100	5-11-16 (27)		

Bottom of borehole at 11.5 feet.



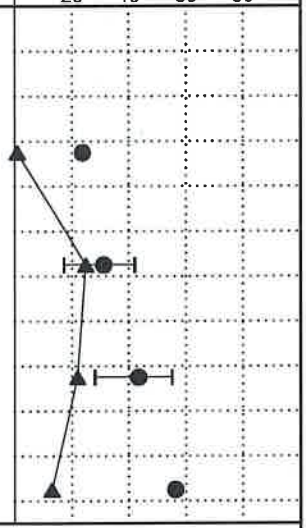
RhinoOne GEOTECHNICAL

BORING NUMBER B-3

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 550 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
AT TIME OF DRILLING ---
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		12-inches GRAVEL (Baserock)					
		LEAN CLAY with some sand (CL), brown, moist, very soft, low to medium plasticity	SPT 1	17	0-0-1 (1)		
5		becomes red-brown, very stiff, medium plasticity	SPT 2	100	5-10-15 (25)		
		FAT CLAY (CH), red, moist, medium to high plasticity	SPT 3	100	5-8-14 (22)		
10		becomes stiff, grey-brown and red	SPT 4	100	3-5-8 (13)		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 11.5 feet.

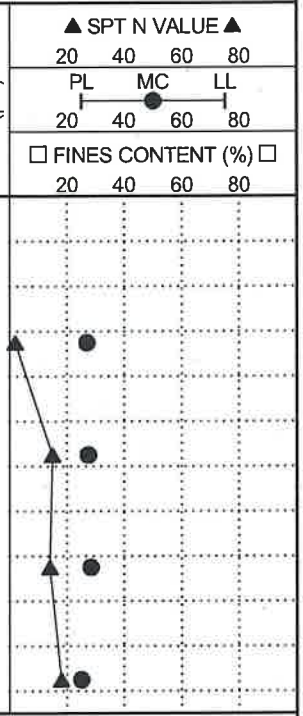
RhinoOne GEOTECHNICAL

BORING NUMBER B-4

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 540 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
AT TIME OF DRILLING ---
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		14-inches GRAVEL (Baserock)					
		LEAN CLAY (CL), grey-brown, moist, very soft to soft, low to medium plasticity	SPT 1	44	0-1-1 (2)		
5		becomes red-brown, stiff to very stiff	SPT 2	100	3-6-9 (15)		
		becomes stiff, medium plasticity	SPT 3	100	3-6-8 (14)		
10		becomes very stiff	SPT 4	100	4-6-12 (18)		

Bottom of borehole at 11.5 feet.



RhinoOne GEOTECHNICAL

BORING NUMBER B-5

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 531.5 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
▽ **AT TIME OF DRILLING** 15.00 ft / Elev 516.50 ft Perched 15 to 19ft BGS
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		8-inches grass sod (Topsoil)					
		LEAN CLAY with trace sand (CL), grey -brown, moist, stiff, medium plasticity (Fill)	SPT 1	89	1-4-7 (11)		
5		becomes brown, very stiff, grey mottling, medium to high plasticity	SPT 2	100	4-7-11 (18)		
		becomes stiff, red-brown	SPT 3	100	4-5-8 (13)		
10		becomes gravelly LEAN CLAY with some sand, brown with red mottling, very stiff, low to medium plasticity	SPT 4	100	15-18-10 (28)		
15		▽ SILT with some sand (ML), grey-brown, wet, medium stiff, fine to coarse sand	SPT 5	100	2-2-4 (6)		
20		Silty SAND with gravel (SM), grey, moist, medium dense becomes very dense	SPT 6	100	7-27-50/2"		
25		Sandy GRAVEL with trace silt (GP), grey, moist, very dense	SPT 7	100	50		
		Bottom of borehole at 25.5 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

BORING NUMBER B-6

RhinoOne GEOTECHNICAL

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 537 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
▽ **AT TIME OF DRILLING** 20.00 ft / Elev 517.00 ft Perched
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		1-inch Asphalt Concrete Cement over 2-inches of GRAVEL baserock					
		LEAN CLAY with trace sand and gravel (CL), dark grey, moist, medium stiff (Fill)	SPT 1	67	3-3-3 (6)		
5		becomes brown with grey mottling, stiff	SPT 2	100	3-4-10 (14)		
			SPT 3	100	3-5-8 (13)		
10		becomes very stiff, medium plasticity	SPT 4	100	4-8-11 (19)		
15		becomes stiff to very stiff	SPT 5	100	6-8-7 (15)		
20	▽	Sandy SILT, brown and grey, moist to wet, medium stiff, low plasticity	SPT 6	100	1-4-3 (7)		

Bottom of borehole at 21.5 feet.

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

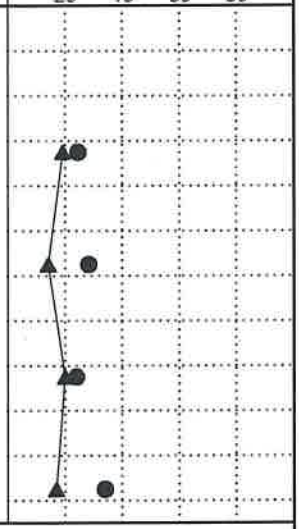
RhinoOne GEOTECHNICAL

BORING NUMBER B-7

CLIENT Parr Lumber
PROJECT NAME Damascus
PROJECT NUMBER PAR-2019-004
PROJECT LOCATION Damascus, OR
DATE STARTED 3/4/19 **COMPLETED** 3/4/19
GROUND ELEVATION 539 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR Western States Soil Conservation
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger w/ Auto Hammer
AT TIME OF DRILLING ---
LOGGED BY RA **CHECKED BY** PH
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		6-inches GRAVEL (Fill)					
		LEAN CLAY (CL), brown and grey, moist, very stiff, orange mottling, low to medium plasticity	SPT 1	100	4-9-10 (19)		
5		becomes stiff, grey-brown with orange mottling, medium plasticity	SPT 2	100	4-5-9 (14)		
		becomes very stiff	SPT 3	100	4-9-11 (20)		
10			SPT 4	100	5-7-10 (17)		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 11.5 feet.

MATERIALS TESTING & INSPECTION

ATTERBERG LIMITS

☐ Environmental Services ☐ Geotechnical Engineering ☐ Construction Materials Testing ☐ Special Inspections

Rajiv Ali
Rhino One Geotechnical
4610 Northeast 77th Avenue, Suite 126
Vancouver, WA 98662

Phone: 360-258-1738
Fax:
Other: E-REPORTS ONLY

Project: **Parr Damascus**
Permit #: **PAR-2019-004**
Project Manager: **Karrie Eixenberger**
Lab Technician: **Jacklynn Miller**
Test Date: **3-22-2019**

As requested MTI has performed Atterberg limits testing on the sample referenced below. The testing was performed in accordance with current standards indicated below. The results obtained in our laboratory are as follows:

Source and Description:	Borings (See Sample ID)						
Date Obtained:	03-4-19						
Sample ID:	19-1024						
Sampling and Preparation:	ASTM D75:	X	AASHTO T2:		ASTM D421:	X	AASHTO T87:
Test Standard:	ASTM D4318:	X	AASHTO T89/90:				

Sample ID	B-3	B-3	B-6	B-6
Depth	5.0'-6.5'	7.5'-9.0'	2.5'-4.0'	10.0'-11.5'
Liquid Limit	42	55	31	47
Plastic Limit	17	28	19	24
Plasticity Index	25	27	12	23
Classification	CL	CH	CL	CL

If there are questions concerning this report (*19-1024 Parr Damascus Atterbergs*), please contact the project manager at (503) 747-7159.

Respectfully submitted,

MATERIALS TESTING & INSPECTION, INC.

Note: The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute.
cc:

RhinoOne GEOTECHNICAL

Laboratory Results
Oven Dry Moisture Content (ASTM D 2216)

Project Name:	Parr Lumber Damascus	Date:	4-Mar-19
Project Number:	PAR-2019-004	Tested By:	RA
Location:	Foster Road	Laboratory Number:	2019-M0086

Boring Number	Depth	Tare Number	Weight of Tare	Weight of Tare + Wet Soil	Weight of Tare + Dry Soil	Weight of Dry Soil	Weight of Water	Water Content by Weight
B-01	2.5 - 4	001	51.25	156.67	133.71	82.46	22.96	27.8%
	5 - 6.5	002	51.58	165.1	142.34	90.76	22.76	25.1%
	7.5 - 9	013	50.26	155.77	132.37	82.11	23.4	28.5%
	10 - 11.5	015	51.55	159.28	136.69	85.14	22.59	26.5%
	15 - 16.5	016	51.66	176.44	150.59	98.93	25.85	26.1%
	20 - 21.5	026	51.42	151.61	114.31	62.89	37.3	59.3%
B-02	2.5 - 4	018	51.58	155.49	136.07	84.49	19.42	23.0%
	5 - 6.5	006	51.12	166.35	143.42	92.3	22.93	24.8%
	7.5 - 9	025	51.55	168.11	144.46	92.91	23.65	25.5%
	10 - 11.5	004	51.36	160.9	136.8	85.44	24.1	28.2%
B-03	2.5 - 4	008	51.82	144.37	126.66	74.84	17.71	23.7%
	5 - 6.5	019	51.37	157.99	132.61	81.24	25.38	31.2%
	7.5 - 9	020	51.76	150.25	120.42	68.66	29.83	43.4%
	10 - 11.5	021	51.01	154.66	117.34	66.33	37.32	56.3%
B-04	2.5 - 4	022	51.79	168.71	143.84	92.05	24.87	27.0%
	5 - 6.5	023	51.7	159.18	136.02	84.32	23.16	27.5%
	7.5 - 9	027	51.54	166.79	141.27	89.73	25.52	28.4%
	10 - 11.5	009	51.49	153.11	132.73	81.24	20.38	25.1%
B-05	2.5 - 4	011	51.61	152.84	133.83	82.22	19.01	23.1%
	5 - 6.5	003	51.25	153.2	132.08	80.83	21.12	26.1%
	7.5 - 9	014	51.22	154.92	131.1	79.88	23.82	29.8%
	10 - 11.5	024	51.66	151.13	119.83	68.17	31.3	45.9%
	15 - 16.5	028	51.48	150.15	111.54	60.06	38.61	64.3%
	20 - 21.5	029	51.55	155.13	121.09	69.54	34.04	49.0%

RhinoOne GEOTECHNICAL

Laboratory Results
Oven Dry Moisture Content (ASTM D 2216)

Project Name:	Parr Lumber Damascus	Date:	4-Mar-19
Project Number:	PAR-2019-004	Tested By:	RA
Location:	Foster Road	Laboratory Number:	2019-M0086

Boring Number	Depth	Tare Number	Weight of Tare	Weight of Tare + Wet Soil	Weight of Tare + Dry Soil	Weight of Dry Soil	Weight of Water	Water Content by Weight
	25 - 26.5	030	51.68	150.95	140.3	88.62	10.65	12.0%
B-06	2.5 - 4	012	51.54	163.28	141.75	90.21	21.53	23.9%
	5 - 6.5	032	51.45	159.89	136.56	85.11	23.33	27.4%
	7.5 - 9	031	51.68	176.98	150.94	99.26	26.04	26.2%
	10 - 11.5	038	51.62	153.88	129.33	77.71	24.55	31.6%
	15 - 16.5	034	51.15	153.48	125.05	73.9	28.43	38.5%
	20 - 21.5	033	50.87	150.1	112.9	62.03	37.2	60.0%
B-07	2.5 - 4	010	51.56	165.16	142.79	91.23	22.37	24.5%
	5 - 6.5	036	51.14	154.09	131.37	80.23	22.72	28.3%
	7.5 - 9	005	51.73	152.29	132.81	81.08	19.48	24.0%
	10 - 11.5	007	51.72	156.17	129.61	77.89	26.56	34.1%

Percentage of Fines Passing the #200 Sieve

Project Name:	Parr Damascus	Date:	14-Mar-19
Project Number:	PAR-2019-004	Tested By:	HH
Location:	Damascus, OR	Laboratory Number:	P086

Boring Number	Depth	Tare Number	Weight of Tare	Weight of Tare + Wet Soil	Weight of Tare + Dry Soil	Weight of Dry Soil	Weight of Water	Water Content by Weight	Post Wash		
									Weight of Tare + Dry Soil	Weight of Dry Soil	Percentage of Fines
B-1	5 -	J	192.27	417.07	370.77	178.5	46.3	25.9%	211.47	19.2	89.2
B-1	10 -	K	191.76	427.15	379.18	187.42	47.97	25.6%	203.67	11.91	93.6
B-5	10 -	F	193.75	394.94	344.53	150.78	50.41	33.4%	225.42	31.67	79.0
B-5	15 -	M	192.24	449.18	350.53	158.29	98.65	62.3%	229.32	37.08	76.6
	-										

SUNRISE WATER
AUTHORITY

10602 S.E. 129th Avenue, Happy Valley, OR 97086-6218
tel: 503.761.0220 • fax: 503.761.7406
www.sunrisewater.com

January 17th, 2020

Harper Houf Peterson Righellis, Inc.
Attn: Ken Valentine
205 SE Spokane Street, Suite 200
Portland, OR 97202

RE: Proposed Parr Lumber Water Service

Dear Ken,

The Sunrise Water Authority has adequate potable water supply available in sufficient quantities to provide normal domestic needs, as required by the Oregon Health Division. In order to meet the fire protection needs for this proposal, the applicant must make additional improvements at their expense. Exact improvements will be determined during design review by the Water Authority.

This recommendation is the result of Staff review and consideration by the Water Authority's Board of Commissioners.

If you have any questions regarding this recommendation, please contact myself or Sunrise Water Authority Engineering Manager, Tim Jannsen.

Sincerely,

SUNRISE WATER AUTHORITY

Elizabeth Edgar, PE
Staff Engineer

CLACKAMAS COUNTY

CLACKAMAS COUNTY PLANNING AND ZONING DIVISION
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD | OREGON CITY, OR 97045
503-742-4500 | ZONINGINFO@CLACKAMAS.US

PRELIMINARY STATEMENT OF FEASIBILITY

(January 2018)

Instructions to Applicant

- This form is to be completed by the applicable sanitary sewer service provider, surface water management authority and water service provider.
- It is the applicant's responsibility to provide a copy of this form to **each** service provider. Attach the completed forms as part of the land use application submittal for a development. Where there is no surface water management service district, this form is to be provided to the Clackamas County Department of Transportation and Development, Engineering Division.
- A service provider may require the submission of detailed plans and/or engineering data prior to determining whether a Preliminary Statement of Feasibility will be issued. Contact the service providers for details.
- Completed forms are required for design review, subdivisions, partitions and conditional uses, and these applications will not be deemed complete until the completed forms are received by the Planning Division.
- The forms must be dated no more than one year prior to submittal of a complete land use application.
- Forms are not required for on-site sewage disposal systems or water service by private well.

Instructions to Service Provider

- A development is proposed within your service area. Please complete the attached Preliminary Statement of Feasibility to indicate whether adequate service can be provided to this development.
- If adequate service can be provided only with the implementation of certain conditions of approval, you may attach such conditions to this statement. Completion of this preliminary statement of feasibility does **not** imply that additional requirements (e.g. plan submittals) may not be imposed by your agency once a land use application is filed.
- The Planning Division will continue to provide notice to you of land use applications for property within your service area. This will allow you to determine whether the submitted development proposal differs from the plans reviewed by your agency in conjunction with the completion of this statement. This will also allow you to provide additional comments as necessary.

CLACKAMAS COUNTY

CLACKAMAS COUNTY PLANNING AND ZONING DIVISION
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD | OREGON CITY, OR 97045
503-742-4500 | ZONINGINFO@CLACKAMAS.US

PRELIMINARY STATEMENT OF FEASIBILITY

To be completed by the applicant:

Applicant's Name: Parr Lumber

Property Legal Description: T 2 S, R 3, Section 5, Tax Lot(s) 1900,2000,2001,2205,2213

Site Address: 19855 SE Sunnyside Road Project Engineer: Ken Valentine, PE

Project Title/Description of Proposed Development:
Lumber yard, lumber warehouse and wholesale center

To be completed by the service provider or surface water management authority:

Check all that apply:

- ☐ Sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system is available to serve the development or can be made available through improvements completed by the developer or the system owner.
- ☑ Adequate surface water treatment and conveyance is available to serve the development or can be made available through improvements completed by the developer or the system owner.
- ☐ Water service is available in levels appropriate for the development, and adequate water system capacity is available in source, supply, treatment, transmission, storage and distribution or such levels and capacity can be made available through improvements completed by the developer or the system owner. This statement ☐ applies ☐ does not apply to fire flows.*

  **If water service is adequate with the exception of fire flows, the applicant shall submit a statement from the fire district serving the subject property that states that an alternate method of fire protection, such as an on-site water source or a sprinkler system, is acceptable.*

- ☐ This statement is issued subject to conditions of approval set forth in the attached.
- ☐ Adequate ☐ sanitary sewer service, ☐ surface water management, ☐ water service cannot be provided.

Signature of Authorized Representative — 12-13-19 Date

DTC Civil Engineer Title — DTD Name of Service Provider or Surface Water Management Authority

Completion of this statement does not reserve capacity for the development and does not alter an applicant's obligation to comply with the service provider's or surface water management authority's regulations. Completion of this statement does not obligate the service provider or surface water management authority to finance or construct improvements necessary to provide adequate service for the proposed development. Completion of this statement does not guarantee that land use approval for the proposed development will be granted.

Parr Lumber Storm Water Management Memorandum

Project Overview

The proposed project is the redevelopment of the site is located at 19855 Sunnyside Road, Damascus Oregon as a Lumber storage and delivery site. The site includes five tax lots 1900, 2000, 2001, 2205 2213 on Map T2S, R3E, SEC 5. The project will replace the two existing buildings on the site with a 15,000 square foot warehouse, a 7,800 square foot wholesale/retail store 3 acres of pavement. The purpose of this drainage memo is provide preliminary information on how storm water will be managed on the site.

Existing Conditions

The site consists of five tax lots that will be consolidated for this project. The existing site is 5.42 acres and consist of two buildings and associated parking lot and open fields. The site slopes down from south to north at about 5%. The site fronts Sunnyside Road to the south, Foster Road to the East and Damascus Lane to the north.

The Natural Resource Conservation Service (NRCS) Soil Survey of Damascus, Oregon describes the soils onsite as 8B (Bornstedt silt loam – Alluvium with a Hydrologic Soil Group C), 13C – (Cascade silt loam Hydrologic Soil Group C, and 30C – Delena silt loam Hydrologic Soil Group C/D. The existing soils are very slow draining and infiltrate very slowly.

A Curve number of 75 was used for existing pervious conditions, a curve number of 98 was used for the existing impervious surfaces. These curve number best represents the site conditions prior to any development.

Proposed Conditions

The project will replace the two existing buildings on the site with a 15,000 square foot warehouse, a 7,800 square foot wholesale/retail store 3 acres of pavement. Modeling will completed using the Santa Barbara Urban Hydrograph method. The Hydraflow Hydrographs software will be used to analyze the storm events. Two detention systems will be installed on the east side of the site and pond will be constructed on the south side of the site. The site will be graded at slopes ranging from 2% to 4% to facilitate forklift traffic. The site will maintain the existing drainage patterns. The diagram below shows the proposed site development.

The site is located in Clackamas Service District 1, therefore district standards will be used to analyze and design the storm water management system. The following precipitation table will be used in the analysis.

Precipitation-Frequency Estimates

Frequency	Precipitation
Infiltration; 24-hr	0.5 inches
WQ; 24-hr	1.0 inch
2-yr; 24-hr	2.65 inches
25-yr; 24-hr	4.0 inches
100-yr; 24-hr	4.8 inches

Water Quality

Water quality shall be achieved by routing the parking lot drainage to a vegetated swales and water quality manholes with a gravel underlayment.

Water Quantity

The detention system will consist of two sets of underground pipes along the Foster Road frontage and a pond along the southern boundary near Sunnyside Road. Flow control will be provided through a flow control manholes. The pipe storage system will be placed a bed of pervious crushed gravel and impermeable liner to prohibit groundwater from intruding into the

Downstream Analysis

The project proposes to limit storm water runoff to pre-developed levels or less. A review of the existing downstream storm water system will be analyzed during the construction document phase and local deficiencies will be addressed.

Conclusion

The proposed detention system will significantly reduce the peak flows from the actual existing conditions and the water quality facility will provide treatment for 100% of the parking lot area.

Operations and Maintenance

Operations and maintenance documents will be included in the final storm water management report.

PARR LUMBER

CUTSHEET PACKAGE

January 22, 2020

GLUMAC
lightingstudio

McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

GLEON
GALLEON LED

1-10 Light Squares

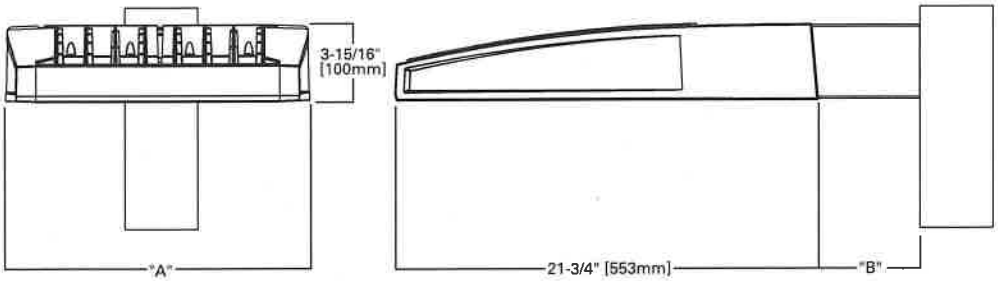
Solid State LED

AREA/SITE LUMINAIRE

LumenSafe Technology
CLICK HERE

WaveLinx

DIMENSIONS



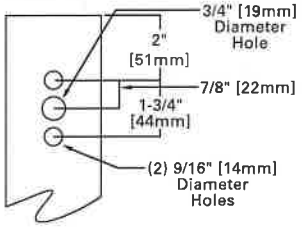
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



CERTIFICATION DATA

3G Vibration Rated
DesignLights Consortium® Qualified*
IP66 Rated
ISO 9001
LM79 / LM80 Compliant
UL/cUL Wet Location Listed

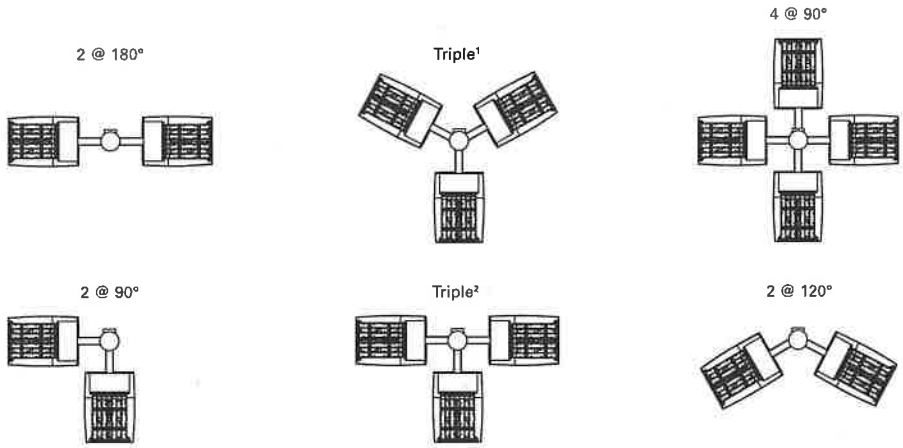
ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V, 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

*www.designlights.org

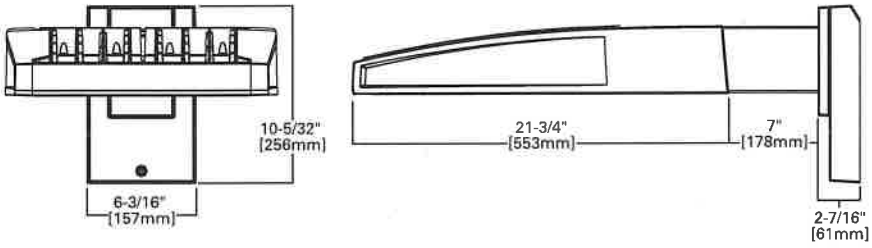
ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AF-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

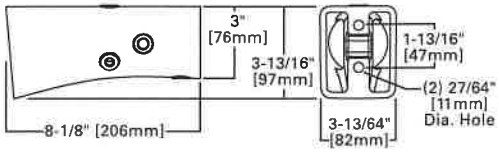


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. 2 Round poles are 3 @ 90°.

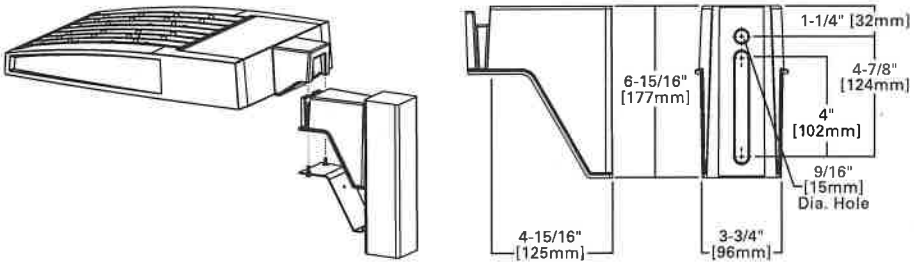
STANDARD WALL MOUNT



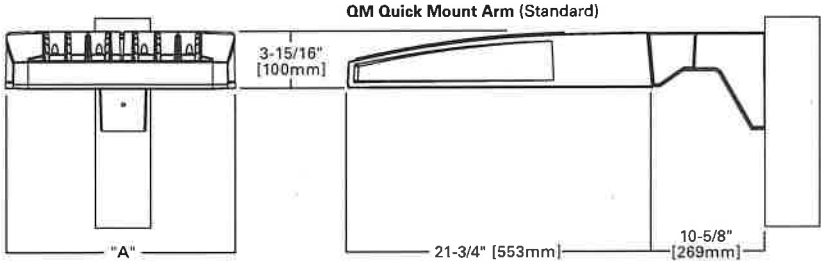
MAST ARM MOUNT



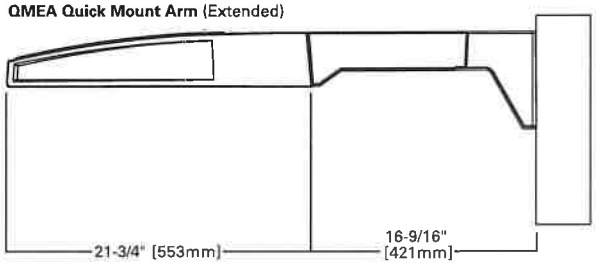
QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QM Quick Mount Arm (Standard)



QMEA Quick Mount Arm (Extended)

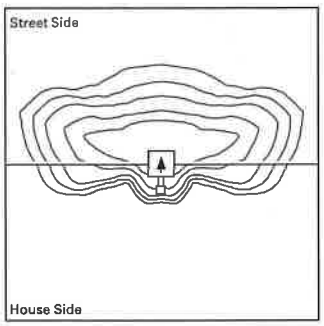


QUICK MOUNT ARM DATA

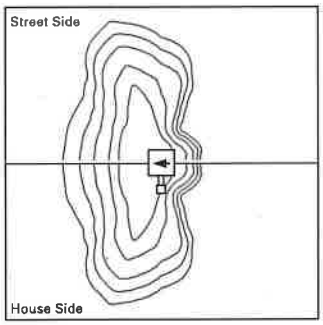
Number of Light Squares [1,2]	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 [3]	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	N/A	

NOTES: 1 QM option available with 1-8 light square configurations. 2 QMEA option available with 1-6 light square configurations. 3 QMEA arm to be used when mounting two fixtures at 90° on a single pole.

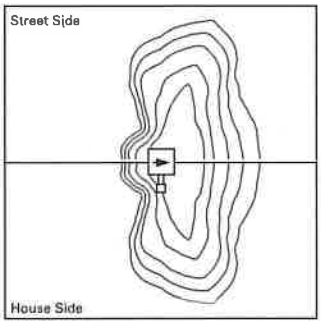
OPTIC ORIENTATION



Standard



Optics Rotated Left @ 90° [L90]

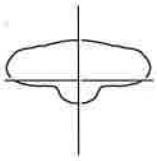


Optics Rotated Right @ 90° [R90]

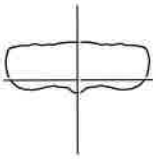
OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

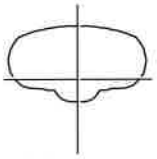
T2
(Type II)



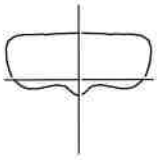
SL2
(Type II with Spill Control)



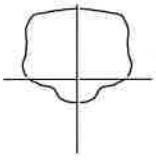
T3
(Type III)



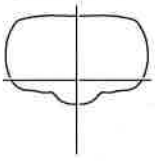
SL3
(Type III with Spill Control)



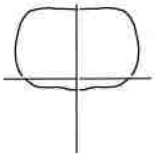
T4FT
(Type IV Forward Throw)



T4W
(Type IV Wide)

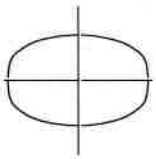


SL4
(Type IV with Spill Control)

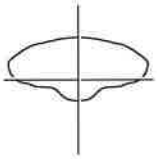


Asymmetric Roadway Distributions

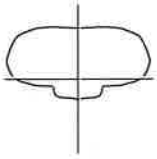
RW
(Rectangular Wide Type I)



T2R
(Type II Roadway)

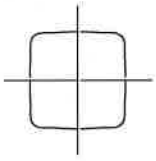


T3R
(Type III Roadway)

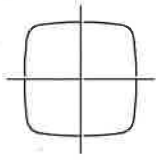


Symmertric Distributions

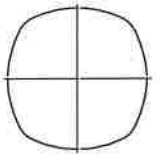
5NQ
(Type V Square Narrow)



5MQ
(Type V Square Medium)

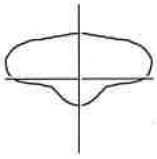


5WQ
(Type V Square Wide)

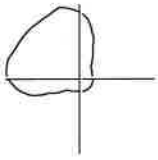


Specialized Distributions

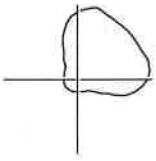
AFL
(Automotive Frontline)



SLL
(90° Spill Light Eliminator Left)

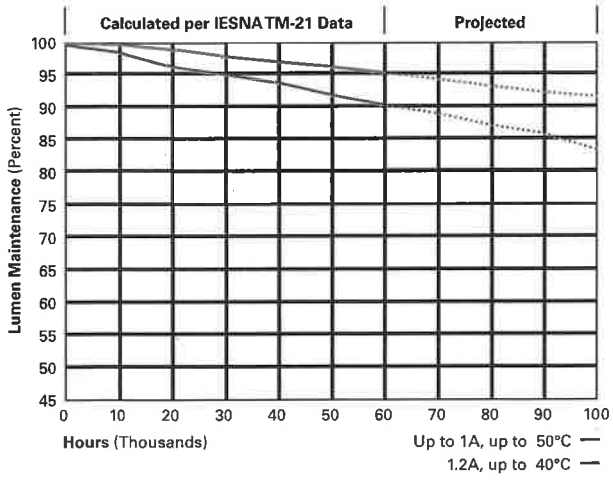


SLR
(90° Spill Light Eliminator Right)



LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	416,000
1.2A	Up to 40°C	> 90%	205,000



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

NOMINAL POWER LUMENS (1.2A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K/5000K Lumens	6,863	13,412	20,011	26,441	32,761	39,205	46,364	52,534	58,601	64,880
	3000K Lumens	6,489	12,681	18,919	25,000	30,974	37,066	43,836	49,668	55,405	61,341
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	7,285	14,238	21,246	28,072	34,780	41,621	49,221	55,770	62,212	68,878
	3000K Lumens	6,888	13,462	20,087	26,541	32,884	39,351	46,537	52,729	58,819	65,122
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,995	13,670	20,397	26,951	33,391	39,959	47,256	53,544	59,728	66,130
	3000K Lumens	6,613	12,924	19,284	25,480	31,570	37,780	44,679	50,624	56,471	62,524
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	7,150	13,973	20,850	27,549	34,134	40,846	48,307	54,734	61,056	67,598
	3000K Lumens	6,761	13,212	19,713	26,046	32,272	38,619	45,673	51,750	57,726	63,911
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	7,036	13,748	20,515	27,107	33,586	40,191	47,530	53,854	60,074	66,512
	3000K Lumens	6,652	12,999	19,397	25,629	31,754	37,999	44,938	50,917	56,797	62,885
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,945	13,571	20,249	26,756	33,152	39,671	46,917	53,160	59,298	65,653
	3000K Lumens	6,566	12,831	19,146	25,297	31,344	37,508	44,358	50,260	56,064	62,072
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,851	13,388	19,977	26,396	32,704	39,137	46,283	52,444	58,498	64,768
	3000K Lumens	6,477	12,658	18,888	24,957	30,920	37,003	43,759	49,584	55,308	61,235
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,994	13,668	20,394	26,947	33,388	39,953	47,249	53,537	59,720	66,119
	3000K Lumens	6,612	12,922	19,281	25,477	31,567	37,774	44,673	50,618	56,463	62,514
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,645	12,986	19,378	25,603	31,723	37,962	44,893	50,868	56,743	62,824
	3000K Lumens	6,282	12,279	18,321	24,207	29,993	35,892	42,445	48,094	53,648	59,398
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	7,214	14,097	21,036	27,795	34,437	41,210	48,734	55,220	61,597	68,199
	3000K Lumens	6,820	13,329	19,888	26,279	32,558	38,962	46,077	52,208	58,237	64,479
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	7,347	14,356	21,423	28,306	35,071	41,969	49,632	56,237	62,730	69,454
	3000K Lumens	6,947	13,573	20,254	26,762	33,158	39,680	46,925	53,170	59,309	65,667
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	7,366	14,396	21,480	28,381	35,164	42,080	49,765	56,386	62,898	69,639
	3000K Lumens	6,964	13,610	20,308	26,833	33,247	39,786	47,050	53,311	59,468	65,842
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	6,147	12,010	17,921	23,679	29,339	35,109	41,521	47,046	52,478	58,102
	3000K Lumens	5,811	11,355	16,944	22,388	27,739	33,194	39,256	44,479	49,617	54,933
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	7,149	13,970	20,846	27,543	34,126	40,837	48,295	54,722	61,042	67,582
	3000K Lumens	6,760	13,208	19,709	26,041	32,264	38,610	45,661	51,738	57,713	63,897
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	7,175	14,021	20,921	27,643	34,249	40,986	48,470	54,920	61,262	67,828
	3000K Lumens	6,784	13,256	19,780	26,136	32,381	38,750	45,827	51,925	57,922	64,129
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (1A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K/5000K Lumens	6,256	12,225	18,242	24,104	29,865	35,739	42,265	47,888	53,420	59,144
	3000K Lumens	5,915	11,559	17,248	22,789	28,236	33,790	39,960	45,277	50,506	55,919
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	6,642	12,979	19,366	25,589	31,705	37,941	44,870	50,840	56,711	62,789
	3000K Lumens	6,280	12,271	18,311	24,193	29,976	35,872	42,423	48,068	53,619	59,365
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,377	12,461	18,593	24,568	30,439	36,426	43,077	48,810	54,447	60,282
	3000K Lumens	6,029	11,781	17,580	23,229	28,781	34,441	40,731	46,150	51,480	56,997
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,518	12,739	19,006	25,113	31,116	37,235	44,036	49,895	55,658	61,622
	3000K Lumens	6,029	11,781	17,579	23,229	28,779	34,440	40,729	46,148	51,478	56,995
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,414	12,533	18,702	24,710	30,616	36,637	43,328	49,093	54,763	60,631
	3000K Lumens	6,064	11,849	17,681	23,363	28,946	34,638	40,966	46,417	51,776	57,325
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,331	12,372	18,459	24,391	30,221	36,163	42,769	48,459	54,056	59,849
	3000K Lumens	5,986	11,697	17,452	23,061	28,572	34,192	40,436	45,817	51,108	56,585
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,245	12,205	18,212	24,062	29,813	35,677	42,192	47,807	53,326	59,042
	3000K Lumens	5,904	11,539	17,218	22,750	28,187	33,732	39,891	45,199	50,418	55,822
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,376	12,460	18,591	24,564	30,436	36,421	43,072	48,803	54,439	60,273
	3000K Lumens	6,028	11,780	17,578	23,224	28,776	34,435	40,723	46,141	51,471	56,986
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,058	11,838	17,664	23,340	28,918	34,605	40,924	46,370	51,727	57,269
	3000K Lumens	5,727	11,193	16,701	22,067	27,341	32,718	38,692	43,841	48,906	54,146
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	6,577	12,851	19,176	25,336	31,392	37,566	44,426	50,337	56,151	62,170
	3000K Lumens	6,218	12,151	18,131	23,955	29,680	35,517	42,003	47,592	53,089	58,779
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	6,697	13,088	19,528	25,803	31,970	38,258	45,243	51,264	57,185	63,313
	3000K Lumens	6,332	12,374	18,463	24,395	30,227	36,171	42,776	48,468	54,066	59,861
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	6,715	13,122	19,580	25,871	32,055	38,360	45,365	51,401	57,337	63,482
	3000K Lumens	6,348	12,406	18,513	24,461	30,307	36,268	42,891	48,599	54,210	60,021
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	5,604	10,949	16,337	21,586	26,745	32,004	37,850	42,886	47,838	52,965
	3000K Lumens	5,298	10,351	15,446	20,409	25,287	30,258	35,786	40,547	45,229	50,077
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	6,517	12,735	19,002	25,107	31,109	37,227	44,025	49,883	55,644	61,607
	3000K Lumens	6,162	12,040	17,965	23,738	29,413	35,197	41,623	47,163	52,609	58,247
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	6,541	12,781	19,072	25,199	31,221	37,362	44,185	50,065	55,846	61,831
	3000K Lumens	6,184	12,084	18,032	23,825	29,519	35,325	41,775	47,334	52,801	58,459
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (800MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K/5000K Lumens	5,054	9,878	14,739	19,475	24,129	28,875	34,148	38,691	43,159	47,785
	3000K Lumens	4,779	9,338	13,935	18,412	22,813	27,301	32,286	36,581	40,805	45,179
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	5,366	10,486	15,647	20,675	25,616	30,654	36,252	41,076	45,819	50,730
	3000K Lumens	5,074	9,914	14,794	19,548	24,218	28,982	34,276	38,835	43,320	47,964
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3	4000K/5000K Lumens	5,153	10,068	15,022	19,849	24,593	29,430	34,805	39,436	43,990	48,705
	3000K Lumens	4,872	9,519	14,203	18,766	23,251	27,825	32,907	37,285	41,591	46,048
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	5,266	10,292	15,356	20,290	25,140	30,084	35,578	40,312	44,968	49,786
	3000K Lumens	4,979	9,731	14,518	19,184	23,769	28,443	33,638	38,114	42,516	47,071
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	5,182	10,126	15,109	19,964	24,736	29,600	35,006	39,664	44,245	48,987
	3000K Lumens	4,899	9,574	14,285	18,876	23,387	27,986	33,097	37,501	41,832	46,315
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	5,115	9,995	14,914	19,706	24,417	29,218	34,554	39,152	43,674	48,354
	3000K Lumens	4,836	9,450	14,100	18,631	23,085	27,624	32,670	37,017	41,292	45,717
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	5,046	9,860	14,713	19,441	24,087	28,825	34,089	38,625	43,085	47,702
	3000K Lumens	4,771	9,322	13,911	18,381	22,774	27,253	32,229	36,518	40,735	45,101
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	5,152	10,067	15,020	19,846	24,591	29,426	34,800	39,431	43,984	48,698
	3000K Lumens	4,871	9,518	14,200	18,764	23,249	27,822	32,902	37,280	41,585	46,042
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	4,894	9,565	14,271	18,857	23,364	27,959	33,065	37,465	41,792	46,270
	3000K Lumens	4,627	9,043	13,492	17,829	22,090	26,434	31,261	35,422	39,513	43,746
	BUG Rating	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	5,313	10,383	15,493	20,470	25,363	30,351	35,893	40,669	45,367	50,229
	3000K Lumens	5,024	9,817	14,647	19,354	23,980	28,696	33,936	38,452	42,893	47,490
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	5,411	10,574	15,778	20,848	25,830	30,911	36,554	41,418	46,202	51,154
	3000K Lumens	5,117	9,997	14,917	19,710	24,421	29,225	34,561	39,160	43,682	48,364
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	5,426	10,603	15,820	20,903	25,899	30,992	36,652	41,529	46,325	51,290
	3000K Lumens	5,130	10,025	14,958	19,763	24,486	29,302	34,654	39,263	43,799	48,493
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	4,528	8,846	13,199	17,440	21,609	25,858	30,580	34,649	38,651	42,792
	3000K Lumens	4,281	8,364	12,480	16,489	20,430	24,448	28,912	32,759	36,543	40,459
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	5,265	10,289	15,353	20,285	25,134	30,077	35,569	40,303	44,958	49,775
	3000K Lumens	4,978	9,727	14,516	19,179	23,763	28,437	33,629	38,105	42,506	47,060
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
AFL	4000K/5000K Lumens	5,285	10,327	15,409	20,360	25,225	30,186	35,699	40,450	45,120	49,956
	3000K Lumens	4,996	9,763	14,569	19,249	23,849	28,540	33,752	38,244	42,659	47,232
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (600MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K/5000K Lumens	4,121	8,055	12,019	15,881	19,676	23,547	27,847	31,552	35,196	38,967
	3000K Lumens	3,896	7,615	11,363	15,015	18,604	22,263	26,328	29,831	33,276	36,842
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	4000K/5000K Lumens	4,376	8,552	12,760	16,860	20,890	24,998	29,563	33,497	37,365	41,369
	3000K Lumens	4,138	8,085	12,064	15,941	19,751	23,635	27,951	31,670	35,328	39,113
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	4000K/5000K Lumens	4,201	8,210	12,251	16,187	20,055	23,999	28,383	32,159	35,873	39,718
	3000K Lumens	3,973	7,763	11,583	15,304	18,961	22,691	26,835	30,406	33,916	37,552
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3R	4000K/5000K Lumens	4,294	8,393	12,523	16,546	20,501	24,532	29,014	32,875	36,671	40,600
	3000K Lumens	4,060	7,936	11,840	15,644	19,383	23,195	27,432	31,082	34,671	38,386
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	4,226	8,257	12,321	16,280	20,172	24,139	28,547	32,346	36,082	39,948
	3000K Lumens	3,996	7,807	11,649	15,392	19,071	22,822	26,990	30,582	34,114	37,770
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	4,171	8,151	12,162	16,071	19,912	23,827	28,178	31,928	35,615	39,432
	3000K Lumens	3,943	7,706	11,498	15,194	18,825	22,527	26,642	30,187	33,673	37,281
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL2	4000K/5000K Lumens	4,114	8,041	11,998	15,854	19,643	23,506	27,799	31,498	35,135	38,901
	3000K Lumens	3,890	7,603	11,344	14,989	18,572	22,224	26,282	29,780	33,219	36,779
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL3	4000K/5000K Lumens	4,200	8,209	12,249	16,184	20,053	23,996	28,379	32,154	35,869	39,712
	3000K Lumens	3,972	7,762	11,580	15,302	18,960	22,688	26,831	30,400	33,913	37,546
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	3,992	7,799	11,638	15,378	19,053	22,801	26,964	30,552	34,081	37,733
	3000K Lumens	3,774	7,374	11,003	14,539	18,015	21,557	25,493	28,886	32,222	35,674
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B2-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	4,333	8,467	12,634	16,694	20,683	24,751	29,271	33,166	36,996	40,961
	3000K Lumens	4,097	8,005	11,945	15,784	19,555	23,401	27,674	31,357	34,978	38,727
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	4,413	8,622	12,867	17,000	21,064	25,207	29,810	33,777	37,677	41,715
	3000K Lumens	4,173	8,152	12,165	16,073	19,915	23,832	28,185	31,934	35,623	39,440
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	4,424	8,646	12,900	17,046	21,120	25,274	29,890	33,866	37,778	41,826
	3000K Lumens	4,182	8,175	12,197	16,117	19,968	23,896	28,260	32,018	35,717	39,545
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	4000K/5000K Lumens	3,692	7,214	10,763	14,222	17,621	21,086	24,937	28,256	31,519	34,897
	3000K Lumens	3,491	6,820	10,176	13,447	16,660	19,937	23,577	26,715	29,800	32,994
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	4,293	8,390	12,520	16,542	20,496	24,527	29,007	32,866	36,662	40,591
	3000K Lumens	4,059	7,932	11,837	15,640	19,378	23,189	27,425	31,074	34,662	38,377
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	4000K/5000K Lumens	4,310	8,421	12,566	16,602	20,571	24,616	29,112	32,986	36,795	40,738
	3000K Lumens	4,074	7,962	11,881	15,697	19,448	23,273	27,525	31,187	34,788	38,516
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

CONTROL OPTIONS

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

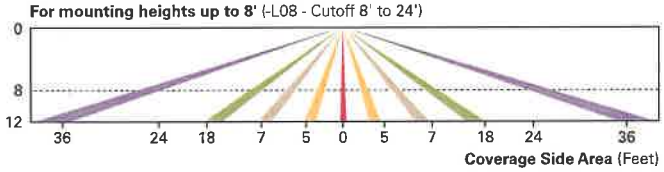
Photocontrol (P, R and PER7)
Optional button-type photocontrol (P) and photocontrol receptacles (R and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

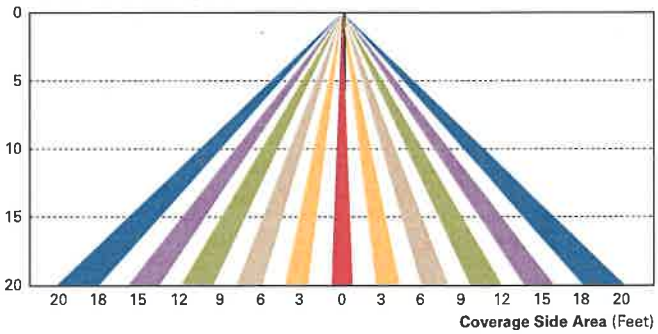
Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for "dusk-to-dawn" control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters. A variety of sensor lens are available to optimize the coverage. pattern for mounting heights from 8'-40'.

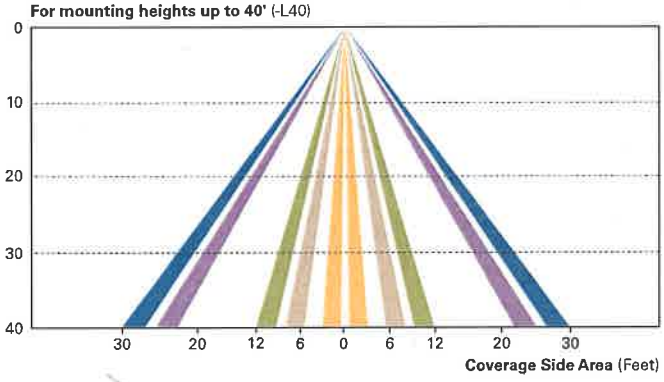
For mounting heights up to 8' (-L08 - Cutoff 8' to 24')



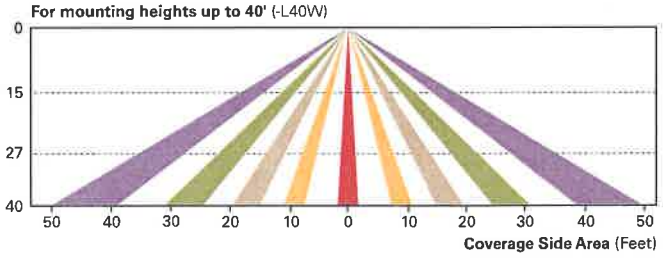
For mounting heights up to 20' (-L20)



For mounting heights up to 40' (-L40)

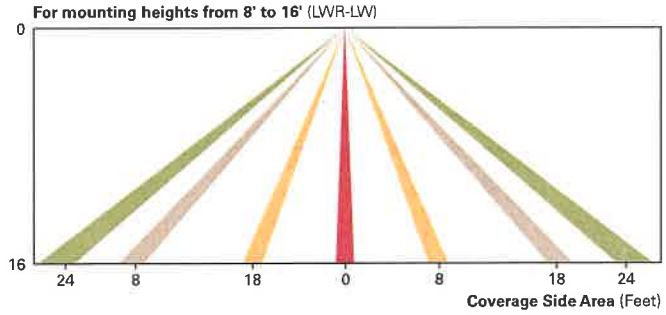


For mounting heights up to 40' (-L40W)

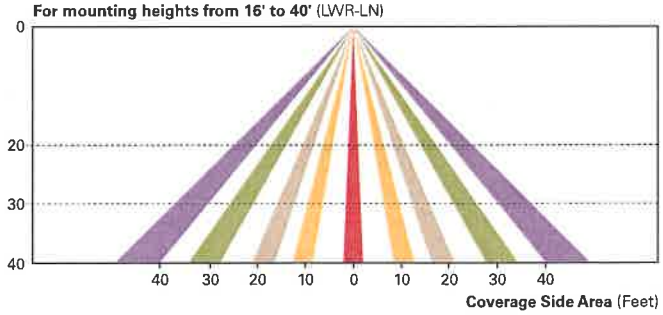


LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The Eaton's LumaWatt Pro powered by Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

LumenSafe Integrated Network Security Camera (LD)
Eaton brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

ORDERING INFORMATION

Sample Number: GLEON-AF-04-LED-E1-T3-GM-QM

Product Family [1, 2]	Light Engine	Number of Light Squares [3]	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	**AF**=1A Drive Current	**01**=1 **02**=2 **03**=3 **04**=4 **05**=5 [4] **06**=6 **07**=7 [5] **08**=8 [5] **09**=9 [6] **10**=10 [6]	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [7] **480**=480V [7,8]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]

Options (Add as Suffix)

7027=70 CRI 2700K [13]
7030=70 CRI 3000K [13]
8030=80 CRI 3000K [13]
7050=70 CRI 5000K [13]
7060=70 CRI 6000K [13]
600=Drive Current Set to Nominal 600mA [15]
800=Drive Current Set to Nominal 800mA [15]
1200=Drive Current Set to Nominal 1200mA [15,16]
F=Single Fuse (120, 277 or 347V. Specify Voltage)
FF=Double Fuse (208, 240 or 480V. Specify Voltage)
2L=Two Circuits [17,18]
DIM=External 0-10V Dimming Leads [19,20]
AHD145=After Hours Dim, 5 Hours [22]
AHD245=After Hours Dim, 6 Hours [22]
AHD255=After Hours Dim, 7 Hours [22]
AHD355=After Hours Dim, 8 Hours [22]
HA=50°C High Ambient [23]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Installed Mesh Top
TH=Tool-less Door Hardware
HSS=Installed House Side Shield [28]
CE=CE Marking [29]
LCF=Light Square Trim Painted to Match Housing [27]
P=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Voltage) [21]
PER7=NEMA 7-PIN Photocontrol Receptacle [21]
R=NEMA Photocontrol Receptacle [21]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24]
MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24]
MS/DIM-L08= Motion Sensor for Dimming Operation, Maximum 8' Mounting Height [24]
MS/DIM-L20= Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24]
MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [24]
MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height [24,25]
MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24,25]
MS/X-L40W=Bi-Level Motion Sensor, 21' - 40' Mounting Height [24,25]
MS-L08=Motion Sensor for ON/OFF Operation, Maximum 8' Mounting Height [24]
LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [26]
LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [26]
ZW =WaveLinx-enabled 4-PIN Twistlock Receptacle [19,33]
ZW-SWPD4WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33]
ZW-SWPD4BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33]
ZW-SWPD5WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33]
ZW-SWPD5BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33]

Accessories (Order Separately)

OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1013=Photocontrol Shorting Cap
OA/RA1014=120V Photocontrol
MA1252=10kV Surge Module Replacement
MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon
MA1037-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon
MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1191-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon
MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon
MA1192-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon
MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1194-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [24]
GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares
GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares
GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares
GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares
GLEON-QM=Quick Mount Arm Kit [11]
GLEON-QMEA=Quick Mount Extended Arm Kit [12]
LS/HSS=Field Installed House Side Shield [28,30]
WOLC-7P-10A=WaveLinx Outdoor Control Module [19,31]
SWPD4-WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33,34]
SWPD4-BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33,34]
SWPD5-WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33,34]
SWPD5-BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33,34]

NOTES:
1 Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information. **2** DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. **3** Standard 4000K CCT and minimum 70 CRI. **4** Not compatible with MS/4-LXX or MS/1-LXX sensors. **5** Not compatible with extended quick mount arm (QMEA). **6** Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA). **7** Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A. **8** Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems). **9** May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table. **10** Factory installed. **11** Maximum 8 light squares. **12** Maximum 6 light squares. **13** Extended lead times apply. Use dedicated IES files for 2700K, 3000K, 5000K and 6000K when performing layouts. **14** Reserved **15** 1 Amp standard. Use dedicated IES files for 600mA, 800mA and 1200mA when performing layouts. **16** Not available with HA option. **17** 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in AF-02 through AF-04 requires a larger housing, normally used for AF-05 or AF-06. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table. **18** Not available with LumaWatt Pro wireless sensors. **19** Cannot be used with other control options. **20** Low voltage control lead brought out 18" outside fixture. **21** Not available if any "MS" sensor is selected. Motion sensor has an integral photocell. **22** Requires the use of P photocontrol or the PER7 or R photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information. **23** 50°C lumen maintenance data applies to 600mA, 800mA and 1A drive currents. **24** The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information. **25** Replace X with number of Light Squares operating in low output mode. **26** LumaWatt Pro wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information. **27** Not available with house side shield (HSS). **28** Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected. **29** CE is not available with the LWR, MS, MS/X, MS/DIM, P, R or PER7 options. Available in 120-277V only. **30** One required for each Light Square. **31** Requires PER7. **32** Reserved. **33** WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. **34** Requires ZW. **35** Reserved.

LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology* LumenSafe Technology CLICK HERE	**D**=Dome Camera, Standard **H**=Dome Camera, Hi-Res **Z**=Dome Camera, Remote PTZ	**C**=Cellular, Customer Installed SIM Card **A**=Cellular, Factory Installed AT&T SIM Card **V**=Cellular, Factory Installed Verizon SIM Card **S**=Cellular, Factory Installed Sprint SIM Card	**W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

*Consult LumenSafe system pages for additional details and compatibility.

McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

GLEON
GALLEON LED

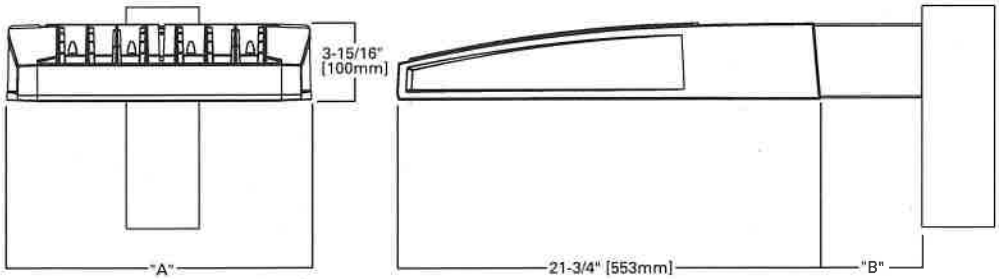
1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

LumenSafe Technology
CLICK HERE

WaveLinx

DIMENSIONS



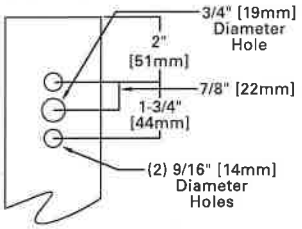
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



CERTIFICATION DATA

3G Vibration Rated
DesignLights Consortium® Qualified*
IP66 Rated
ISO 9001
LM79 / LM80 Compliant
UL/cUL Wet Location Listed

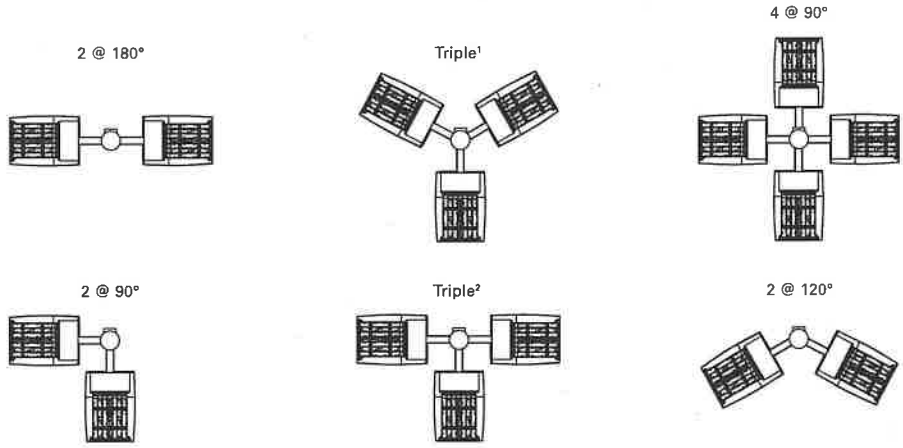
ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V, 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

*www.designlights.org

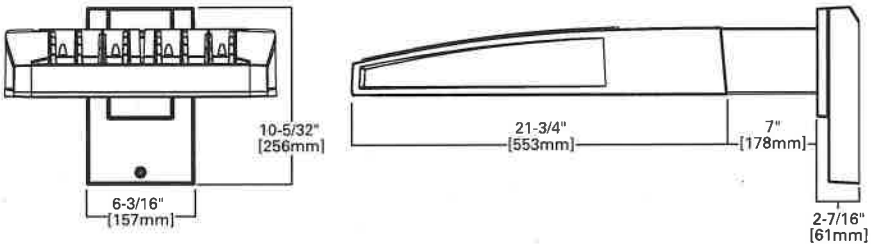
ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AF-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

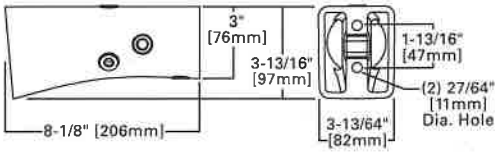


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. 2 Round poles are 3 @ 90°.

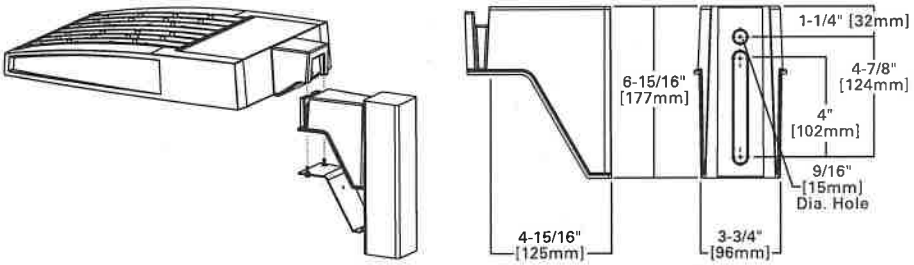
STANDARD WALL MOUNT



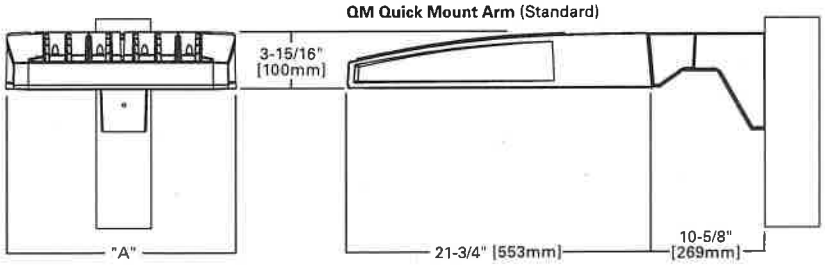
MAST ARM MOUNT



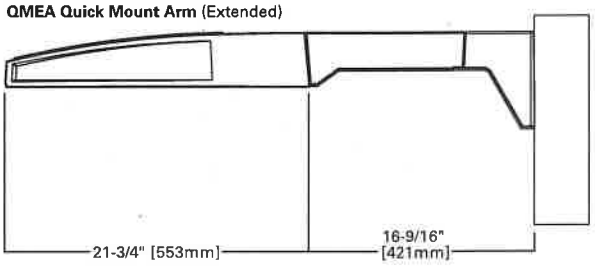
QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QM Quick Mount Arm (Standard)



QMEA Quick Mount Arm (Extended)

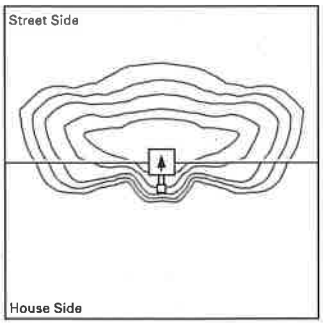


QUICK MOUNT ARM DATA

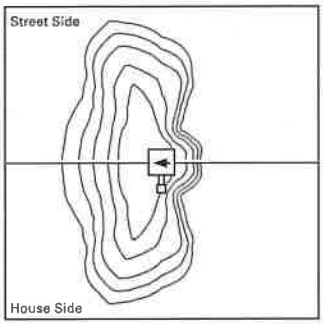
Number of Light Squares [1,2]	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 [3]	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	N/A	

NOTES: 1 QM option available with 1-8 light square configurations. 2 QMEA option available with 1-6 light square configurations. 3 QMEA arm to be used when mounting two fixtures at 90° on a single pole.

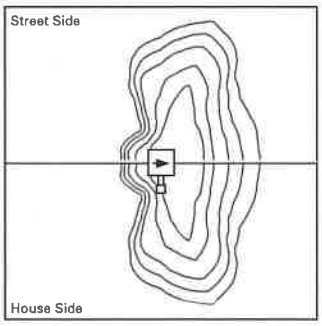
OPTIC ORIENTATION



Standard



Optics Rotated Left @ 90° [L90]

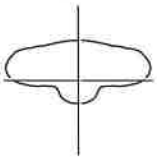


Optics Rotated Right @ 90° [R90]

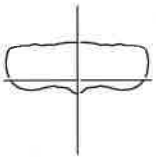
OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

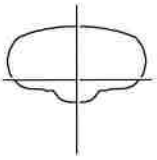
T2 (Type II)



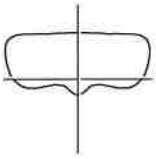
SL2 (Type II with Spill Control)



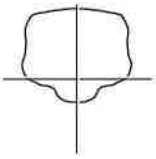
T3 (Type III)



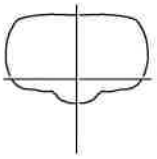
SL3 (Type III with Spill Control)



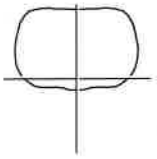
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

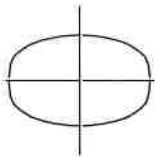


SL4 (Type IV with Spill Control)

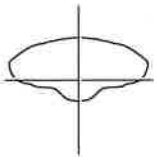


Asymmetric Roadway Distributions

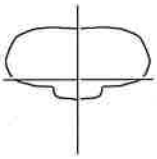
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

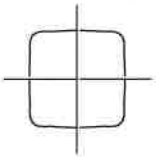


T3R (Type III Roadway)

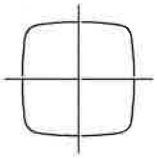


Symmertric Distributions

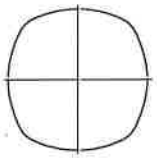
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

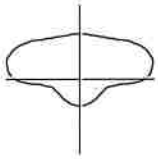


5WQ (Type V Square Wide)

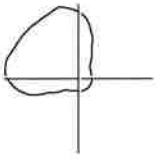


Specialized Distributions

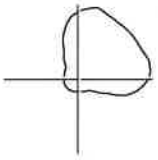
AFL (Automotive Frontline)



SLL (90° Spill Light Eliminator Left)

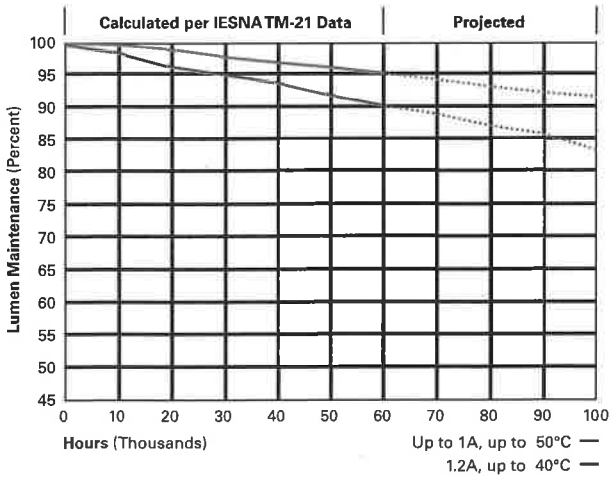


SLR (90° Spill Light Eliminator Right)



LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	416,000
1.2A	Up to 40°C	> 90%	205,000



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

NOMINAL POWER LUMENS (1.2A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K/5000K Lumens	6,863	13,412	20,011	26,441	32,761	39,205	46,364	52,534	58,601	64,880
	3000K Lumens	6,489	12,681	18,919	25,000	30,974	37,066	43,836	49,668	55,405	61,341
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	7,285	14,238	21,246	28,072	34,780	41,621	49,221	55,770	62,212	68,878
	3000K Lumens	6,888	13,462	20,087	26,541	32,884	39,351	46,537	52,729	58,819	65,122
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,995	13,670	20,397	26,951	33,391	39,959	47,256	53,544	59,728	66,130
	3000K Lumens	6,613	12,924	19,284	25,480	31,570	37,780	44,679	50,624	56,471	62,524
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	7,150	13,973	20,850	27,549	34,134	40,846	48,307	54,734	61,056	67,598
	3000K Lumens	6,761	13,212	19,713	26,046	32,272	38,619	45,673	51,750	57,726	63,911
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	7,036	13,748	20,515	27,107	33,586	40,191	47,530	53,854	60,074	66,512
	3000K Lumens	6,652	12,999	19,397	25,629	31,754	37,999	44,938	50,917	56,797	62,885
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,945	13,571	20,249	26,756	33,152	39,671	46,917	53,160	59,298	65,653
	3000K Lumens	6,566	12,831	19,146	25,297	31,344	37,508	44,358	50,260	56,064	62,072
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,851	13,388	19,977	26,396	32,704	39,137	46,283	52,444	58,498	64,768
	3000K Lumens	6,477	12,658	18,888	24,957	30,920	37,003	43,759	49,584	55,308	61,235
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,994	13,668	20,394	26,947	33,388	39,953	47,249	53,537	59,720	66,119
	3000K Lumens	6,612	12,922	19,281	25,477	31,567	37,774	44,673	50,618	56,463	62,514
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,645	12,986	19,378	25,603	31,723	37,962	44,893	50,868	56,743	62,824
	3000K Lumens	6,282	12,279	18,321	24,207	29,993	35,892	42,445	48,094	53,648	59,398
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	7,214	14,097	21,036	27,795	34,437	41,210	48,734	55,220	61,597	68,199
	3000K Lumens	6,820	13,329	19,888	26,279	32,558	38,962	46,077	52,208	58,237	64,479
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	7,347	14,356	21,423	28,306	35,071	41,969	49,632	56,237	62,730	69,454
	3000K Lumens	6,947	13,573	20,254	26,762	33,158	39,680	46,925	53,170	59,309	65,667
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	7,366	14,396	21,480	28,381	35,164	42,080	49,765	56,386	62,898	69,639
	3000K Lumens	6,964	13,610	20,308	26,833	33,247	39,786	47,050	53,311	59,468	65,842
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	6,147	12,010	17,921	23,679	29,339	35,109	41,521	47,046	52,478	58,102
	3000K Lumens	5,811	11,355	16,944	22,388	27,739	33,194	39,256	44,479	49,617	54,933
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	7,149	13,970	20,846	27,543	34,126	40,837	48,295	54,722	61,042	67,582
	3000K Lumens	6,760	13,208	19,709	26,041	32,264	38,610	45,661	51,738	57,713	63,897
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	7,175	14,021	20,921	27,643	34,249	40,986	48,470	54,920	61,262	67,828
	3000K Lumens	6,784	13,256	19,780	26,136	32,381	38,750	45,827	51,925	57,922	64,129
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (1A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K/5000K Lumens	6,256	12,225	18,242	24,104	29,865	35,739	42,265	47,888	53,420	59,144
	3000K Lumens	5,915	11,559	17,248	22,789	28,236	33,790	39,960	45,277	50,506	55,919
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	6,642	12,979	19,366	25,589	31,705	37,941	44,870	50,840	56,711	62,789
	3000K Lumens	6,280	12,271	18,311	24,193	29,976	35,872	42,423	48,068	53,619	59,365
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,377	12,461	18,593	24,568	30,439	36,426	43,077	48,810	54,447	60,282
	3000K Lumens	6,029	11,781	17,580	23,229	28,781	34,441	40,731	46,150	51,480	56,997
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,518	12,739	19,006	25,113	31,116	37,235	44,036	49,895	55,658	61,622
	3000K Lumens	6,029	11,781	17,579	23,229	28,779	34,440	40,729	46,148	51,478	56,995
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,414	12,533	18,702	24,710	30,616	36,637	43,328	49,093	54,763	60,631
	3000K Lumens	6,064	11,849	17,681	23,363	28,946	34,638	40,966	46,417	51,776	57,325
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,331	12,372	18,459	24,391	30,221	36,163	42,769	48,459	54,056	59,849
	3000K Lumens	5,986	11,697	17,452	23,061	28,572	34,192	40,436	45,817	51,108	56,585
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,245	12,205	18,212	24,062	29,813	35,677	42,192	47,807	53,326	59,042
	3000K Lumens	5,904	11,539	17,218	22,750	28,187	33,732	39,891	45,199	50,418	55,822
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,376	12,460	18,591	24,564	30,436	36,421	43,072	48,803	54,439	60,273
	3000K Lumens	6,028	11,780	17,578	23,224	28,776	34,435	40,723	46,141	51,471	56,986
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,058	11,838	17,664	23,340	28,918	34,605	40,924	46,370	51,727	57,269
	3000K Lumens	5,727	11,193	16,701	22,067	27,341	32,718	38,692	43,841	48,906	54,146
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	6,577	12,851	19,176	25,336	31,392	37,566	44,426	50,337	56,151	62,170
	3000K Lumens	6,218	12,151	18,131	23,955	29,680	35,517	42,003	47,592	53,089	58,779
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	6,697	13,088	19,528	25,803	31,970	38,258	45,243	51,264	57,185	63,313
	3000K Lumens	6,332	12,374	18,463	24,395	30,227	36,171	42,776	48,468	54,066	59,861
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	6,715	13,122	19,580	25,871	32,055	38,360	45,365	51,401	57,337	63,482
	3000K Lumens	6,348	12,406	18,513	24,461	30,307	36,268	42,891	48,599	54,210	60,021
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	5,604	10,949	16,337	21,586	26,745	32,004	37,850	42,886	47,838	52,965
	3000K Lumens	5,298	10,351	15,446	20,409	25,287	30,258	35,786	40,547	45,229	50,077
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	6,517	12,735	19,002	25,107	31,109	37,227	44,025	49,883	55,644	61,607
	3000K Lumens	6,162	12,040	17,965	23,738	29,413	35,197	41,623	47,163	52,609	58,247
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	6,541	12,781	19,072	25,199	31,221	37,362	44,185	50,065	55,846	61,831
	3000K Lumens	6,184	12,084	18,032	23,825	29,519	35,325	41,775	47,334	52,801	58,459
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (800MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K/5000K Lumens	5,054	9,878	14,739	19,475	24,129	28,875	34,148	38,691	43,159	47,785
	3000K Lumens	4,779	9,338	13,935	18,412	22,813	27,301	32,286	36,581	40,805	45,179
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	5,366	10,486	15,647	20,675	25,616	30,654	36,252	41,076	45,819	50,730
	3000K Lumens	5,074	9,914	14,794	19,548	24,218	28,982	34,276	38,835	43,320	47,964
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3	4000K/5000K Lumens	5,153	10,068	15,022	19,849	24,593	29,430	34,805	39,436	43,990	48,705
	3000K Lumens	4,872	9,519	14,203	18,766	23,251	27,825	32,907	37,285	41,591	46,048
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	5,266	10,292	15,356	20,290	25,140	30,084	35,578	40,312	44,968	49,786
	3000K Lumens	4,979	9,731	14,518	19,184	23,769	28,443	33,638	38,114	42,516	47,071
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	5,182	10,126	15,109	19,964	24,736	29,600	35,006	39,664	44,245	48,987
	3000K Lumens	4,899	9,574	14,285	18,876	23,387	27,986	33,097	37,501	41,832	46,315
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	5,115	9,995	14,914	19,706	24,417	29,218	34,554	39,152	43,674	48,354
	3000K Lumens	4,836	9,450	14,100	18,631	23,085	27,624	32,670	37,017	41,292	45,717
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	5,046	9,860	14,713	19,441	24,087	28,825	34,089	38,625	43,085	47,702
	3000K Lumens	4,771	9,322	13,911	18,381	22,774	27,253	32,229	36,518	40,735	45,101
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	5,152	10,067	15,020	19,846	24,591	29,426	34,800	39,431	43,984	48,698
	3000K Lumens	4,871	9,518	14,200	18,764	23,249	27,822	32,902	37,280	41,585	46,042
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	4,894	9,565	14,271	18,857	23,364	27,959	33,065	37,465	41,792	46,270
	3000K Lumens	4,627	9,043	13,492	17,829	22,090	26,434	31,261	35,422	39,513	43,746
	BUG Rating	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	5,313	10,383	15,493	20,470	25,363	30,351	35,893	40,669	45,367	50,229
	3000K Lumens	5,024	9,817	14,647	19,354	23,980	28,696	33,936	38,452	42,893	47,490
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	5,411	10,574	15,778	20,848	25,830	30,911	36,554	41,418	46,202	51,154
	3000K Lumens	5,117	9,997	14,917	19,710	24,421	29,225	34,561	39,160	43,682	48,364
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	5,426	10,603	15,820	20,903	25,899	30,992	36,652	41,529	46,325	51,290
	3000K Lumens	5,130	10,025	14,958	19,763	24,486	29,302	34,654	39,263	43,799	48,493
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	4,528	8,846	13,199	17,440	21,609	25,858	30,580	34,649	38,651	42,792
	3000K Lumens	4,281	8,364	12,480	16,489	20,430	24,448	28,912	32,759	36,543	40,459
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	5,265	10,289	15,353	20,285	25,134	30,077	35,569	40,303	44,958	49,775
	3000K Lumens	4,978	9,727	14,516	19,179	23,763	28,437	33,629	38,105	42,506	47,060
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
AFL	4000K/5000K Lumens	5,285	10,327	15,409	20,360	25,225	30,186	35,699	40,450	45,120	49,956
	3000K Lumens	4,996	9,763	14,569	19,249	23,849	28,540	33,752	38,244	42,659	47,232
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (600MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K/5000K Lumens	4,121	8,055	12,019	15,881	19,676	23,547	27,847	31,552	35,196	38,967
	3000K Lumens	3,896	7,615	11,363	15,015	18,604	22,263	26,328	29,831	33,276	36,842
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	4000K/5000K Lumens	4,376	8,552	12,760	16,860	20,890	24,998	29,563	33,497	37,365	41,369
	3000K Lumens	4,138	8,085	12,064	15,941	19,751	23,635	27,951	31,670	35,328	39,113
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	4000K/5000K Lumens	4,201	8,210	12,251	16,187	20,055	23,999	28,383	32,159	35,873	39,718
	3000K Lumens	3,973	7,763	11,583	15,304	18,961	22,691	26,835	30,406	33,916	37,552
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3R	4000K/5000K Lumens	4,294	8,393	12,523	16,546	20,501	24,532	29,014	32,875	36,671	40,600
	3000K Lumens	4,060	7,936	11,840	15,644	19,383	23,195	27,432	31,082	34,671	38,386
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	4,226	8,257	12,321	16,280	20,172	24,139	28,547	32,346	36,082	39,948
	3000K Lumens	3,996	7,807	11,649	15,392	19,071	22,822	26,990	30,582	34,114	37,770
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	4,171	8,151	12,162	16,071	19,912	23,827	28,178	31,928	35,615	39,432
	3000K Lumens	3,943	7,706	11,498	15,194	18,825	22,527	26,642	30,187	33,673	37,281
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL2	4000K/5000K Lumens	4,114	8,041	11,998	15,854	19,643	23,506	27,799	31,498	35,135	38,901
	3000K Lumens	3,890	7,603	11,344	14,989	18,572	22,224	26,282	29,780	33,219	36,779
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL3	4000K/5000K Lumens	4,200	8,209	12,249	16,184	20,053	23,996	28,379	32,154	35,869	39,712
	3000K Lumens	3,972	7,762	11,580	15,302	18,960	22,688	26,831	30,400	33,913	37,546
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	3,992	7,799	11,638	15,378	19,053	22,801	26,964	30,552	34,081	37,733
	3000K Lumens	3,774	7,374	11,003	14,539	18,015	21,557	25,493	28,886	32,222	35,674
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B2-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	4,333	8,467	12,634	16,694	20,683	24,751	29,271	33,166	36,996	40,961
	3000K Lumens	4,097	8,005	11,945	15,784	19,555	23,401	27,674	31,357	34,978	38,727
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	4,413	8,622	12,867	17,000	21,064	25,207	29,810	33,777	37,677	41,715
	3000K Lumens	4,173	8,152	12,165	16,073	19,915	23,832	28,185	31,934	35,623	39,440
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	4,424	8,646	12,900	17,046	21,120	25,274	29,890	33,866	37,778	41,826
	3000K Lumens	4,182	8,175	12,197	16,117	19,968	23,896	28,260	32,018	35,717	39,545
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	4000K/5000K Lumens	3,692	7,214	10,763	14,222	17,621	21,086	24,937	28,256	31,519	34,897
	3000K Lumens	3,491	6,820	10,176	13,447	16,660	19,937	23,577	26,715	29,800	32,994
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	4,293	8,390	12,520	16,542	20,496	24,527	29,007	32,866	36,662	40,591
	3000K Lumens	4,059	7,932	11,837	15,640	19,378	23,189	27,425	31,074	34,662	38,377
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	4000K/5000K Lumens	4,310	8,421	12,566	16,602	20,571	24,616	29,112	32,986	36,795	40,738
	3000K Lumens	4,074	7,962	11,881	15,697	19,448	23,273	27,525	31,187	34,788	38,516
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

CONTROL OPTIONS

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

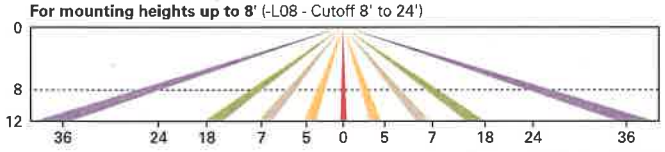
Photocontrol (P, R and PER7)
Optional button-type photocontrol (P) and photocontrol receptacles (R and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

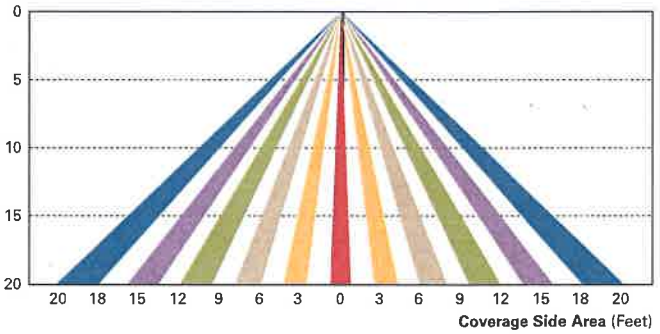
Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for "dusk-to-dawn" control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters. A variety of sensor lens are available to optimize the coverage. pattern for mounting heights from 8'-40'.

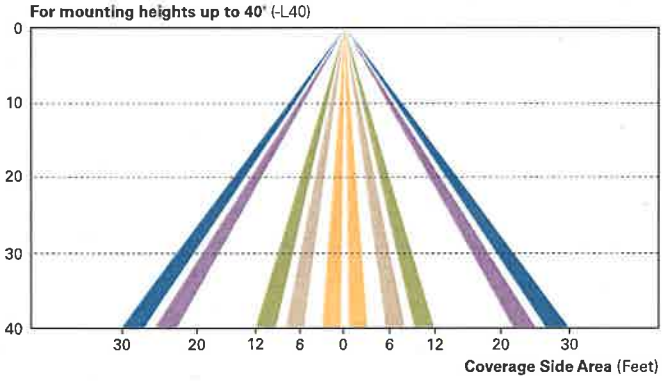
For mounting heights up to 8' (-L08 - Cutoff 8' to 24')



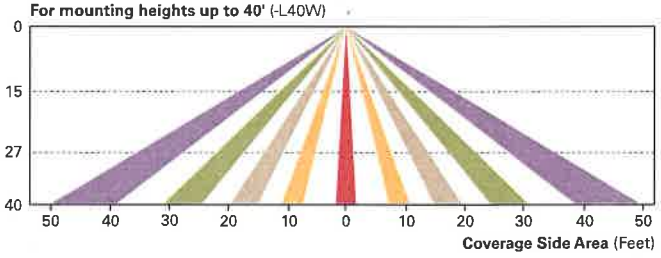
For mounting heights up to 20' (-L20)



For mounting heights up to 40' (-L40)

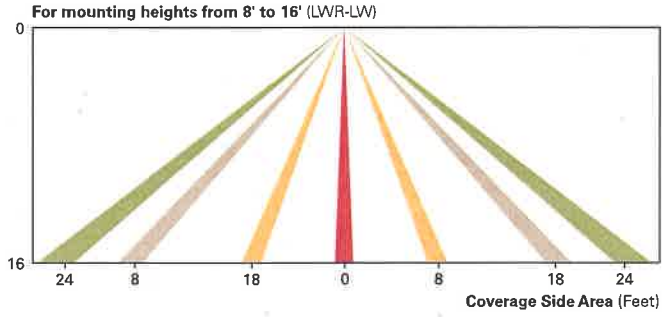


For mounting heights up to 40' (-L40W)

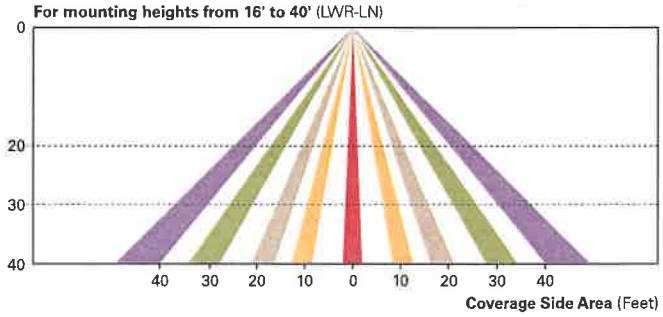


LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The Eaton's LumaWatt Pro powered by Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

LumenSafe Integrated Network Security Camera (LD)
Eaton brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

ORDERING INFORMATION

Sample Number: GLEON-AF-04-LED-E1-T3-GM-QM

Product Family [1, 2]	Light Engine	Number of Light Squares [3]	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	**AF**=1A Drive Current	**01**=1 **02**=2 **03**=3 **04**=4 **05**=5 [4] **06**=6 **07**=7 [5] **08**=8 [5] **09**=9 [6] **10**=10 [6]	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [7] **480**=480V [7,8]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]

Options (Add as Suffix)

7027=70 CRI 2700K [13]
7030=70 CRI 3000K [13]
8030=80 CRI 3000K [13]
7050=70 CRI 5000K [13]
7060=70 CRI 6000K [13]
600=Drive Current Set to Nominal 600mA [15]
800=Drive Current Set to Nominal 800mA [15]
1200=Drive Current Set to Nominal 1200mA [15,16]
F=Single Fuse (120, 277 or 347V. Specify Voltage)
FF=Double Fuse (208, 240 or 480V. Specify Voltage)
2L=Two Circuits [17,18]
DIM=External 0-10V Dimming Leads [19,20]
AHD145=After Hours Dim, 5 Hours [22]
AHD245=After Hours Dim, 6 Hours [22]
AHD255=After Hours Dim, 7 Hours [22]
AHD355=After Hours Dim, 8 Hours [22]
HA=50°C High Ambient [23]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Installed Mesh Top
TH=Tool-less Door Hardware
HSS=Installed House Side Shield [28]
CE=CE Marking [29]
LCF=Light Square Trim Painted to Match Housing [27]
P=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Voltage) [21]
PER7=NEMA 7-PIN Photocontrol Receptacle [21]
R=NEMA Photocontrol Receptacle [21]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24]
MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24]
MS/DIM-L08= Motion Sensor for Dimming Operation, Maximum 8' Mounting Height [24]
MS/DIM-L20= Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24]
MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [24]
MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height [24,25]
MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24,25]
MS/X-L40W=Bi-Level Motion Sensor, 21' - 40' Mounting Height [24,25]
MS-L08=Motion Sensor for ON/OFF Operation, Maximum 8' Mounting Height [24]
LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [26]
LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [26]
ZW=WaveLinx-enabled 4-PIN Twistlock Receptacle [19,33]
ZW-SWPD4WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33]
ZW-SWPD4BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33]
ZW-SWPD5WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33]
ZW-SWPD5BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33]

Accessories (Order Separately)

OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1013=Photocontrol Shorting Cap
OA/RA1014=120V Photocontrol
MA1252=10kV Surge Module Replacement
MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon
MA1037-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon
MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1191-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon
MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon
MA1192-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon
MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1194-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [24]
GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares
GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares
GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares
GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares
GLEON-QM=Quick Mount Arm Kit [11]
GLEON-QMEA=Quick Mount Extended Arm Kit [12]
LS/HSS=Field Installed House Side Shield [28,30]
WOLC-7P-10A=WaveLinx Outdoor Control Module [19,21]
SWPD4-WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33,34]
SWPD4-BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33,34]
SWPD5-WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33,34]
SWPD5-BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33,34]

NOTES:
1 Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information. **2** DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. **3** Standard 4000K CCT and minimum 70 CRI. **4** Not compatible with MS/4-LXX or MS/1-LXX sensors. **5** Not compatible with extended quick mount arm (QMEA). **6** Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA). **7** Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A. **8** Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems). **9** May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table. **10** Factory installed. **11** Maximum 8 light squares. **12** Maximum 6 light squares. **13** Extended lead times apply. Use dedicated IES files for 2700K, 3000K, 5000K and 6000K when performing layouts. **14** Reserved **15** 1 Amp standard. Use dedicated IES files for 600mA, 800mA and 1200mA when performing layouts. **16** Not available with HA option. **17** 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in AF-02 through AF-04 requires a larger housing, normally used for AF-05 or AF-06. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table. **18** Not available with LumaWatt Pro wireless sensors. **19** Cannot be used with other control options. **20** Low voltage control lead brought out 18" outside fixture. **21** Not available if any "MS" sensor is selected. Motion sensor has an integral photocell. **22** Requires the use of P photocontrol or the PER7 or R photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information. **23** 50°C lumen maintenance data applies to 600mA, 800mA and 1A drive currents. **24** The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information. **25** Replace X with number of Light Squares operating in low output mode. **26** LumaWatt Pro wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information. **27** Not available with house side shield (HSS). **28** Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected. **29** CE is not available with the LWR, MS, MS/X, MS/DIM, P, R or PER7 options. Available in 120-277V only. **30** One required for each Light Square. **31** Requires PER7. **32** Reserved. **33** WAC Gateway required to enable field-configurability: Order WAC PoE and WPOE 120 (10V to PoE injector) power supply if needed. **34** Requires ZW. **35** Reserved.

LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology* LumenSafe Technology CLICK HERE	**D**=Dome Camera, Standard **H**=Dome Camera, Hi-Res **Z**=Dome Camera, Remote PTZ	**C**=Cellular, Customer Installed SIM Card **A**=Cellular, Factory Installed AT&T SIM Card **V**=Cellular, Factory Installed Verizon SIM Card **S**=Cellular, Factory Installed Sprint SIM Card	**W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

*Consult LumenSafe system pages for additional details and compatibility.

McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

GLEON
GALLEON LED

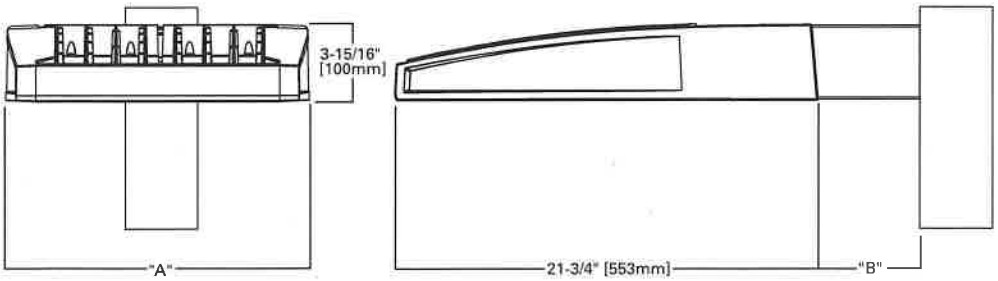
1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

LumenSafe Technology
CLICK HERE

WaveLinx

DIMENSIONS



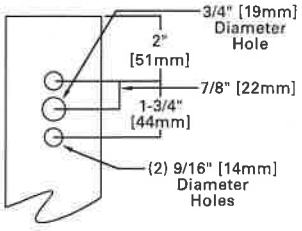
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



CERTIFICATION DATA

3G Vibration Rated
DesignLights Consortium® Qualified*
IP66 Rated
ISO 9001
LM79 / LM80 Compliant
UL/cUL Wet Location Listed

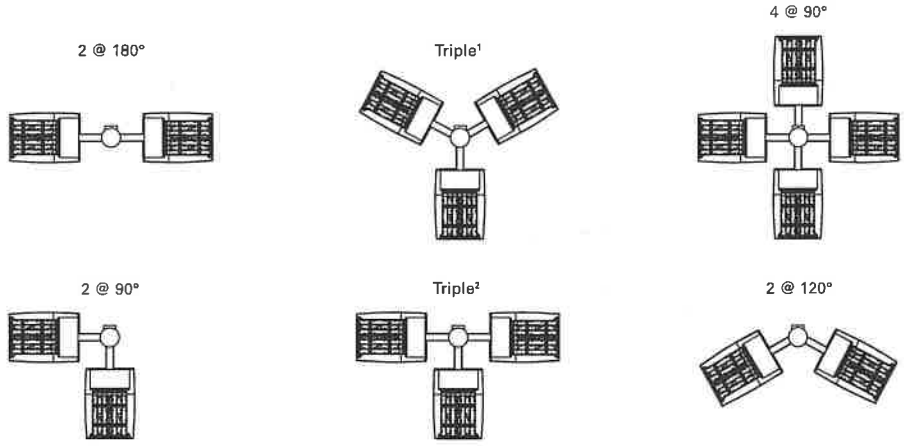
ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V, 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

*www.designlights.org

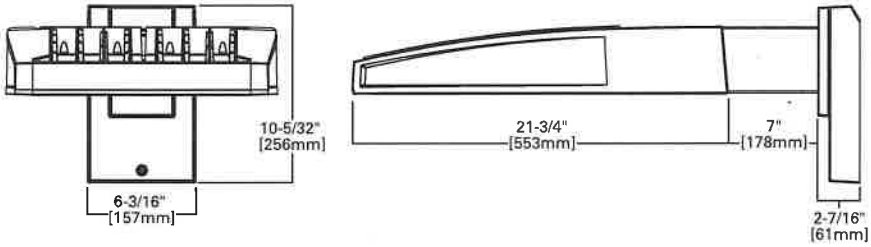
ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AF-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

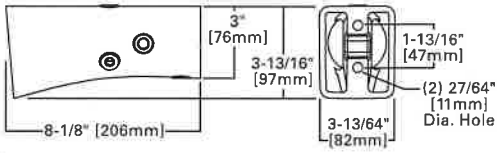


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. 2 Round poles are 3 @ 90°.

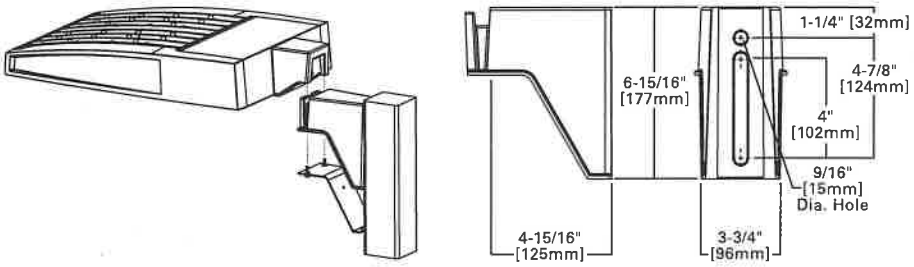
STANDARD WALL MOUNT



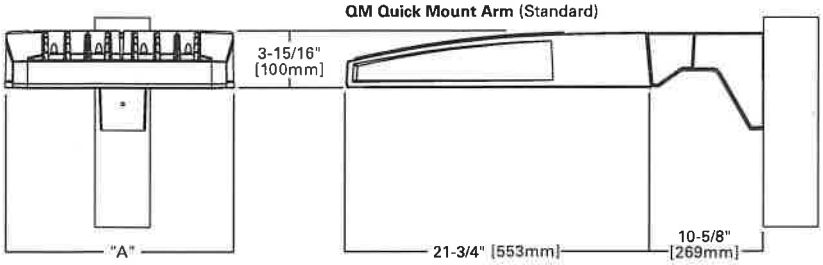
MAST ARM MOUNT



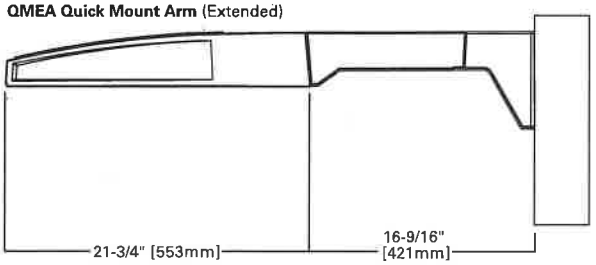
QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QM Quick Mount Arm (Standard)



QMEA Quick Mount Arm (Extended)

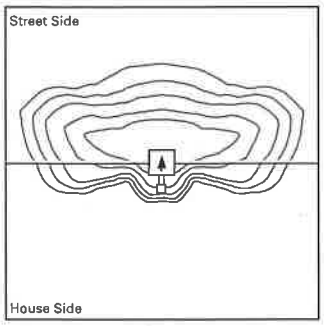


QUICK MOUNT ARM DATA

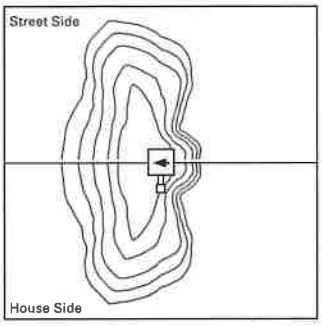
Number of Light Squares [1,2]	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 [3]	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	N/A	

NOTES: 1 QM option available with 1-8 light square configurations. 2 QMEA option available with 1-6 light square configurations. 3 QMEA arm to be used when mounting two fixtures at 90° on a single pole.

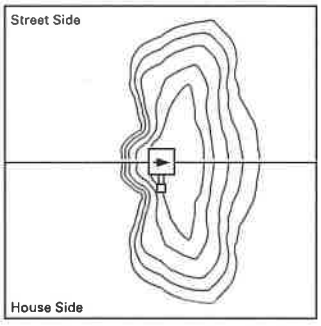
OPTIC ORIENTATION



Standard



Optics Rotated Left @ 90° [L90]

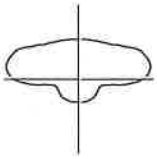


Optics Rotated Right @ 90° [R90]

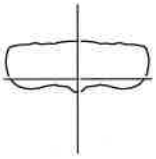
OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

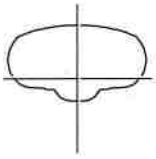
T2 (Type II)



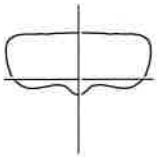
SL2 (Type II with Spill Control)



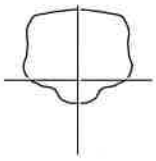
T3 (Type III)



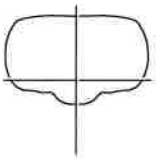
SL3 (Type III with Spill Control)



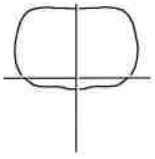
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

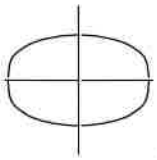


SL4 (Type IV with Spill Control)

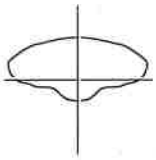


Asymmetric Roadway Distributions

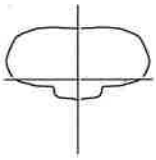
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

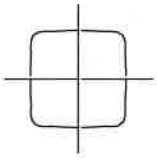


T3R (Type III Roadway)

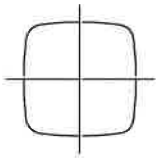


Symmetric Distributions

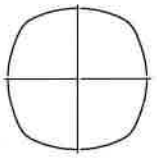
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

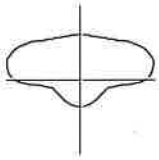


5WQ (Type V Square Wide)

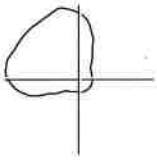


Specialized Distributions

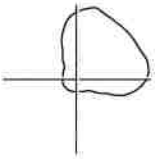
AFL (Automotive Frontline)



SLL (90° Spill Light Eliminator Left)

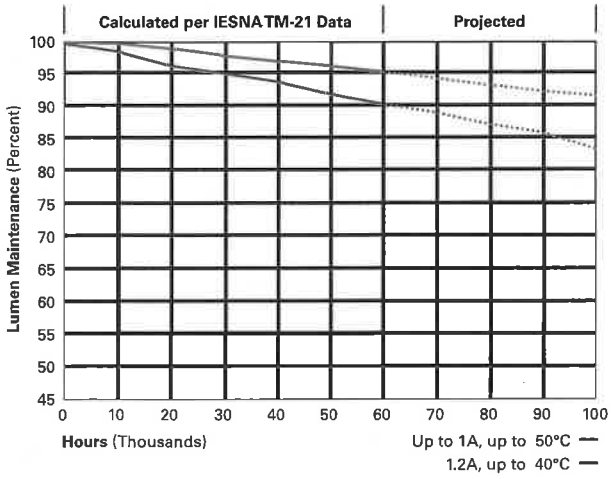


SLR (90° Spill Light Eliminator Right)



LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	416,000
1.2A	Up to 40°C	> 90%	205,000



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

NOMINAL POWER LUMENS (1.2A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K/5000K Lumens	6,863	13,412	20,011	26,441	32,761	39,205	46,364	52,534	58,601	64,880
	3000K Lumens	6,489	12,681	18,919	25,000	30,974	37,066	43,836	49,668	55,405	61,341
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	7,285	14,238	21,246	28,072	34,780	41,621	49,221	55,770	62,212	68,878
	3000K Lumens	6,888	13,462	20,087	26,541	32,884	39,351	46,537	52,729	58,819	65,122
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,995	13,670	20,397	26,951	33,391	39,959	47,256	53,544	59,728	66,130
	3000K Lumens	6,613	12,924	19,284	25,480	31,570	37,780	44,679	50,624	56,471	62,524
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	7,150	13,973	20,850	27,549	34,134	40,846	48,307	54,734	61,056	67,598
	3000K Lumens	6,761	13,212	19,713	26,046	32,272	38,619	45,673	51,750	57,726	63,911
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	7,036	13,748	20,515	27,107	33,586	40,191	47,530	53,854	60,074	66,512
	3000K Lumens	6,652	12,999	19,397	25,629	31,754	37,999	44,938	50,917	56,797	62,885
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,945	13,571	20,249	26,756	33,152	39,671	46,917	53,160	59,298	65,653
	3000K Lumens	6,566	12,831	19,146	25,297	31,344	37,508	44,358	50,260	56,064	62,072
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,851	13,388	19,977	26,396	32,704	39,137	46,283	52,444	58,498	64,768
	3000K Lumens	6,477	12,658	18,888	24,957	30,920	37,003	43,759	49,584	55,308	61,235
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,994	13,668	20,394	26,947	33,388	39,953	47,249	53,537	59,720	66,119
	3000K Lumens	6,612	12,922	19,281	25,477	31,567	37,774	44,673	50,618	56,463	62,514
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,645	12,986	19,378	25,603	31,723	37,962	44,893	50,868	56,743	62,824
	3000K Lumens	6,282	12,279	18,321	24,207	29,993	35,892	42,445	48,094	53,648	59,398
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	7,214	14,097	21,036	27,795	34,437	41,210	48,734	55,220	61,597	68,199
	3000K Lumens	6,820	13,329	19,888	26,279	32,558	38,962	46,077	52,208	58,237	64,479
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	7,347	14,356	21,423	28,306	35,071	41,969	49,632	56,237	62,730	69,454
	3000K Lumens	6,947	13,573	20,254	26,762	33,158	39,680	46,925	53,170	59,309	65,667
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	7,366	14,396	21,480	28,381	35,164	42,080	49,765	56,386	62,898	69,639
	3000K Lumens	6,964	13,610	20,308	26,833	33,247	39,786	47,050	53,311	59,468	65,842
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	6,147	12,010	17,921	23,679	29,339	35,109	41,521	47,046	52,478	58,102
	3000K Lumens	5,811	11,355	16,944	22,388	27,739	33,194	39,256	44,479	49,617	54,933
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	7,149	13,970	20,846	27,543	34,126	40,837	48,295	54,722	61,042	67,582
	3000K Lumens	6,760	13,208	19,709	26,041	32,264	38,610	45,661	51,738	57,713	63,897
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	7,175	14,021	20,921	27,643	34,249	40,986	48,470	54,920	61,262	67,828
	3000K Lumens	6,784	13,256	19,780	26,136	32,381	38,750	45,827	51,925	57,922	64,129
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (1A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K/5000K Lumens	6,256	12,225	18,242	24,104	29,865	35,739	42,265	47,888	53,420	59,144
	3000K Lumens	5,915	11,559	17,248	22,789	28,236	33,790	39,960	45,277	50,506	55,919
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	6,642	12,979	19,366	25,589	31,705	37,941	44,870	50,840	56,711	62,789
	3000K Lumens	6,280	12,271	18,311	24,193	29,976	35,872	42,423	48,068	53,619	59,365
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,377	12,461	18,593	24,568	30,439	36,426	43,077	48,810	54,447	60,282
	3000K Lumens	6,029	11,781	17,580	23,229	28,781	34,441	40,731	46,150	51,480	56,997
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,518	12,739	19,006	25,113	31,116	37,235	44,036	49,895	55,658	61,622
	3000K Lumens	6,029	11,781	17,579	23,229	28,779	34,440	40,729	46,148	51,478	56,995
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,414	12,533	18,702	24,710	30,616	36,637	43,328	49,093	54,763	60,631
	3000K Lumens	6,064	11,849	17,681	23,363	28,946	34,638	40,966	46,417	51,776	57,325
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,331	12,372	18,459	24,391	30,221	36,163	42,769	48,459	54,056	59,849
	3000K Lumens	5,986	11,697	17,452	23,061	28,572	34,192	40,436	45,817	51,108	56,585
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,245	12,205	18,212	24,062	29,813	35,677	42,192	47,807	53,326	59,042
	3000K Lumens	5,904	11,539	17,218	22,750	28,187	33,732	39,891	45,199	50,418	55,822
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,376	12,460	18,591	24,564	30,436	36,421	43,072	48,803	54,439	60,273
	3000K Lumens	6,028	11,780	17,578	23,224	28,776	34,435	40,723	46,141	51,471	56,986
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,058	11,838	17,664	23,340	28,918	34,605	40,924	46,370	51,727	57,269
	3000K Lumens	5,727	11,193	16,701	22,067	27,341	32,718	38,692	43,841	48,906	54,146
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	6,577	12,851	19,176	25,336	31,392	37,566	44,426	50,337	56,151	62,170
	3000K Lumens	6,218	12,151	18,131	23,955	29,680	35,517	42,003	47,592	53,089	58,779
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	6,697	13,088	19,528	25,803	31,970	38,258	45,243	51,264	57,185	63,313
	3000K Lumens	6,332	12,374	18,463	24,395	30,227	36,171	42,776	48,468	54,066	59,861
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	6,715	13,122	19,580	25,871	32,055	38,360	45,365	51,401	57,337	63,482
	3000K Lumens	6,348	12,406	18,513	24,461	30,307	36,268	42,891	48,599	54,210	60,021
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	5,604	10,949	16,337	21,586	26,745	32,004	37,850	42,886	47,838	52,965
	3000K Lumens	5,298	10,351	15,446	20,409	25,287	30,258	35,786	40,547	45,229	50,077
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	6,517	12,735	19,002	25,107	31,109	37,227	44,025	49,883	55,644	61,607
	3000K Lumens	6,162	12,040	17,965	23,738	29,413	35,197	41,623	47,163	52,609	58,247
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	6,541	12,781	19,072	25,199	31,221	37,362	44,185	50,065	55,846	61,831
	3000K Lumens	6,184	12,084	18,032	23,825	29,519	35,325	41,775	47,334	52,801	58,459
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (800MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K/5000K Lumens	5,054	9,878	14,739	19,475	24,129	28,875	34,148	38,691	43,159	47,785
	3000K Lumens	4,779	9,338	13,935	18,412	22,813	27,301	32,286	36,581	40,805	45,179
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	5,366	10,486	15,647	20,675	25,616	30,654	36,252	41,076	45,819	50,730
	3000K Lumens	5,074	9,914	14,794	19,548	24,218	28,982	34,276	38,835	43,320	47,964
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3	4000K/5000K Lumens	5,153	10,068	15,022	19,849	24,593	29,430	34,805	39,436	43,990	48,705
	3000K Lumens	4,872	9,519	14,203	18,766	23,251	27,825	32,907	37,285	41,591	46,048
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	5,266	10,292	15,356	20,290	25,140	30,084	35,578	40,312	44,968	49,786
	3000K Lumens	4,979	9,731	14,518	19,184	23,769	28,443	33,638	38,114	42,516	47,071
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	5,182	10,126	15,109	19,964	24,736	29,600	35,006	39,664	44,245	48,987
	3000K Lumens	4,899	9,574	14,285	18,876	23,387	27,986	33,097	37,501	41,832	46,315
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	5,115	9,995	14,914	19,706	24,417	29,218	34,554	39,152	43,674	48,354
	3000K Lumens	4,836	9,450	14,100	18,631	23,085	27,624	32,670	37,017	41,292	45,717
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	5,046	9,860	14,713	19,441	24,087	28,825	34,089	38,625	43,085	47,702
	3000K Lumens	4,771	9,322	13,911	18,381	22,774	27,253	32,229	36,518	40,735	45,101
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	5,152	10,067	15,020	19,846	24,591	29,426	34,800	39,431	43,984	48,698
	3000K Lumens	4,871	9,518	14,200	18,764	23,249	27,822	32,902	37,280	41,585	46,042
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	4,894	9,565	14,271	18,857	23,364	27,959	33,065	37,465	41,792	46,270
	3000K Lumens	4,627	9,043	13,492	17,829	22,090	26,434	31,261	35,422	39,513	43,746
	BUG Rating	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	5,313	10,383	15,493	20,470	25,363	30,351	35,893	40,669	45,367	50,229
	3000K Lumens	5,024	9,817	14,647	19,354	23,980	28,696	33,936	38,452	42,893	47,490
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	5,411	10,574	15,778	20,848	25,830	30,911	36,554	41,418	46,202	51,154
	3000K Lumens	5,117	9,997	14,917	19,710	24,421	29,225	34,561	39,160	43,682	48,364
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	5,426	10,603	15,820	20,903	25,899	30,992	36,652	41,529	46,325	51,290
	3000K Lumens	5,130	10,025	14,958	19,763	24,486	29,302	34,654	39,263	43,799	48,493
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	4,528	8,846	13,199	17,440	21,609	25,858	30,580	34,649	38,651	42,792
	3000K Lumens	4,281	8,364	12,480	16,489	20,430	24,448	28,912	32,759	36,543	40,459
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	5,265	10,289	15,353	20,285	25,134	30,077	35,569	40,303	44,958	49,775
	3000K Lumens	4,978	9,727	14,516	19,179	23,763	28,437	33,629	38,105	42,506	47,060
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
AFL	4000K/5000K Lumens	5,285	10,327	15,409	20,360	25,225	30,186	35,699	40,450	45,120	49,956
	3000K Lumens	4,996	9,763	14,569	19,249	23,849	28,540	33,752	38,244	42,659	47,232
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (600MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K/5000K Lumens	4,121	8,055	12,019	15,881	19,676	23,547	27,847	31,552	35,196	38,967
	3000K Lumens	3,896	7,615	11,363	15,015	18,604	22,263	26,328	29,831	33,276	36,842
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	4000K/5000K Lumens	4,376	8,552	12,760	16,860	20,890	24,998	29,563	33,497	37,365	41,369
	3000K Lumens	4,138	8,085	12,064	15,941	19,751	23,635	27,951	31,670	35,328	39,113
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	4000K/5000K Lumens	4,201	8,210	12,251	16,187	20,055	23,999	28,383	32,159	35,873	39,718
	3000K Lumens	3,973	7,763	11,583	15,304	18,961	22,691	26,835	30,406	33,916	37,552
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3R	4000K/5000K Lumens	4,294	8,393	12,523	16,546	20,501	24,532	29,014	32,875	36,671	40,600
	3000K Lumens	4,060	7,936	11,840	15,644	19,383	23,195	27,432	31,082	34,671	38,386
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	4,226	8,257	12,321	16,280	20,172	24,139	28,547	32,346	36,082	39,948
	3000K Lumens	3,996	7,807	11,649	15,392	19,071	22,822	26,990	30,582	34,114	37,770
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	4,171	8,151	12,162	16,071	19,912	23,827	28,178	31,928	35,615	39,432
	3000K Lumens	3,943	7,706	11,498	15,194	18,825	22,527	26,642	30,187	33,673	37,281
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL2	4000K/5000K Lumens	4,114	8,041	11,998	15,854	19,643	23,506	27,799	31,498	35,135	38,901
	3000K Lumens	3,890	7,603	11,344	14,989	18,572	22,224	26,282	29,780	33,219	36,779
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL3	4000K/5000K Lumens	4,200	8,209	12,249	16,184	20,053	23,996	28,379	32,154	35,869	39,712
	3000K Lumens	3,972	7,762	11,580	15,302	18,960	22,688	26,831	30,400	33,913	37,546
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	3,992	7,799	11,638	15,378	19,053	22,801	26,964	30,552	34,081	37,733
	3000K Lumens	3,774	7,374	11,003	14,539	18,015	21,557	25,493	28,886	32,222	35,674
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B2-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	4,333	8,467	12,634	16,694	20,683	24,751	29,271	33,166	36,996	40,961
	3000K Lumens	4,097	8,005	11,945	15,784	19,555	23,401	27,674	31,357	34,978	38,727
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	4,413	8,622	12,867	17,000	21,064	25,207	29,810	33,777	37,677	41,715
	3000K Lumens	4,173	8,152	12,165	16,073	19,915	23,832	28,185	31,934	35,623	39,440
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	4,424	8,646	12,900	17,046	21,120	25,274	29,890	33,866	37,778	41,826
	3000K Lumens	4,182	8,175	12,197	16,117	19,968	23,896	28,260	32,018	35,717	39,545
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	4000K/5000K Lumens	3,692	7,214	10,763	14,222	17,621	21,086	24,937	28,256	31,519	34,897
	3000K Lumens	3,491	6,820	10,176	13,447	16,660	19,937	23,577	26,715	29,800	32,994
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	4,293	8,390	12,520	16,542	20,496	24,527	29,007	32,866	36,662	40,591
	3000K Lumens	4,059	7,932	11,837	15,640	19,378	23,189	27,425	31,074	34,662	38,377
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	4000K/5000K Lumens	4,310	8,421	12,566	16,602	20,571	24,616	29,112	32,986	36,795	40,738
	3000K Lumens	4,074	7,962	11,881	15,697	19,448	23,273	27,525	31,187	34,788	38,516
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

CONTROL OPTIONS

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

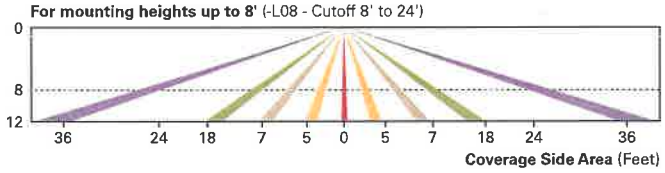
Photocontrol (P, R and PER7)
Optional button-type photocontrol (P) and photocontrol receptacles (R and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

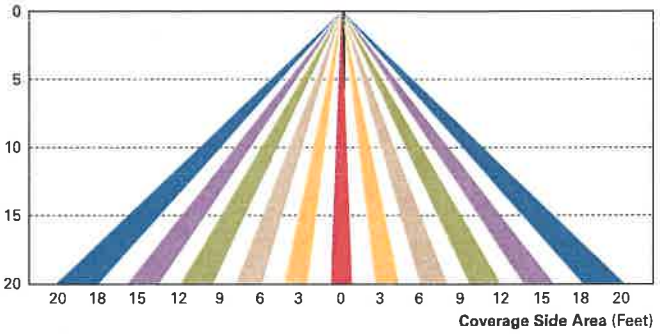
Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for "dusk-to-dawn" control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters. A variety of sensor lens are available to optimize the coverage. pattern for mounting heights from 8'-40'.

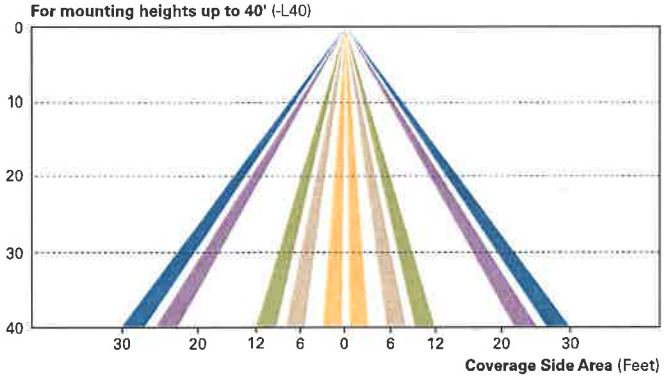
For mounting heights up to 8' (-L08 - Cutoff 8' to 24')



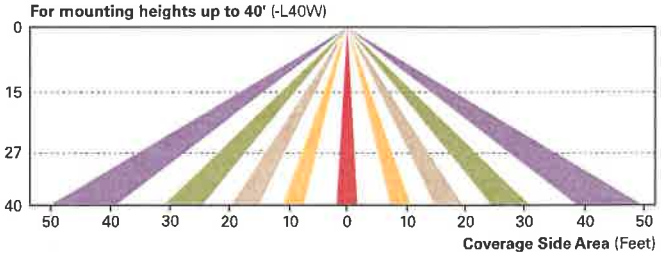
For mounting heights up to 20' (-L20)



For mounting heights up to 40' (-L40)

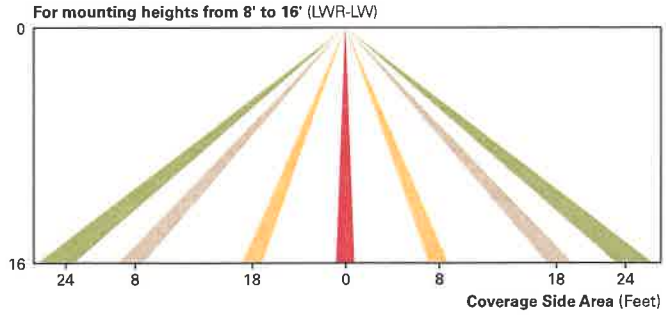


For mounting heights up to 40' (-L40W)

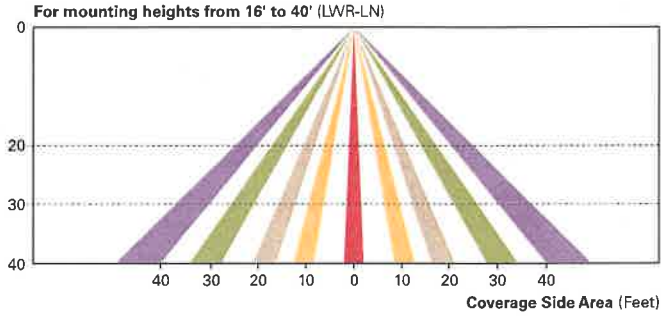


LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The Eaton's LumaWatt Pro powered by Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

LumenSafe Integrated Network Security Camera (LD)
Eaton brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

ORDERING INFORMATION

Sample Number: GLEON-AF-04-LED-E1-T3-GM-QM

Product Family [1,2]	Light Engine	Number of Light Squares [3]	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	**AF**=1A Drive Current	**01**=1 **02**=2 **03**=3 **04**=4 **05**=5 [4] **06**=6 **07**=7 [5] **08**=8 [5] **09**=9 [6] **10**=10 [6]	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [7] **480**=480V [7,8]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV ForwardThrow **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=RectangularWideType I **AFL**=Automotive Frontline	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]

Options (Add as Suffix)

7027=70 CRI 2700K [13]
7030=70 CRI 3000K [13]
8030=80 CRI 3000K [13]
7050=70 CRI 5000K [13]
7060=70 CRI 6000K [13]
600=Drive Current Set to Nominal 600mA [15]
800=Drive Current Set to Nominal 800mA [15]
1200=Drive Current Set to Nominal 1200mA [15,16]
F=Single Fuse (120, 277 or 347V. Specify Voltage)
FF=Double Fuse (208, 240 or 480V. Specify Voltage)
2L=Two Circuits [17,18]
DIM=External 0-10V Dimming Leads [19,20]
AHD145=After Hours Dim, 5 Hours [22]
AHD245=After Hours Dim, 6 Hours [22]
AHD255=After Hours Dim, 7 Hours [22]
AHD355=After Hours Dim, 8 Hours [22]
HA=50°C High Ambient [23]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Installed MeshTop
TH=Tool-less Door Hardware
HSS=Installed House Side Shield [28]
CE=CE Marking [29]
LCF=Light SquareTrim Painted to Match Housing [27]
P=ButtonType Photocontrol (120, 208, 240 or 277V. Must Specify Voltage) [21]
PER7=NEMA 7-PIN Photocontrol Receptacle [21]
R=NEMA Photocontrol Receptacle [21]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24]
MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24]
MS/DIM-L08= Motion Sensor for Dimming Operation, Maximum 8' Mounting Height [24]
MS/DIM-L20= Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24]
MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [24]
MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height [24,25]
MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24,25]
MS/X-L40W=Bi-Level Motion Sensor, 21' - 40' Mounting Height [24,25]
MS-L08=Motion Sensor for ON/OFF Operation, Maximum 8' Mounting Height [24]
LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [26]
LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [26]
ZW=WaveLinx-enabled 4-PINTwistlock Receptacle [19,33]
ZW-SWPD4WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33]
ZW-SWPD4BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33]
ZW-SWPD5WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33]
ZW-SWPD5BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33]

Accessories (Order Separately)

OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1013=Photocontrol Shorting Cap
OA/RA1014=120V Photocontrol
MA1252=10kV Surge Module Replacement
MA1036-XX=SingleTenon Adapter for 2-3/8" O.D.Tenon
MA1037-XX=2@180°Tenon Adapter for 2-3/8" O.D.Tenon
MA1197-XX=3@120°Tenon Adapter for 2-3/8" O.D.Tenon
MA1188-XX=4@90°Tenon Adapter for 2-3/8" O.D.Tenon
MA1189-XX=2@90°Tenon Adapter for 2-3/8" O.D.Tenon
MA1190-XX=3@90°Tenon Adapter for 2-3/8" O.D.Tenon
MA1191-XX=2@120°Tenon Adapter for 2-3/8" O.D.Tenon
MA1038-XX=SingleTenon Adapter for 3-1/2" O.D.Tenon
MA1039-XX=2@180°Tenon Adapter for 3-1/2" O.D.Tenon
MA1192-XX=3@120°Tenon Adapter for 3-1/2" O.D.Tenon
MA1193-XX=4@90°Tenon Adapter for 3-1/2" O.D.Tenon
MA1194-XX=2@90°Tenon Adapter for 3-1/2" O.D.Tenon
MA1195-XX=3@90°Tenon Adapter for 3-1/2" O.D.Tenon
FSIR-100=Wireless ConfigurationTool for Occupancy Sensor [24]
GLEON-MT1=Field Installed MeshTop for 1-4 Light Squares
GLEON-MT2=Field Installed MeshTop for 5-6 Light Squares
GLEON-MT3=Field Installed MeshTop for 7-8 Light Squares
GLEON-MT4=Field Installed MeshTop for 9-10 Light Squares
GLEON-QM=Quick Mount Arm Kit [11]
GLEON-QMEA=Quick Mount Extended Arm Kit [12]
LS/HSS=Field Installed House Side Shield [28,30]
WOLC-7P-10A=WaveLinx Outdoor Control Module [19,31]
SWPD4-WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33,34]
SWPD4-BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33,34]
SWPD5-WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33,34]
SWPD5-BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33,34]

NOTES:
1 Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information. **2** DesignLights Consortium© Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. **3** Standard 4000K CCT and minimum 70 CRI. **4** Not compatible with MS/4-LXX or MS/1-LXX sensors. **5** Not compatible with extended quick mount arm (QMEA). **6** Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA). **7** Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A. **8** Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems). **9** May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table. **10** Factory installed. **11** Maximum 8 light squares. **12** Maximum 6 light squares. **13** Extended lead times apply. Use dedicated IES files for 2700K, 3000K, 5000K and 6000K when performing layouts. **14** Reserved **15** 1 Amp standard. Use dedicated IES files for 600mA, 800mA and 1200mA when performing layouts. **16** Not available with HA option. **17** 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in AF-02 through AF-04 requires a larger housing, normally used for AF-05 or AF-06. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table. **18** Not available with LumaWatt Pro wireless sensors. **19** Cannot be used with other control options. **20** Low voltage control lead brought out 18" outside fixture. **21** Not available if any "MS" sensor is selected. Motion sensor has an integral photocell. **22** Requires the use of P photocontrol or the PER7 or R photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information. **23** 50°C lumen maintenance data applies to 600mA, 800mA and 1A drive currents. **24** The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information. **25** Replace X with number of Light Squares operating in low output mode. **26** LumaWatt Pro wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information. **27** Not available with house side shield (HSS). **28** Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected. **29** CE is not available with the LWR, MS, MS/X, MS/DIM, P, R or PER7 options. Available in 120-277V only. **30** One required for each Light Square. **31** Requires PER7. **32** Reserved. **33** WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. **34** Requires ZW. **35** Reserved.

LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology* LumenSafe Technology CLICK HERE	**D**=Dome Camera, Standard **H**=Dome Camera, Hi-Res **Z**=Dome Camera, Remote PTZ	**C**=Cellular, Customer Installed SIM Card **A**=Cellular, Factory Installed AT&T SIM Card **V**=Cellular, Factory Installed Verizon SIM Card **S**=Cellular, Factory Installed Sprint SIM Card	**W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

*Consult LumenSafe system pages for additional details and compatibility.

McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

GLEON
GALLEON LED

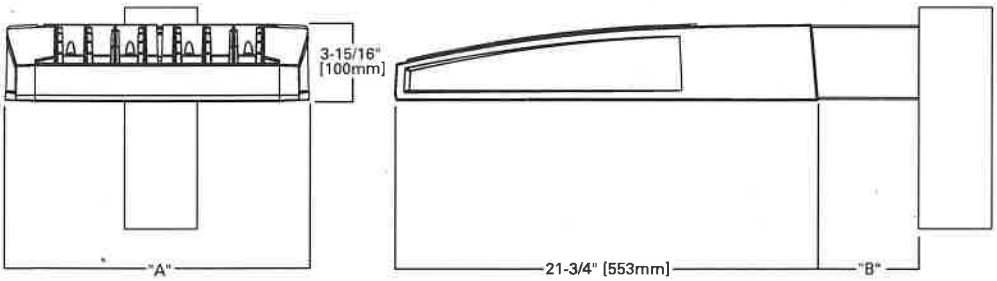
1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

LumenSafe Technology
CLICK HERE

WaveLinx

DIMENSIONS



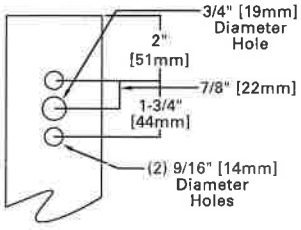
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm [2] (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



CERTIFICATION DATA

3G Vibration Rated
DesignLights Consortium® Qualified*
IP66 Rated
ISO 9001
LM79 / LM80 Compliant
UL/cUL Wet Location Listed

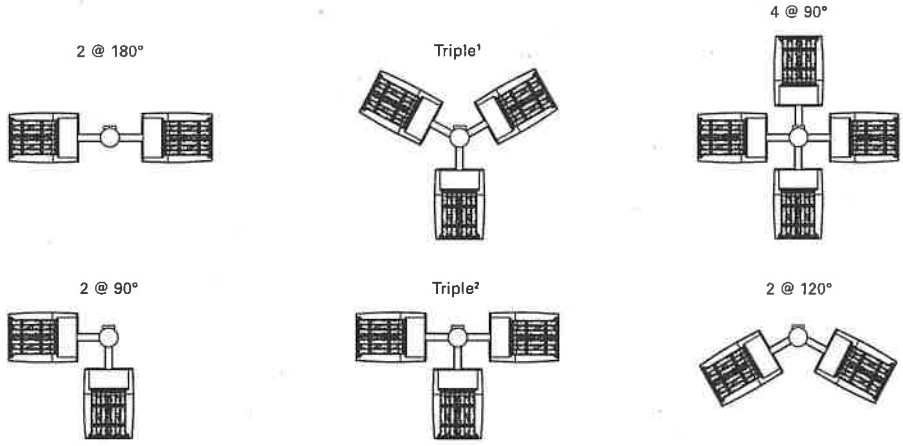
ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V, 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

*www.designlights.org

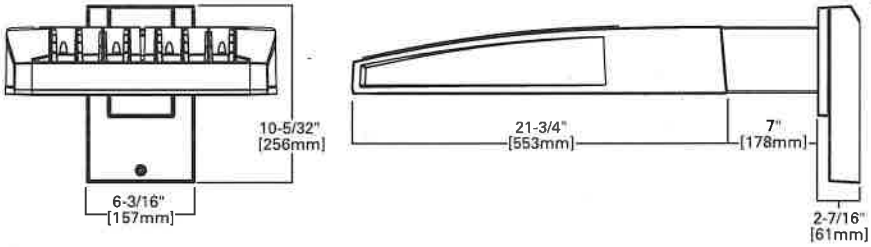
ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AF-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

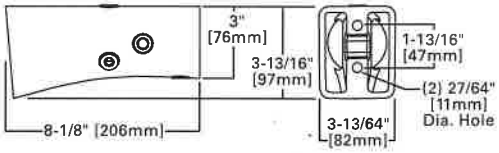


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. 2 Round poles are 3 @ 90°.

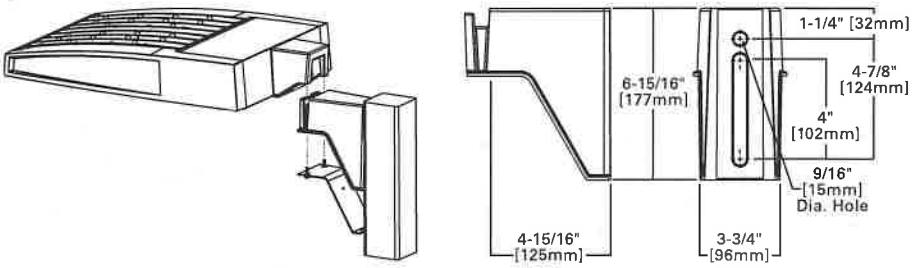
STANDARD WALL MOUNT



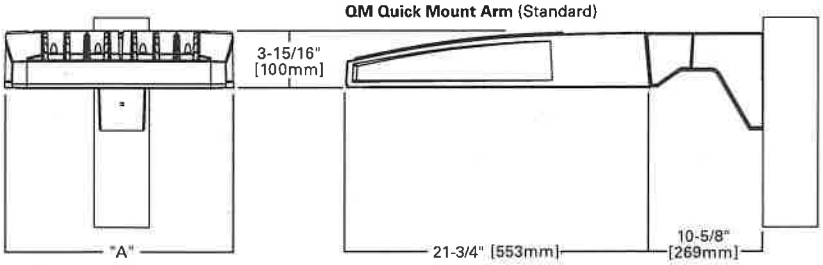
MAST ARM MOUNT



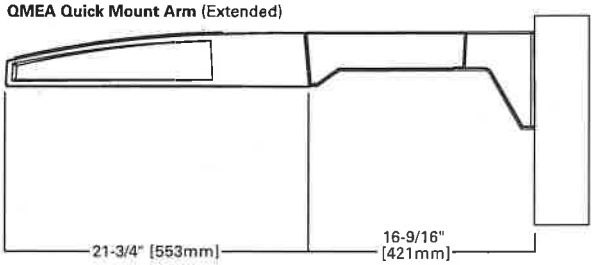
QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QM Quick Mount Arm (Standard)



QMEA Quick Mount Arm (Extended)

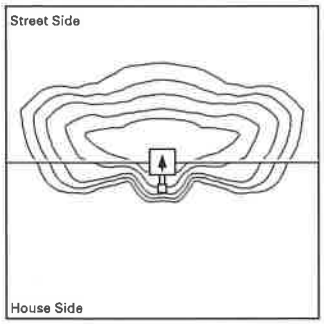


QUICK MOUNT ARM DATA

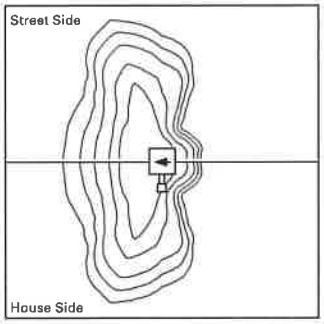
Number of Light Squares [1,2]	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 [3]	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	N/A	

NOTES: 1 QM option available with 1-8 light square configurations. 2 QMEA option available with 1-6 light square configurations. 3 QMEA arm to be used when mounting two fixtures at 90° on a single pole.

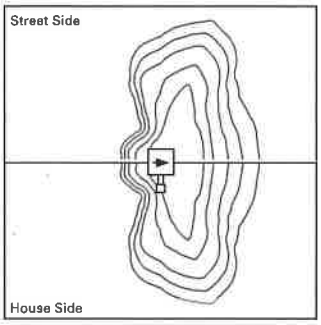
OPTIC ORIENTATION



Standard



Optics Rotated Left @ 90° [L90]

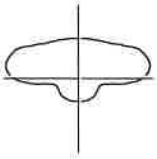


Optics Rotated Right @ 90° [R90]

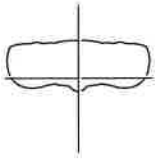
OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

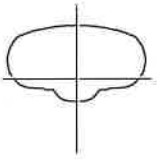
T2
(Type II)



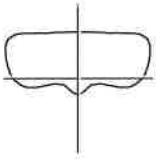
SL2
(Type II with Spill Control)



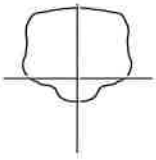
T3
(Type III)



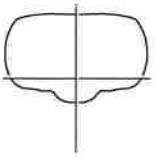
SL3
(Type III with Spill Control)



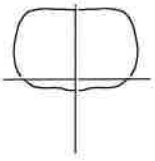
T4FT
(Type IV Forward Throw)



T4W
(Type IV Wide)

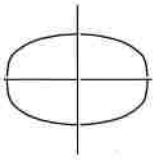


SL4
(Type IV with Spill Control)

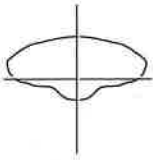


Asymmetric Roadway Distributions

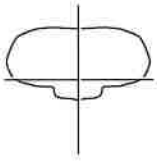
RW
(Rectangular Wide Type I)



T2R
(Type II Roadway)

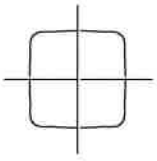


T3R
(Type III Roadway)

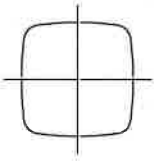


Symmetric Distributions

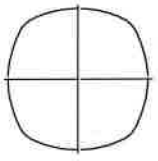
5NQ
(Type V Square Narrow)



5MQ
(Type V Square Medium)

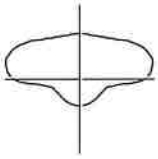


5WQ
(Type V Square Wide)

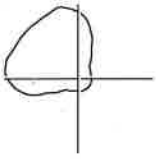


Specialized Distributions

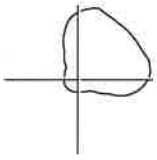
AFL
(Automotive Frontline)



SLL
(90° Spill Light Eliminator Left)

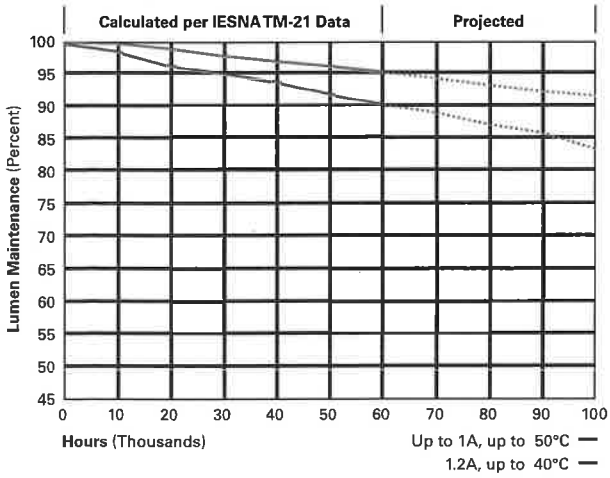


SLR
(90° Spill Light Eliminator Right)



LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	416,000
1.2A	Up to 40°C	> 90%	205,000



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

NOMINAL POWER LUMENS (1.2A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K/5000K Lumens	6,863	13,412	20,011	26,441	32,761	39,205	46,364	52,534	58,601	64,880
	3000K Lumens	6,489	12,681	18,919	25,000	30,974	37,066	43,836	49,668	55,405	61,341
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	7,285	14,238	21,246	28,072	34,780	41,621	49,221	55,770	62,212	68,878
	3000K Lumens	6,888	13,462	20,087	26,541	32,884	39,351	46,537	52,729	58,819	65,122
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,995	13,670	20,397	26,951	33,391	39,959	47,256	53,544	59,728	66,130
	3000K Lumens	6,613	12,924	19,284	25,480	31,570	37,780	44,679	50,624	56,471	62,524
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	7,150	13,973	20,850	27,549	34,134	40,846	48,307	54,734	61,056	67,598
	3000K Lumens	6,761	13,212	19,713	26,046	32,272	38,619	45,673	51,750	57,726	63,911
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	7,036	13,748	20,515	27,107	33,586	40,191	47,530	53,854	60,074	66,512
	3000K Lumens	6,652	12,999	19,397	25,629	31,754	37,999	44,938	50,917	56,797	62,885
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,945	13,571	20,249	26,756	33,152	39,671	46,917	53,160	59,298	65,653
	3000K Lumens	6,566	12,831	19,146	25,297	31,344	37,508	44,358	50,260	56,064	62,072
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,851	13,388	19,977	26,396	32,704	39,137	46,283	52,444	58,498	64,768
	3000K Lumens	6,477	12,658	18,888	24,957	30,920	37,003	43,759	49,584	55,308	61,235
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,994	13,668	20,394	26,947	33,388	39,953	47,249	53,537	59,720	66,119
	3000K Lumens	6,612	12,922	19,281	25,477	31,567	37,774	44,673	50,618	56,463	62,514
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,645	12,986	19,378	25,603	31,723	37,962	44,893	50,868	56,743	62,824
	3000K Lumens	6,282	12,279	18,321	24,207	29,993	35,892	42,445	48,094	53,648	59,398
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	7,214	14,097	21,036	27,795	34,437	41,210	48,734	55,220	61,597	68,199
	3000K Lumens	6,820	13,329	19,888	26,279	32,558	38,962	46,077	52,208	58,237	64,479
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	7,347	14,356	21,423	28,306	35,071	41,969	49,632	56,237	62,730	69,454
	3000K Lumens	6,947	13,573	20,254	26,762	33,158	39,680	46,925	53,170	59,309	65,667
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	7,366	14,396	21,480	28,381	35,164	42,080	49,765	56,386	62,898	69,639
	3000K Lumens	6,964	13,610	20,308	26,833	33,247	39,786	47,050	53,311	59,468	65,842
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	6,147	12,010	17,921	23,679	29,339	35,109	41,521	47,046	52,478	58,102
	3000K Lumens	5,811	11,355	16,944	22,388	27,739	33,194	39,256	44,479	49,617	54,933
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	7,149	13,970	20,846	27,543	34,126	40,837	48,295	54,722	61,042	67,582
	3000K Lumens	6,760	13,208	19,709	26,041	32,264	38,610	45,661	51,738	57,713	63,897
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	7,175	14,021	20,921	27,643	34,249	40,986	48,470	54,920	61,262	67,828
	3000K Lumens	6,784	13,256	19,780	26,136	32,381	38,750	45,827	51,925	57,922	64,129
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (1A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K/5000K Lumens	6,256	12,225	18,242	24,104	29,865	35,739	42,265	47,888	53,420	59,144
	3000K Lumens	5,915	11,559	17,248	22,789	28,236	33,790	39,960	45,277	50,506	55,919
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	6,642	12,979	19,366	25,589	31,705	37,941	44,870	50,840	56,711	62,789
	3000K Lumens	6,280	12,271	18,311	24,193	29,976	35,872	42,423	48,068	53,619	59,365
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,377	12,461	18,593	24,568	30,439	36,426	43,077	48,810	54,447	60,282
	3000K Lumens	6,029	11,781	17,580	23,229	28,781	34,441	40,731	46,150	51,480	56,997
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,518	12,739	19,006	25,113	31,116	37,235	44,036	49,895	55,658	61,622
	3000K Lumens	6,029	11,781	17,579	23,229	28,779	34,440	40,729	46,148	51,478	56,995
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,414	12,533	18,702	24,710	30,616	36,637	43,328	49,093	54,763	60,631
	3000K Lumens	6,064	11,849	17,681	23,363	28,946	34,638	40,966	46,417	51,776	57,325
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,331	12,372	18,459	24,391	30,221	36,163	42,769	48,459	54,056	59,849
	3000K Lumens	5,986	11,697	17,452	23,061	28,572	34,192	40,436	45,817	51,108	56,585
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,245	12,205	18,212	24,062	29,813	35,677	42,192	47,807	53,326	59,042
	3000K Lumens	5,904	11,539	17,218	22,750	28,187	33,732	39,891	45,199	50,418	55,822
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,376	12,460	18,591	24,564	30,436	36,421	43,072	48,803	54,439	60,273
	3000K Lumens	6,028	11,780	17,578	23,224	28,776	34,435	40,723	46,141	51,471	56,986
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,058	11,838	17,664	23,340	28,918	34,605	40,924	46,370	51,727	57,269
	3000K Lumens	5,727	11,193	16,701	22,067	27,341	32,718	38,692	43,841	48,906	54,146
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	6,577	12,851	19,176	25,336	31,392	37,566	44,426	50,337	56,151	62,170
	3000K Lumens	6,218	12,151	18,131	23,955	29,680	35,517	42,003	47,592	53,089	58,779
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	6,697	13,088	19,528	25,803	31,970	38,258	45,243	51,264	57,185	63,313
	3000K Lumens	6,332	12,374	18,463	24,395	30,227	36,171	42,776	48,468	54,066	59,861
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	6,715	13,122	19,580	25,871	32,055	38,360	45,365	51,401	57,337	63,482
	3000K Lumens	6,348	12,406	18,513	24,461	30,307	36,268	42,891	48,599	54,210	60,021
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	5,604	10,949	16,337	21,586	26,745	32,004	37,850	42,886	47,838	52,965
	3000K Lumens	5,298	10,351	15,446	20,409	25,287	30,258	35,786	40,547	45,229	50,077
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	6,517	12,735	19,002	25,107	31,109	37,227	44,025	49,883	55,644	61,607
	3000K Lumens	6,162	12,040	17,965	23,738	29,413	35,197	41,623	47,163	52,609	58,247
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	6,541	12,781	19,072	25,199	31,221	37,362	44,185	50,065	55,846	61,831
	3000K Lumens	6,184	12,084	18,032	23,825	29,519	35,325	41,775	47,334	52,801	58,459
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (800MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K/5000K Lumens	5,054	9,878	14,739	19,475	24,129	28,875	34,148	38,691	43,159	47,785
	3000K Lumens	4,779	9,338	13,935	18,412	22,813	27,301	32,286	36,581	40,805	45,179
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	5,366	10,486	15,647	20,675	25,616	30,654	36,252	41,076	45,819	50,730
	3000K Lumens	5,074	9,914	14,794	19,548	24,218	28,982	34,276	38,835	43,320	47,964
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3	4000K/5000K Lumens	5,153	10,068	15,022	19,849	24,593	29,430	34,805	39,436	43,990	48,705
	3000K Lumens	4,872	9,519	14,203	18,766	23,251	27,825	32,907	37,285	41,591	46,048
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	5,266	10,292	15,356	20,290	25,140	30,084	35,578	40,312	44,968	49,786
	3000K Lumens	4,979	9,731	14,518	19,184	23,769	28,443	33,638	38,114	42,516	47,071
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	5,182	10,126	15,109	19,964	24,736	29,600	35,006	39,664	44,245	48,987
	3000K Lumens	4,899	9,574	14,285	18,876	23,387	27,986	33,097	37,501	41,832	46,315
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	5,115	9,995	14,914	19,706	24,417	29,218	34,554	39,152	43,674	48,354
	3000K Lumens	4,836	9,450	14,100	18,631	23,085	27,624	32,670	37,017	41,292	45,717
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	5,046	9,860	14,713	19,441	24,087	28,825	34,089	38,625	43,085	47,702
	3000K Lumens	4,771	9,322	13,911	18,381	22,774	27,253	32,229	36,518	40,735	45,101
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	5,152	10,067	15,020	19,846	24,591	29,426	34,800	39,431	43,984	48,698
	3000K Lumens	4,871	9,518	14,200	18,764	23,249	27,822	32,902	37,280	41,585	46,042
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	4,894	9,565	14,271	18,857	23,364	27,959	33,065	37,465	41,792	46,270
	3000K Lumens	4,627	9,043	13,492	17,829	22,090	26,434	31,261	35,422	39,513	43,746
	BUG Rating	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	5,313	10,383	15,493	20,470	25,363	30,351	35,893	40,669	45,367	50,229
	3000K Lumens	5,024	9,817	14,647	19,354	23,980	28,696	33,936	38,452	42,893	47,490
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	5,411	10,574	15,778	20,848	25,830	30,911	36,554	41,418	46,202	51,154
	3000K Lumens	5,117	9,997	14,917	19,710	24,421	29,225	34,561	39,160	43,682	48,364
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	5,426	10,603	15,820	20,903	25,899	30,992	36,652	41,529	46,325	51,290
	3000K Lumens	5,130	10,025	14,958	19,763	24,486	29,302	34,654	39,263	43,799	48,493
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	4,528	8,846	13,199	17,440	21,609	25,858	30,580	34,649	38,651	42,792
	3000K Lumens	4,281	8,364	12,480	16,489	20,430	24,448	28,912	32,759	36,543	40,459
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	5,265	10,289	15,353	20,285	25,134	30,077	35,569	40,303	44,958	49,775
	3000K Lumens	4,978	9,727	14,516	19,179	23,763	28,437	33,629	38,105	42,506	47,060
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
AFL	4000K/5000K Lumens	5,285	10,327	15,409	20,360	25,225	30,186	35,699	40,450	45,120	49,956
	3000K Lumens	4,996	9,763	14,569	19,249	23,849	28,540	33,752	38,244	42,659	47,232
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (600MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K/5000K Lumens	4,121	8,055	12,019	15,881	19,676	23,547	27,847	31,552	35,196	38,967
	3000K Lumens	3,896	7,615	11,363	15,015	18,604	22,263	26,328	29,831	33,276	36,842
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	4000K/5000K Lumens	4,376	8,552	12,760	16,860	20,890	24,998	29,563	33,497	37,365	41,369
	3000K Lumens	4,138	8,085	12,064	15,941	19,751	23,635	27,951	31,670	35,328	39,113
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	4000K/5000K Lumens	4,201	8,210	12,251	16,187	20,055	23,999	28,383	32,159	35,873	39,718
	3000K Lumens	3,973	7,763	11,583	15,304	18,961	22,691	26,835	30,406	33,916	37,552
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3R	4000K/5000K Lumens	4,294	8,393	12,523	16,546	20,501	24,532	29,014	32,875	36,671	40,600
	3000K Lumens	4,060	7,936	11,840	15,644	19,383	23,195	27,432	31,082	34,671	38,386
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	4,226	8,257	12,321	16,280	20,172	24,139	28,547	32,346	36,082	39,948
	3000K Lumens	3,996	7,807	11,649	15,392	19,071	22,822	26,990	30,582	34,114	37,770
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	4,171	8,151	12,162	16,071	19,912	23,827	28,178	31,928	35,615	39,432
	3000K Lumens	3,943	7,706	11,498	15,194	18,825	22,527	26,642	30,187	33,673	37,281
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL2	4000K/5000K Lumens	4,114	8,041	11,998	15,854	19,643	23,506	27,799	31,498	35,135	38,901
	3000K Lumens	3,890	7,603	11,344	14,989	18,572	22,224	26,282	29,780	33,219	36,779
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL3	4000K/5000K Lumens	4,200	8,209	12,249	16,184	20,053	23,996	28,379	32,154	35,869	39,712
	3000K Lumens	3,972	7,762	11,580	15,302	18,960	22,688	26,831	30,400	33,913	37,546
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	3,992	7,799	11,638	15,378	19,053	22,801	26,964	30,552	34,081	37,733
	3000K Lumens	3,774	7,374	11,003	14,539	18,015	21,557	25,493	28,886	32,222	35,674
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B2-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	4,333	8,467	12,634	16,694	20,683	24,751	29,271	33,166	36,996	40,961
	3000K Lumens	4,097	8,005	11,945	15,784	19,555	23,401	27,674	31,357	34,978	38,727
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	4,413	8,622	12,867	17,000	21,064	25,207	29,810	33,777	37,677	41,715
	3000K Lumens	4,173	8,152	12,165	16,073	19,915	23,832	28,185	31,934	35,623	39,440
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	4,424	8,646	12,900	17,046	21,120	25,274	29,890	33,866	37,778	41,826
	3000K Lumens	4,182	8,175	12,197	16,117	19,968	23,896	28,260	32,018	35,717	39,545
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	4000K/5000K Lumens	3,692	7,214	10,763	14,222	17,621	21,086	24,937	28,256	31,519	34,897
	3000K Lumens	3,491	6,820	10,176	13,447	16,660	19,937	23,577	26,715	29,800	32,994
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	4,293	8,390	12,520	16,542	20,496	24,527	29,007	32,866	36,662	40,591
	3000K Lumens	4,059	7,932	11,837	15,640	19,378	23,189	27,425	31,074	34,662	38,377
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	4000K/5000K Lumens	4,310	8,421	12,566	16,602	20,571	24,616	29,112	32,986	36,795	40,738
	3000K Lumens	4,074	7,962	11,881	15,697	19,448	23,273	27,525	31,187	34,788	38,516
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

CONTROL OPTIONS

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

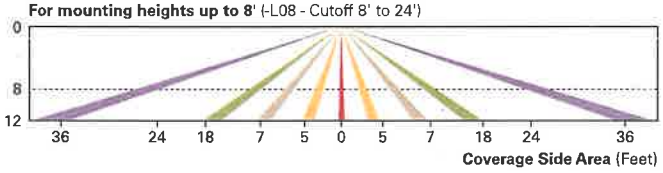
Photocontrol (P, R and PER7)
Optional button-type photocontrol (P) and photocontrol receptacles (R and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

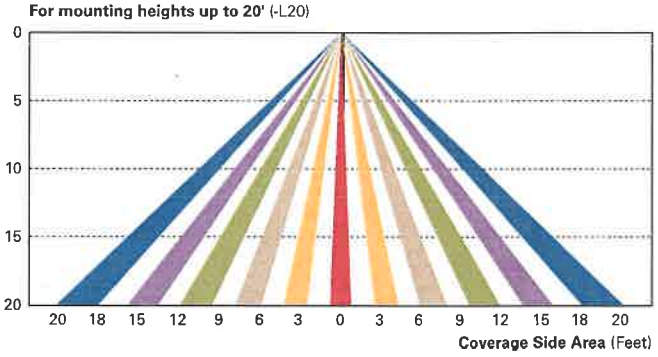
Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for "dusk-to-dawn" control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters. A variety of sensor lens are available to optimize the coverage. pattern for mounting heights from 8'-40'.

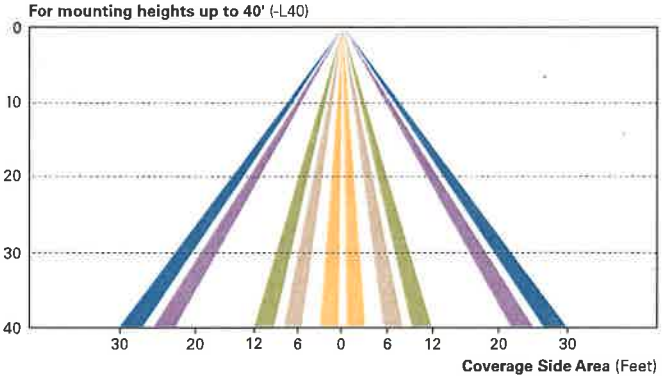
For mounting heights up to 8' (-L08 - Cutoff 8' to 24')



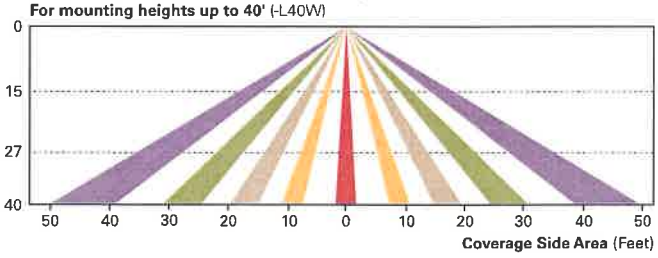
For mounting heights up to 20' (-L20)



For mounting heights up to 40' (-L40)

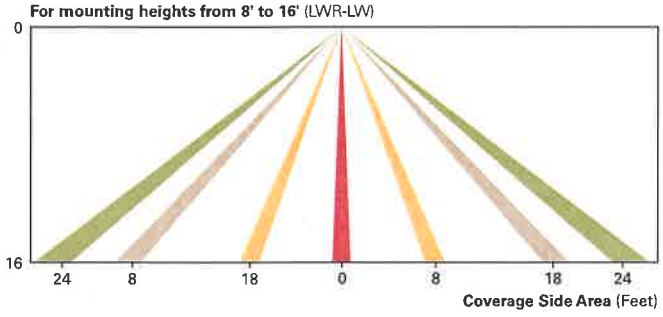


For mounting heights up to 40' (-L40W)

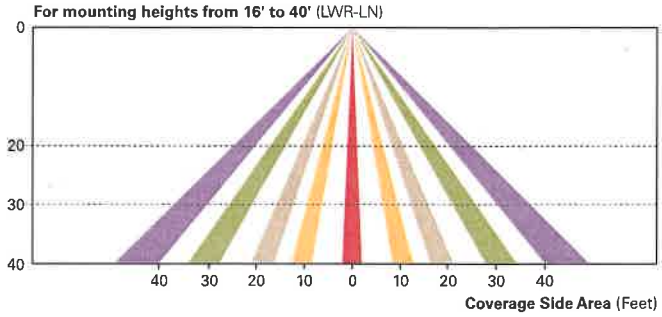


LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The Eaton's LumaWatt Pro powered by Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

LumenSafe Integrated Network Security Camera (LD)
Eaton brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

ORDERING INFORMATION

Sample Number: GLEON-AF-04-LED-E1-T3-GM-QM

Product Family [1, 2]	Light Engine	Number of Light Squares [3]	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	**AF**=1A Drive Current	**01**=1 **02**=2 **03**=3 **04**=4 **05**=5 [4] **06**=6 **07**=7 [5] **08**=8 [5] **09**=9 [6] **10**=10 [6]	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [7] **480**=480V [7,8]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]

Options (Add as Suffix)

7027=70 CRI 2700K [13]
7030=70 CRI 3000K [13]
8030=80 CRI 3000K [13]
7050=70 CRI 5000K [13]
7060=70 CRI 6000K [13]
600=Drive Current Set to Nominal 600mA [15]
800=Drive Current Set to Nominal 800mA [15]
1200=Drive Current Set to Nominal 1200mA [15,18]
F=Single Fuse (120, 277 or 347V. Specify Voltage)
FF=Double Fuse (208, 240 or 480V. Specify Voltage)
2L=Two Circuits [17,18]
DIM=External 0-10V Dimming Leads [18,20]
AHD145=After Hours Dim, 5 Hours [22]
AHD245=After Hours Dim, 6 Hours [22]
AHD255=After Hours Dim, 7 Hours [22]
AHD355=After Hours Dim, 8 Hours [22]
HA=50°C High Ambient [23]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Installed Mesh Top
TH=Tool-less Door Hardware
HSS=Installed House Side Shield [28]
CE=CE Marking [29]
LCF=Light Square Trim Painted to Match Housing [27]
P=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Voltage) [21]
PER7=NEMA 7-PIN Photocontrol Receptacle [21]
R=NEMA Photocontrol Receptacle [21]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24]
MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24]
MS/DIM-L08= Motion Sensor for Dimming Operation, Maximum 8' Mounting Height [24]
MS/DIM-L20= Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24]
MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [24]
MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height [24,25]
MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24,25]
MS/X-L40W=Bi-Level Motion Sensor, 21' - 40' Mounting Height [24,25]
MS-L08=Motion Sensor for ON/OFF Operation, Maximum 8' Mounting Height [24]
LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [26]
LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [25]
ZW=WaveLinx-enabled 4-PIN Twistlock Receptacle [18,33]
ZW-SWPD4WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33]
ZW-SWPD4BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33]
ZW-SWPD5WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33]
ZW-SWPD5BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33]

Accessories (Order Separately)

OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1013=Photocontrol Shorting Cap
OA/RA1014=120V Photocontrol
MA1252=10kV Surge Module Replacement
MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon
MA1037-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon
MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon
MA1191-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon
MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon
MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon
MA1192-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon
MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1194-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon
MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [24]
GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares
GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares
GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares
GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares
GLEON-QM=Quick Mount Arm Kit [11]
GLEON-QMEA=Quick Mount Extended Arm Kit [12]
LS/HSS=Field Installed House Side Shield [28,30]
WOLC-7P-10A=WaveLinx Outdoor Control Module [18,31]
SWPD4-WH=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, White [19,33,34]
SWPD4-BZ=Wavelinx Wireless Sensor, 7' – 15' Mounting Height, Bronze [19,33,34]
SWPD5-WH=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, White [19,33,34]
SWPD5-BZ=Wavelinx Wireless Sensor, 15' – 40' Mounting Height, Bronze [19,33,34]

NOTES:
1 Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information. **2** DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. **3** Standard 4000K CCT and minimum 70 CRI. **4** Not compatible with MS/4-LXX or MS/1-LXX sensors. **5** Not compatible with extended quick mount arm (QMEA). **6** Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA). **7** Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A. **8** Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems). **9** May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table. **10** Factory installed. **11** Maximum 8 light squares. **12** Maximum 6 light squares. **13** Extended lead times apply. Use dedicated IES files for 2700K, 3000K, 5000K and 6000K when performing layouts. **14** Reserved **15** 1 Amp standard. Use dedicated IES files for 600mA, 800mA and 1200mA when performing layouts. **16** Not available with HA option. **17** 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in AF-02 through AF-04 requires a larger housing, normally used for AF-05 or AF-06. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table. **18** Not available with LumaWatt Pro wireless sensors. **19** Cannot be used with other control options. **20** Low voltage control lead brought out 18" outside fixture. **21** Not available if any "MS" sensor is selected. Motion sensor has an integral photocell. **22** Requires the use of P photocontrol or the PER7 or R photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information. **23** 50°C lumen maintenance data applies to 600mA, 800mA and 1A drive currents. **24** The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information. **25** Replace X with number of Light Squares operating in low output mode. **26** LumaWatt Pro wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information. **27** Not available with house side shield (HSS). **28** Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected. **29** CE is not available with the LWR, MS, MS/X, MS/DIM, P, R or PER7 options. Available in 120-277V only. **30** One required for each Light Square. **31** Requires PER7. **32** Reserved. **33** WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. **34** Requires ZW. **35** Reserved.

LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology* LumenSafe Technology CLICK HERE	**D**=Dome Camera, Standard **H**=Dome Camera, Hi-Res **Z**=Dome Camera, Remote PTZ	**C**=Cellular, Customer Installed SIM Card **A**=Cellular, Factory Installed AT&T SIM Card **V**=Cellular, Factory Installed Verizon SIM Card **S**=Cellular, Factory Installed Sprint SIM Card	**W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

*Consult LumenSafe system pages for additional details and compatibility.

BEACON
design . performance . technology

DATE: | LOCATION:

TYPE: | PROJECT:

CATALOG #:

SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

DRIVE EDGE-LIT

FEATURES

- For ceiling mount and parking garage applications from an 8–15 foot mounting height
- Edge-lit flat lens for optimal visual comfort and uniformity across the lens
- Two optical distributions specifically design for parking garage and canopy applications are available making the Beacon Edge-Lit luminaire both versatile and functional
- UL/cUL listed for we locations, IP65 and 3G vibration rated
- Occupancy sensor available for complete on/off and dimming operation

RELATED PRODUCTS

Drive Edge-Lit SRT2 | Orbeon | Viper Small

SPECIFICATIONS

HOUSING

- Die-cast aluminum housing ensures long electrical component life and luminaire performance
- Corrosion resistant powder coat finish both protects and provides architectural appearance
- One piece molded silicone gasket ensures weather proof seal
- Thermally isolated driver mounted to dedicated bracket reduces operating temperatures and increases driver life and reliability

OPTICS

- Edge-lit acrylic light guide provides blended non-pixelated light for unprecedented visual comfort
- Choice of multiple light outputs with lumen range of 2500–6000
- Two distribution types: Type 5 Square Wide, Type 5 Concentrated
- Wide variety of CCT's and CRI's offered: 3000K (70CRI), 3000K (80CRI), 3500K (80CRI), 4000K (70CRI), 4000K (80CRI) or 5000K (70 CRI) CCT

ELECTRICAL

- 120V–277V 50/60Hz available
- 0–10V dimming drivers are RoHS compliant
- Surge protection – Standard 10kA with optional end of life LED indicator

INSTALLATION

- Standard quick mount plate over standard 4" junction box or octagonal junction box and allows for simplified fixture installation.
- Standard luminaire accepts a rigid or free-swinging 3/4" NPT stem for pendant mounting via wet location j-box (by others)
- Optional bird deterrent shroud available for field installation

OPTIONS/CONTROLS

- Standalone occupancy sensor available for on/off or dimming operation
- Uplight option provides approximately 800 lumens and consumes only 8 additional watts
- Vandal resistant wire guard available as an option for factory installation or as an accessory for field installation.

CERTIFICATIONS

- Listed to UL1598 for use in wet location, listed for -40°C to 40°C applications
- IDA approved with zero uplight for 3000K and warmer CCTs
- IP65

WARRANTY

- 5 year warranty
- See HLI Standard Warranty for additional information

KEY DATA	
Lumen Range	2500–6000
Wattage Range	20–55
Efficacy Range (LPW)	99–118
Reported Life (Hours)	L70>60K
Weight lbs. (kg)	8 (3.6)

HUBBELL Lighting

BEACON

DATE: | LOCATION:

TYPE: | PROJECT:

CATALOG #:

SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

ORDERING GUIDE

Example: SRT1-35-3K7-5QW-UNV-BL-WG

CATALOG # _____

Series		Engine		CCT		Distribution		Voltage		Color/Finish		Options	
SRT1	Edge-Lit Parking Garage Size 1	**20**	20W Nominal 2500 lm	**3K7**	3000K, 70 CRI	**5QW**	Type 5 Square Wide	**UNV**	120V-277V	**BL**	Textured Black	**CD**	Continuous Dimming[4]
		35	35W Nominal 4000 lm	**3K8**	3000K, 80 CRI	**5C**	Type 5 Concentrated	**120**	120V	**DB**	Textured Dark Bronze	**WG**	Wire Guard
		55	55W Nominal 6000 lm	**35K7**	3500K, 80 CRI			**208**	208V	**GT**	Graphite Textured	**UD**	Uplight Module[3]
				4K7	4000K, 70 CRI			**240**	240V	**GYS**	Smooth Gray	**F**	Single Fuse (120, 277)[1]
				4K8	4000K, 80 CRI			**277**	277V	**PS**	Smooth Plat. Silver	**LD3**	36" Lead Length[2]
				5K7	5000K, 70 CRI					**WH**	Textured White	**LD6**	72" Lead Length[2]
										CC	Custom Color	**LD9**	108" Lead Length[2]
												SP10K	10kA Surge Protection with End of Life LED Indicator[3]
												LMB	Less Mounting Bracket

Control Options	
NX Standalone	
NXOS12F	NX Distributed Intelligence™, PIR Occ. Sensor, Dimming Daylight Harvesting, up to 12' MH
Sensor Controls	
SCP-8F	Remote control programmable line voltage sensor (8-12' recommended mounting height)
SCP-20F	Remote control programmable line voltage sensor (12-20' recommended mounting height)

Notes

1. Must specify voltage
2. Standard wire lead length 24"
3. SP10K LED indicator not available with uplight
4. Specify when using external 0-10V dimming system

Accessories (Order Separately)		
☐	**SRT1-WG**	Wire Guard
☐	**SRT-MB**	Mounting bracket for pre-installation
☐	**SRT1-BRD**	Bird deterrent shroud for SRT1 version, not available with uplight
☐	**SCP-REMOTE**	Remote control for SCP option; order at least on per project to program and control

PERFORMANCE DATA

Nominal Watts	Nominal Lumens	Distribution	5K (5000K NOMINAL 70 CRI)					4K (4000K NOMINAL 70 CRI)					3K (3000K NOMINAL 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
20	2500	5QW	2446	113	1	0	1	2434	113	1	0	1	2312	107	1	0	1
		5C	2539	118	1	0	1	2527	117	1	0	1	2400	111	1	0	1
35	4000	5QW	3783	109	2	0	1	3769	109	2	0	1	3578	103	2	0	1
		5C	3929	114	2	0	1	3913	113	2	0	1	3714	107	2	0	1
55	6000	5QW	5726	104	3	0	1	5698	104	3	0	1	5413	99	3	0	1
		5C	5945	108	2	0	1	5915	108	2	0	1	5619	102	2	0	1

ELECTRICAL DATA

Nominal Watts	System Watts	Line Voltage		AMPS AC				Dimming Range	Absolute Voltage Range on 0-10V (+)	
		VAC	HZ	120	208	240	277		VAC	HZ
20	21.6	120-277	50/60	0.18	0.10	0.09	0.08	10% to 100%	0V	10V
35	34.6	120-278	50/61	0.29	0.17	0.14	0.12	10% to 100%	0V	10V
55	54.9	120-279	50/62	0.46	0.26	0.23	0.20	10% to 100%	0V	10V

HUBBELL Lighting

BEACON

DATE: | LOCATION:

TYPE: | PROJECT:

CATALOG #:

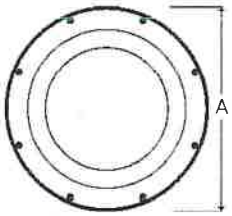
SRT1 EDGE-LIT

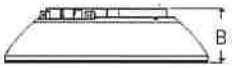
CEILING/SURFACE/GARAGE

PROJECTED LUMEN MAINTENANCE

TM-21 Lifetime Calculations - Projected Lumen Maintenance (25°C/77°F)							
Hours	0	25,000	36,000	50,000	100,000	Reported L70	Calculated L70
Project Lumen Maintenance	100%	0.97	0.94	0.93	0.88	> 60,000	> 262,000

DIMENSIONS





A	B	Weight
12" (304mm)	3.1" (78mm)	8lbs (3.6kg)

ADDITIONAL INFORMATION

FINISH OPTIONS

DB Dark Bronze Textured

BL Black Textured

PS Platinum Silver Smooth

GYS Gray Smooth

WH White Textured

GT Graphite Textured

ACCESSORIES AND SERVICES

Wire Guard

An optional wire guard can be specified at the factory or as an accessory for field installation.

Bird Deterrent

An optional bird shroud deterrent can be specified at the factory or as an accessory for field installation.

HUBBELL Lighting

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

ADDITIONAL INFORMATION (CONT'D)

MOUNTING

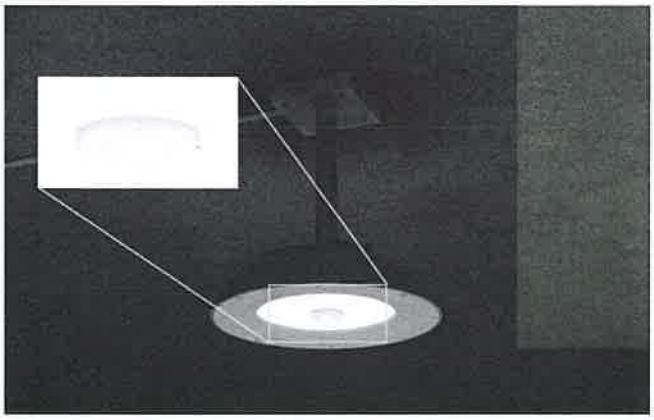
Surface Mount

Mounting plate with "quick mount" hanger for one person simple installation.

Pendant Mount

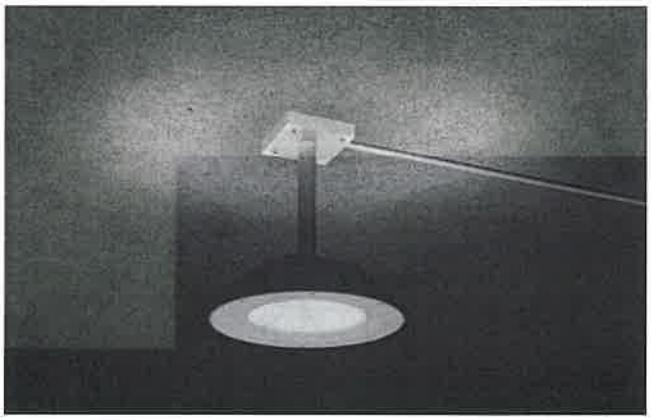
Standard 3/4" threaded entry for pendant applications.

CONTROLS



Standalone Controls

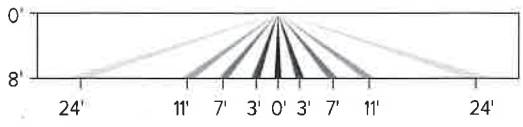
Optional passive infrared sensors are available for basic occupancy and daylight sensing. Programmable via remote or Bluetooth® phone app.

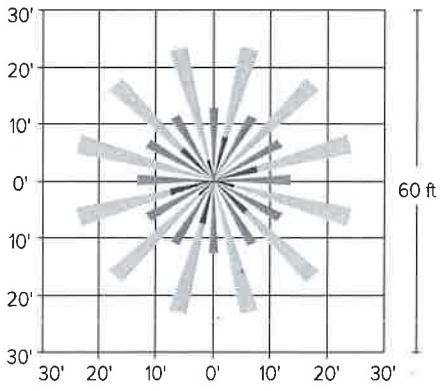


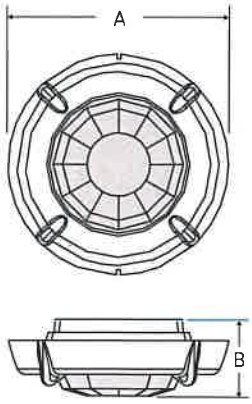
Uplight

Optional uplight module provides 800 lumens of indirect illumination for improved visual quality while eliminating cave effect.

SCP-8F







A	B
2.3" (59mm)	.8" (20mm)

HUBBELL Lighting

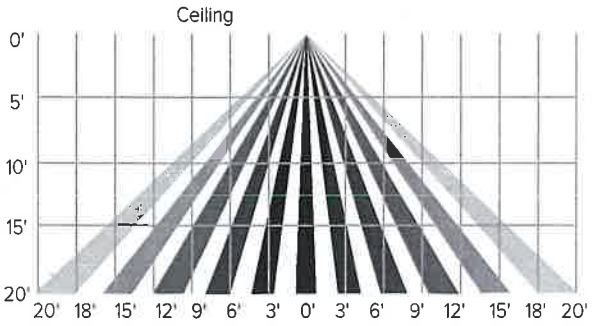
SRT1 EDGE-LIT

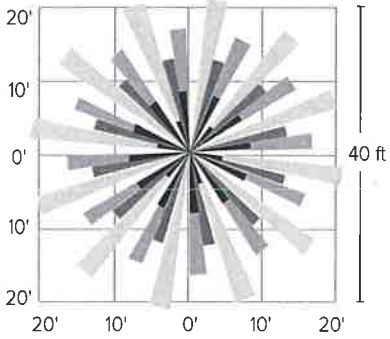
CEILING/SURFACE/GARAGE

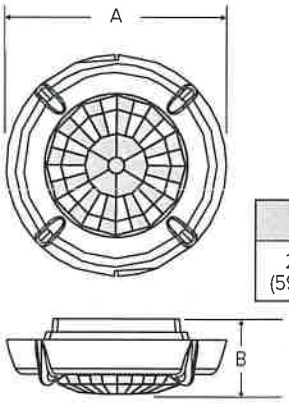
ADDITIONAL INFORMATION (CONT'D)

CONTROLS (CONT'D)

SCP-20F

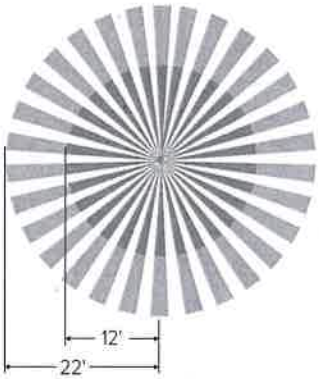


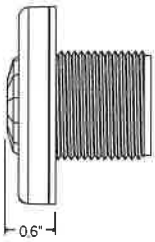


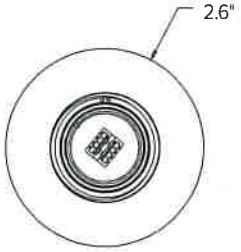


A	B
2.3" (59mm)	.8" (20mm)

NXOS12F





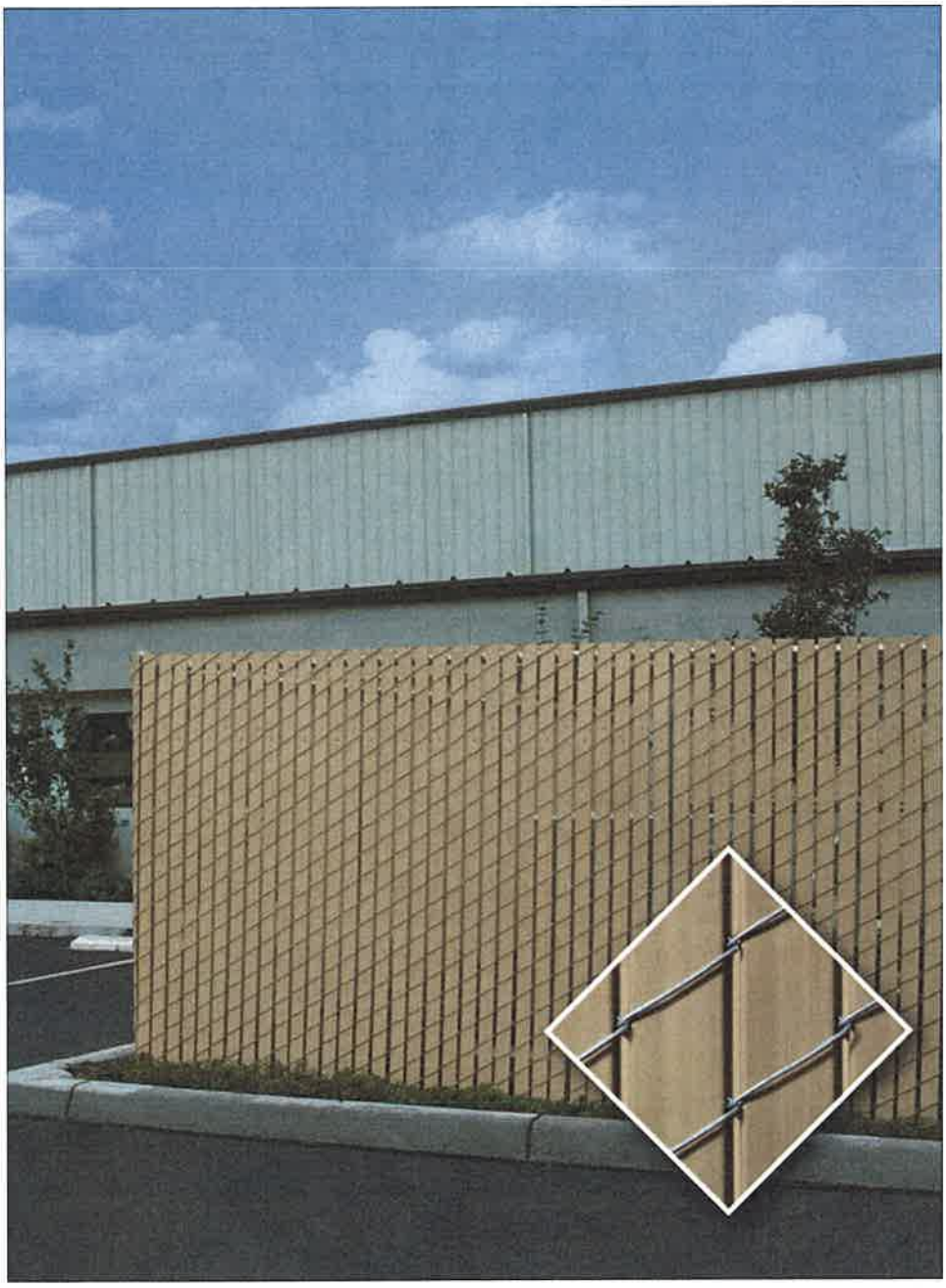


NXSMP-OMNI Range

USE OF TRADEMARKS AND TRADE NAMES

HUBBELL Lighting

INDUSTRIAL PRE-WOVEN



The Industrial Pre-Woven Slat is a standard style economical slat, for commerical or industrial applications.

This slat is mechanically inserted into the chain link wire during the weaving process. Once inserted, the wire is finished above and below the slat (either bow-knuckle or knuckle-over).

Design
Industrial Pre-Woven Slats are flat and tubular in shape, with three "legs" inside the hollow body of the slat, for extra durability.

Standard Heights
4, 5, 6, 8, 10 & 12 feet. Special heights available upon request.

Wind Load & Privacy Factor
Approximately 75%.

Upon Special Request
Available in bags that cover 25 linear feet for smaller jobs.

SLAT PROFILE:

Colors*

White | Green | Brown | Black | Beige | Gray | Redwood | Royal Blue | Light Blue

* Exact representation of slat colors in printing is difficult. Please refer to actual color samples for final matching. Covered by one or more of the following patents: US Patent 6,068,243 / 5,165,664 / 5,234,199

PDS FENCE PRODUCTS

Made in the USA

PRODUCT SPECIFICATIONS

Slat Type	Slat Width	Mesh Size	Wire Gauge	Slats Per Crate	Approx. Coverage Per Crate
Industrial	2⅜	3½" x 5"	9 or 10	2,014 (106 pieces/bag)	475 linear feet (25 linear feet/bag)

Materials

The Industrial Pre-Woven product is extruded from High Density Polyethylene (HDPE), color pigments and ultra violet (UV) inhibitors, specifically designed to retard the harmful effects of the sun and lengthen the life of the product.

Durability

Pexco PDS® HDPE Fence Products are resistant to: severe weather conditions, salt water, sand, road dirt, most acids, alcohol, alkaline, ammonia, petroleum distillates, and common environmental pollutants.

Maintenance

Pressure cleaning of surface contaminants is quickly accomplished with plain water.

Wind Load Disclaimer

Pexco will not be responsible for damage due to wind load conditions resulting from insufficient structural support.

Limited Warranty

Industrial Pre-Woven carries a 25-year, pro-rata warranty against breakage under normal conditions. Write Pexco for full warranty information.

Installation Instructions

Because this slat comes pre-inserted in the chain link fabric, just stretch the wire and tie it up. The result is a fully slatted fence with 75% privacy.

Note

Pexco is the manufacturer of the plastic slats only, we do not weave the wire. For pre-woven products, please contact your fence supplier or contact us for a supplier near you.

PDS FENCE PRODUCTS

HDPE Technical Properties

Property	Value
Melt Idex	(.35) Optimum extrusion processing conditions for Fence Slats
Density	(.945) Polyethylene ranges anywhere from .914 to .960 in density
Minimum Temp.	(-70°) Under no stress, HDPE remains flexible at this temperature
Maximum Temp.	(180°) Under no stress, HDPE will not distort at this temperature
Tensile Strength	(3,700 psi) HDPE will not distort at lesser loads or impacts

PEXCO LLC

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Contact your local fence professional for more information about our complete line of enhancement products.